

Information and Communications Technology Industry Communications and Information Services Specification of Competency Standards

Version 2

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Chapter 1

Review on Development of ICT Industry

Introduction

The Education Bureau (EDB) of the Hong Kong Special Administrative Region (HKSAR) Government assisted the Information and Communications Technology (ICT) industry to setup its Industry Training Advisory Committee (ITAC) with a view to promoting the Qualifications Framework (QF) to the industry. In 2019, the ITAC kicked start the work of production of progression pathways and revision of Specification of Competency Standards (SCS) for the industry. In consideration of the present conditions and future development of ICT as well as the new skills and knowledge required, the above SCS formulated would not only set out the competency standards at various levels required by the future development of the industry, but also act as a set of unified benchmarks for human resources management. This could provide a comprehensive training framework for the improvement of the service quality of the industry.

2. This Section presents a review of the development of ICT industry including review of the global and local ICT industry development, the development of emerging technologies, impact on competency requirements and identification of Specification of Competency Standards (SCS) for update and development.

A Recap of the Global Development Trends of ICT Industry

3. The global ICT industry is under rapid development. Both business operations and personal lives are becoming more digital, more connected and increasingly more automated. According to the CompTIA research¹, the global ICT industry business is estimated to reach US\$5.2 trillion in 2020. The United States remains the largest technology market in the world representing 32% of the total business value (approximately US\$1.7 trillion). The Asia region accounts for the second largest market (21% of the total business value) with technology expenses mainly on the areas of infrastructure setup and research & development (R&D) activities. The Western Europe stays at the third position of the global technology business value with a sharing of 20%.

4. The advancement of the emerging technologies has led to the transformation of job nature and induced new skill requirements. From the Table 1.1, the top demanding new technology skills include big data analysis, app/web-enabled marketing, IoT applications, machining learning and cloud computing. According to the World Economic Forum², at least 133 million new ICT job roles will be generated globally by 2022 as a result of the new division of labour between humans, machines and algorithms. In addition to the strong demand of technology skills, management skills including creative thinking, problem-solving and negotiating are also highly required for the ICT workforce.

¹ Research Report, CompTIA (November 2019)

² www.weforum.org

Technology	Percentage of respondents that likely to adopt
User and entity big data analytics	85%
App- and web-enabled marketing	75%
Internet of things	75%
Machine learning	73%
Cloud computing	72%
Digital trade	59%
Augmented and virtual reality	58%
Encryption	54%

Table 1.1: Technologies by proportion of companies likely to adopt them by 2022 (projected)
(source: www.weforum.org)

5. Filling the knowledge and skill gaps for ICT workforce is a major challenge faced by business companies worldwide. Many companies started to develop their own training programmes to upskill their employees. The topic of ICT manpower training will further be discussed in the below paragraphs.

6. The US ICT industry has a market-oriented economy structure mainly including extensive provision of innovative technology services across different business sectors and exports of technology products and services to other countries. In 2018, the majority of the ICT workforce in US involves in the categories of Software, IT and Business Services, and Emerging Technologies development (Table 1.2).

Key Career Categories	ICT Workforce
Software	18%
Devices plus Infrastructure	17%
IT and Business Services	30%
Telecom Services	13%
Emerging Technologies (such as IoT, AI, Blockchain etc.)	22%

Table 1.2: ICT Key Career Categories of US market 2018 (Source: *CompTIA*)

7. A further breakdown of the key technology employment growth drivers of the US market from 2010-2018 is shown in Table 1.3. From the Table, the category Software Developers and Application accounts for the largest actual number of employment growth (+386,900) revealing the strong talent demand in supporting the technology service development in the past few years. For other conventional technology positions (such as System Analysts and Network Architect), the employment growth is relatively mild. On the other hand, it is observed that the categories Cybersecurity Analyst and Technology Occupation have high percentage increase of employment growth showing the rising needs of these new technology skills.

Key Technology Employment	Actual change	Percentage change
Software Developers and Applications	+386,900	+76%
IT Support Specialists	+190,200	+43%
Technology Occupation, Others*	+138,900	+69%
Systems Analysts	+90,000	+17%
CIOs / IT Managers	+82,900	+28%
Industrial Engineers	+69,800	+34%
Mechanical Engineers	+64,800	+27%
Web Developers	+58,800	+56%
Cybersecurity Analysts	+52,500	+91%
Network Architects	+50,800	+45%
Total	1,185,600	44%

Table 1.3: Key Technology Employment Growth Drivers in US (2010-2018) (Source: CompTIA)

**Note: include positions such as videogame developers, business intelligence analysts, IT project management etc.*

8. In global terms, Europe has no massive software industry³. However, Europe does innovate in ICT through technology applications in other industries. For example, BMW and Airbus are the major companies embracing the Internet of Things (IoT) to develop advanced transportation systems⁴. The telecom companies such as Vodafone, Telefonica, Nokia and Ericsson are the major multinationals with telecom operations spanning several continents. London, as one of the world's financial centers, hosts vigorous FinTech industry with keen talent demand in big data analysis and other technology-based financial services. Ireland is the second largest exporter of computer and IT services in the world that its ICT sector accounts for more than €50 billion of the nation exports per annum⁴.

9. In 2018, around 8.9 million professionals worked as ICT specialists across the 28 member states under the European Union (EU). In 2020, the European market is projected to be lacking more than 0.67 million ICT professionals due to the rapid growth of technology-driven business ecosystem⁵. Both small-medium enterprises (SMEs) and multinational companies are competing for ICT professionals for their business development. Among the spectrum of job vacancies, two segments are particularly in high demand including 1) ICT professionals with strong communication and project management skills; and 2) workforce with entry-level programming skills⁶.

³ Association for Computing Machinery (2019)

⁴ www.enterprise-ireland.com

⁵ www.eu-startups.com (2019)

10. To build the long-term strategic digital capacities and facilitate the wide deployment of digital technologies in EU, the European Commission has proposed the “Digital Europe Programme” with €9.2 billion of funding to support the EU ICT development for 2021-2027⁶. The Programme has identified several key areas for technology investment including supercomputing, artificial intelligence and cybersecurity. In addition, the Programme will provide funding to nurture advanced digital skill workforce through the following initiatives.

- Support the design and delivery of short-term trainings and courses for entrepreneurs, small business leaders and the workforce
- Support the design and delivery of long-term trainings and Master’s courses for students, IT professionals and the workforce
- Support on-the-job trainings and traineeships for students, young entrepreneurs and graduates.

11. Europe is a leading region in data privacy protection. Their General Data Protection Regulation (GDPR) provides a regulatory model that aims to protect consumers and increase control over their personal data via informed consent. For companies with business operations in Europe, the GDPR may lead to their increased compliance risks, growing costs to maintain the data storage systems and fulfill compliance requirements.

12. Israel is not a state member of EU but it has significant ICT development and achievement in recent years. Israel’s ICT industry was initially fueled by the defense-related research and development (R&D) needs. The Israel government has invested a lot to nurture the technology talents that it attracted many multinational companies, including Intel, IBM, Google, Cisco, Apple etc., to invest and setup research centres in Israel to take the advantage of the local talent. Nowadays, Israel has become the global leading ICT development hub in software, data communications, hardware design and cybersecurity. It has attracted 19% of global investment in cybersecurity, ranks number one globally in R&D expenditures per GDP, and attracts the highest rate of venture capital funding per capita in the world⁷.

Development of ICT Industry in Mainland China

13. The ICT industry is a major driving force of the Mainland China economy. It is estimated that the Mainland China ICT market reaches \$8.1 trillion in 2021 representing 55% of the national GDP⁸. The competitiveness of the Mainland China ICT companies keeps growing as the quality of domestic hardware, software, and services has continued to improve. In 2017, the Mainland China’s ICT imports totaled \$528 billion while exports totaled \$781 billion¹⁰.

⁶ www.ec.europa.eu/digital-single-market/

⁷ Start-up Nation Central (SNC) and PwC Israel (2018)

⁸ www.export.gov (2019)

14. Certain technology sectors (e.g. smart phone devices) are predicted to reach saturation that could not further boost national economy growth. It is believed that integrating ICT technologies into and transforming traditional industries will be the fuel of the future national economy growth. As announced in the China's Made in China 2025 initiative, the industrial big data and industrial internet are the two major areas to support the new development of Mainland China's technology market¹⁰. Alibaba has also listed several potential technology areas for economy growth including real-time urban simulation, development and applications of AI, 5G networks for new applications, smart vehicles and commercial applications of Blockchain. In addition, the Mainland China business companies are willing to apply and develop immersive technology (AR/VR) products for entertainment and business services markets.

15. On the other hand, technology talent supply is a critical challenge facing by the Mainland China ICT industry. The challenge is analyzed as below.

Gap between the talent supply and demand

According to statistics from China's National Bureau of Statistics and Ministry of Education⁹, the ICT industry showed demand for a total of 7.6 million educated talents in 2017, while the number of ICT graduates per year has not yet exceeded 1 million. There is a huge gap between the supply of talent and the demand for it, and the rapid development of the ICT industry will further widen this gap. The overall talent deficit is projected to rise to 12.4 million by 2020¹⁰.

Mismatch between talent quality and industry demand

As the ICT industry develops, the trend of supply chain segmentation continues to reshape the structural demand for talent. Instead of professionals who specialize in a single area, ICT talent with diverse skill sets are expected by business companies. Companies may look for talents who have a comprehensive knowledge of multiple areas such as technology, product, marketing, business, and communication.

16. To fill the gap of talent supply, some Mainland China giant technology companies (such as Alibaba and Huawei) have established their own ICT training and certification programmes with training contents focusing on their own product specifications and company standards. Beside to offering the training programmes on their own, these giant companies also seek collaboration with educational institutions to expand the supply of technology talent.

17. The Mainland China's technology policy presents another challenge on the ICT industry development. In addition to commercial concern, the Mainland China authority would also consider national security in setting up the ICT policy. For example:

⁹ <https://support.huawei.com/learning/news/>

Cybersecurity Law

On June 1, 2017, Mainland China established the first Cybersecurity law as a framework to regulate China's networks on national security grounds and for the supervision of the ICT sector more generally. The law details the security obligations of internet products and service providers, institutes rules for the transmission of data, and enhances the rules on personal data protection. Lack of clarity about how the law will be enforced remains a top concern for many ICT companies in Mainland China.

18. In view of the extensive cross-border business operations and the frequent travel between Mainland China and Hong Kong, there is a need for the Hong Kong ICT practitioners to understand the details and the compliance requirements of the relevant Mainland China's technology regulations in order to ensure smooth business operations in Mainland China.

The Greater Bay Area (GBA)

19. In 2018, the Chinese Government committed to developing an international innovation and technology hub in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) that serves as a leading force for national innovation development. To support the GBA development, the China Government has announced the following technology initiatives:

- strengthen the coordination of policies in areas such as intellectual property protection, market regulation, financial technologies, talent cultivation and the commercial application of technological achievements
- establish several major technological infrastructure facilities, cross-study platforms, as well as emerging innovative research in the GBA
- remove barriers that hinder the free flow of talent, technologies, capital, equipment, information and other innovative elements in the GBA

20. According to some study reports^{10&11}, the GBA has a high proportion of high level talent in the areas of manufacturing, consumer goods and ICT with over 25 percent having overseas learning experience and more than 30 percent holding a master's degree and above. Among the ICT relevant specialties, the majority of the talent possesses computer science qualification.

21. The reports pointed out that the demand for quality technology workforce in the GBA is particularly acute in four fast-growing industries including research and development within innovative technologies, financial services, trade and logistics, and the medical industry. R&D in technology lacks of professionals in areas of data scientists, cloud architects, user interface designers, solution engineers and artificial intelligence. There is a need to upgrade the gap of the current technology workforce in the GBA.

¹⁰ GBA talent study report by the Tsinghua University's School of Economics and Management and LinkedIn in 2019

¹¹ Decoding the Outline Development Plan for Guangdong-Hong Kong-Macao Greater Bay Area 2019

22. The reports examined that among the GBA eleven cities, Shenzhen, Guangzhou and Hong Kong are rated as the top cities where digital talent is concentrated. It is further analyzed that Guangzhou has the most balanced talent distribution among industries; Shenzhen highlights the talent in ICT relevant industries while Hong Kong mainly has talents in the financial and education industries.

23. According to the reports, the number of talent exchange between Hong Kong and other GBA cities lags far behind that of Shenzhen and Guangzhou. There is room for Hong Kong to further strengthen talent exchange with other GBA cities especially the necessity for favorable policies to incentivize the youth of Hong Kong.

24. In summary, the development of emerging technologies is changing the global business ecosystem. Different nations have been setting up policies to support and upgrade the ICT skill workforce training. The demand for ICT workforce with new skills/knowledge is keen especially in the areas of big data analysis, AI, cybersecurity, IoT applications and cloud computing etc. Business companies has also positioned ICT as an integral part of their strategy planning process that the ICT workforce is also expected to enhance their competence in business management. In addition to university academic path, industry professional training/certification could be considered as an alternative pathway to fill up the technology gap of ICT workforce. If university programmes and/or industry certifications are developed with reference to industry competence standard, it would facilitate the recognition of the outcomes of training by the industry.

Development of ICT Industry in Hong Kong

25. In 2017, the ICT industry generated US\$13.6 billion of value added, contributing to round 4% of the Hong Kong GDP.¹² The ICT infrastructure of Hong Kong plays an important role to maintain its leading business position in the Asia-Pacific region especially in the age of e-business and digital social media. According to the Global Innovation Index 2019, Hong Kong ranked fourth worldwide in technological infrastructure. The ranking indicates the readiness of the Hong Kong's infrastructure and market to support the development of digital economy.

26. In the following paragraphs, the Hong Kong ICT industry would be reviewed from the public policy, economic, social and technological aspects to explore the future development direction of the industry.

Public Policy Factor

27. Focusing on technology related public policies, the two major initiatives including the Hong Kong Smart City Blueprint and the Greater Bay Area would definitely impact on the coming Hong Kong ICT industry development and the technology talent requirements.

¹² "2018 Economic Background and 2019 Prospects", HKSAR Government

Smart City Blueprint

28. In 2017 the HKSAR Government published the Smart City Blueprint¹³ outlining the Government's vision to build Hong Kong into a world-class smart city. The Blueprint covers six areas including "Smart Mobility", "Smart Living", "Smart Environment", "Smart People", "Smart Government" and "Smart Economy". Three digital infrastructures will be developed to support the Smart City Blueprint including "eID", "Pilot Multi-functional Smart Lampposts Scheme" and "Next Generation GovCloud and Big Data Analytics Platform".

29. According to the study by Sharing Economy Alliance¹⁴ in 2018, Hong Kong came last in developing innovation and technology out of other Asian cities such as Taipei, Shenzhen, Seoul and Singapore. Lack of sufficient technology talent supply is considered as a major factor of holding back the Hong Kong smart city development. According to a study report¹⁵, over 70% of the Hong Kong CIOs commented that IT security, software/application development (including Java/Python developers and UI developers etc.) and database management are the most difficult functional areas to source skilled IT workforce.

30. To support the ICT industry development and talent development, the HKSAR Government has announced the following policies in recent years.

2017 Government Policy Address

- Earmarked HK\$500 million for the Innovation and Technology Bureau (ITB) to help the government in applying technology to improve the quality of public services
- Promoted establishment of a Common Spatial Data Infrastructure (CSDI) to enable sharing of geospatial data and support the Smart City Blueprint of Hong Kong
- Introduced the Technology Voucher Programme to facilitate the adoption of technology by small-and-medium enterprises (SMEs) for upgrading and improving productivity

2018 Government Policy Address

- Injected \$20 billion into the Research Endowment Fund of the Research Grants Council and launched a \$3 billion Research Matching Grant Scheme
- Expedited re-industrialization by establishing a \$2 billion re-industrialization funding scheme to subsidize manufacturers to set up smart production lines in Hong Kong and allocating \$2 billion for building manufacturing facilities required by the advanced manufacturing sector in industrial estates
- Promoted technology transfer by increasing the funding support to the Technology Transfer Offices of universities, the Technology Start-up Support Scheme for Universities, as well as the State Key Laboratories and Hong Kong branches of the Chinese National Engineering Research Centre

¹³ <https://www.smartcity.gov.hk/>

¹⁴ <https://sharingcitiesalliance.com/>

¹⁵ Robert Half Technology Salary Guide 2019

2019 Government Policy Address

- Extended the coverage of the Technology Talent Admission Scheme to companies outside the Hong Kong Science and Technology Parks Corporation and Cyberport and to cover new technology areas
- Extended the coverage of the Researcher Programme, Postdoctoral Hub and Public Sector Trial Scheme to all technology companies conducting research and development activities
- Injected \$500 million into the Social Innovation and Entrepreneurship Development Fund to further promote social innovation

2018-19 Government Budget

- The Government identified four areas for technology development including biotechnology, artificial intelligence, smart city and financial technologies (Fintech). Additional funding was allocated to promote the innovation and technology development that include:
 - HK\$10 billion additional injection to the Innovation Technology Fund (ITF)
 - HK\$10 billion to support the establishment of two research clusters on healthcare technologies, artificial intelligence and robotics technologies
 - HK\$200 million to Cyberport to enhance support for start-ups and promote development of a digital technology ecosystem
 - HK\$100 million to Cyberport to promote the development of eSports

Integration with the Greater Bay Area (GBA)

31. Shenzhen has a strong pool of ICT talent while Hong Kong mainly has talents in the financial and education industries. The Hong Kong Government has reviewed its role in the GBA development by changing from a connector to being a more proactive participant with the following technology related initiatives¹⁶.

32. The four fast-growing industries in the GBA includes research and development of innovative technology, financial services, trade and logistics, and the medical industry. The above initiatives by the HK Government could support the technology talent demand of R&D activities, FinTech and trade and logistics. On the other hand, Hong Kong has existing advantage of providing high standard medical service. Future development of digitalization of the industry operation should have great potential market in Hong Kong and the GBA.

33. The development of Hong Kong Smart City and the GBA would continuously drive substantial demand of technology talent. It is observed that the Hong Kong's R&D investment has kept improving. According to the WIPO (World Intellectual Property Company)¹⁷, Hong Kong ranked 13th worldwide under the Global Innovation Index (GII)¹⁸ in 2019 as compared to 16th in 2017. The ranking in 2019 is also the third position in Asia that just

¹⁶ Decoding the Outline Development Plan for Guangdong-Hong Kong-Macao Greater Bay Area 2019

¹⁷ Global Innovation Index (2019)

¹⁸ <https://www.globalinnovationindex.org/Home>

behind Singapore and South Korea. On the other hand, together with the Shenzhen innovation and technology sector, the Shenzhen-Hong Kong technology cluster ranked the world's second largest on the GII 2018. It is expected the continuous investment on R&D schemes could further support the R&D talent supply for the ICT industry growth.

Other Government Policies

34. In the 2017-18 Budget, the Financial Secretary highlighted eSports as a new potential sector to boost the local digital entertainment and ICT industries. The Hong Kong Government has injected a funding of HK\$100 million to Cyberport to promote the development of eSports. Although Hong Kong is not a major game development hub, the development of eSports industry could induce other demand of technology talent including digital content production, social media marketing, network infrastructure setup and online broadcasting etc.

35. The Hong Kong's start-up ecosystem keeps growing in recent years with the increasing funding supports. According to the survey by InvestHK¹⁹, in 2017, there is a record of steady growth of the number of start-ups (+16%) and the number of staff employed in these start-ups (+21%) as compared with the previous year. Major focus of the Hong Kong ICT start-ups includes software as a services (SaaS), Internet of Things (IoT), data analytics, biotech, Artificial Intelligence (AI), robotics, Virtual Reality (VR) and Augmented Reality (AR). In terms of application development, Fintech, Smart City and Smart Home, healthcare and big data applications are also popular. The growth of the local start-up ecosystem is benefited by the increasing investment on R&D activities from the Hong Kong Government, and the global and local trend of emerging technology applications in finance and e-business sectors.

Economic Factors

36. The high rent in Hong Kong has speeded up the companies' pace to develop e-business²⁰ in order to reduce the rental cost. It is estimated that the revenue in the Hong Kong e-business market amounts to US\$4,784 million in 2019 while the revenue is expected to show an annual growth rate of 7.9%, resulting in a market volume of US\$6,484 million by 2023²¹. To catch up the rapid growth of e-business market, business companies have to consider which technologies fit into their business the best. According to a study report (Table 1.5), building omni-channel business platforms and social media platform for consumer engagement are the most important concern by Hong Kong companies, followed by big data application development. The rapid development of e-business depends on the supply of technology talent including digital media production and marketing, big data applications and mobile apps development etc..

¹⁹ <https://www.investhk.gov.hk/en.html>

²⁰ Definition of e-business: "all business activities conducted through electronic means, including all business activities involved in various stages of the business cycle from marketing, advertising, ordering, delivery, payment to stock replenishment." (www.legco.gov.hk)

²¹ KPMG and GS1 Survey Analysis (2017)

Area		Percentage
1	Building omni-channel business platforms	31
2	Popular social media platform for consumer engagement	25
3	Adopting big data analytics	17
4	Building up mobile commerce	11
5	Adopting Internet of Things	9
6	Adopting cloud computing technologies	6
7	Others	1

Table 1.5: The most important digital innovation technology for business development
(Source: KPMG and GS1 Survey Analysis (2017))

37. Online cross-border trading is another growth area for the Hong Kong business companies especially for e-business in China. According to Agreement Ten of the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA) Supplementary²², service providers in Hong Kong are allowed to set up joint ventures to provide online data processing and transaction processing business (operating e-business sites) in Guangdong province. Hong Kong business companies could make use of the support from CEPA to strengthen the development of the cross-border e-business in the Mainland.

38. More companies are entering the Hong Kong's FinTech sector to offer innovation solutions to the local and global markets in areas such as payment systems and data analytics. To support the development of Hong Kong FinTech market, the Hong Kong Monetary Authority (HKMA) has launched the upgraded version of the FinTech Career Accelerator Scheme to nurture the talent. In addition, in the 2017-18 Budget, the Hong Kong Government has provided HK\$2 billion for the technology start-ups to support the FinTech industry. It is expected that the talent demand in relevant FinTech areas would keep growing.

39. Hong Kong is developing data center business by taking its advantages including location as an international investment hub, free flow of information and proximity to the Mainland China. The development drives the talent demand of data scientists and cyber security specialists.

40. It is also observed that more Hong Kong technology and business companies are moving towards to a more Agile methodology of project-based work to replace the waterfall management approach. Companies hiring management staff are therefore, looking for candidates who are not only technically capable but also have the software skills (such as collaboration and adaptability etc.) to work in an Agile workplace.

²² "Overview of Internet in Hong Kong", HKTDC Research

41. On the other hand, the Mainland China recorded a slowdown of economy growth with the 2018 GDP at 6.5% only, which is the lowest in the past 28 years. However, the giant technology company Alibaba reported that their ebusiness sales volume was still under double-digit growth despite the overall slowdown of the nation economy. Alibaba commented that their business growth heavily depends on the rapid and diversified development of ebusiness marketing channels.

Social Factors

42. Social factors, including population statistical data such as the age of population and its distribution, their education, living attitude and consumption pattern, etc., will affect the preference of consumers, thus influencing their demands on different products and services.

43. Hong Kong's communications and Internet infrastructure is advantageous to the development of online shopping, especially for the younger generation. According to a survey²³, Hong Kong ranked tenth in the Asia Pacific region on the popularity of online shopping (with China ranked the first and India ranked the second). By considering the factors affecting online shopping behavior, secure payment facility remains to be a top factor, along with the reputation of the website or merchant and the items' prices or monetary value. As online shopping continues to develop as one of the most significant consumption activities in Hong Kong, it would further drive the demand of technology talent in areas of digital media production, digital marketing, cybersecurity and mobile apps development etc.

Technology Factors

44. The comprehensive and advanced ICT infrastructure in Hong Kong includes the 100% coverage of mobile network, the fastest Internet connection speed in the world, numerous free public Wi-Fi points and high mobile device penetration rate.

HK ICT Infrastructure	Figures
Mobile Services	
▪ Mobile network operators	4
▪ Mobile subscriber penetration rate	259.9%
▪ Mobile broadband customers (2.5G/3G/4G)	18,573,243
Internet Services	
▪ Registered customer accounts with broadband access	2,699,029
▪ Household broadband penetration rate	93.2%

Table 1.6: Key statistics of ICT infrastructure in Hong Kong
(Source: Office of the Communications Authority)

²³ "Hongkongers Continue to Embrace Online Shopping", Mastercard Survey (2018)

45. The ICT infrastructure could well support local and overseas business companies to carry out frequent e-business activities and foster the development of technology-based business applications. With the growing demand on obtaining faster and reliable consumer service, business companies are driven to further develop business and technology applications. In addition, Hong Kong's advancement of data centre and cloud computing service also supports business companies to develop innovation and technology initiatives to meet the local and global business opportunities brought by emerging technologies.

Impact on Competency Requirements and Manpower Development in Hong Kong

46. The increasing adoption of internet stimulated the growth in all facets of economic interactions that achieving the global transferability of skill and knowledge. The ICT industry itself also breaks the geographical constraint especially through the flourishing global outsourcing services. An advantage of the Hong Kong ICT professionals is their language competency of Chinese and English communication that enable them to work with clients from Mainland China and other countries. The language competency is important in matters of collection and preparation of the system specifications, communication with clients and preparation of the user manual etc. In particular, the China Government's initiative to develop the Greater Bay Area (GBA) into an international innovation and technology hub would continuously drive substantial demand of technology talent.

47. ICT is a vast sector that is continuously splintering off into subsectors. There is an array of career paths for professional development. As the impact of digitalization is growing exponentially, the global technology manpower demand is keen. ICT professionals could develop themselves into different technology specialists to catch the new technology career opportunities. On the other hand, ICT is a team-based industry requiring professionals with transversal skills including communication, problem solving, collaboration, project management and team skills. The ICT professionals could also further develop their career into different managerial positions.

48. Major emerging technologies, including Blockchain (distributed ledger technology), Artificial Intelligence (AI), Virtual Reality (VR), Internet of Things (IoT), 5G network and Cloud computing etc., are rapidly redefining global business and society development. The new business ecosystem however, has brought several challenges to the business companies today including the demand of production efficiency, expansion into new markets and the competition on new products for a global consumer base. Business companies have to consider which technologies fit into their business the best. They have to place more priority on how technologies could support potential market penetration across different channels, how to apply the technologies to enhance customer services and how technologies could innovate their business. Large number of ICT professionals now are therefore, employed by companies from different industry sectors. For instance, the IDC Research (IDC FutureScape: WorldWide IT Industry 2019) indicated that 46% of the US ICT workforce is employed by technology companies while 56% of the ICT workforce is employed by companies from different industry sectors.

49. The increasing adoption of ICT in government and public utility organizations has brought advancement in public service standard in terms of improving efficiency and transparency. To deliver more robust and user-friendly digital services to citizens, many cities have been increasing the investment on technology hardware and manpower development. A stable source of ICT professionals is crucial to deploy and maintain these digital services as any failure of the systems, such as the electricity and telecommunication systems, would bring adverse impact to the society operation. Therefore, there is a need to have a well-established framework to develop and monitor the competency requirements for the ICT professionals, and to recognize their standard of competency, particularly in the new technology areas.

50. The advancement of the emerging technologies has led to the transformation of job nature and induced new skill requirements. From the Table 1.1, the top demanding new technology skills include big data analysis, app/web-enabled marketing, IoT applications, machining learning and cloud computing. According to the World Economic Forum²⁴, at least 133 million new ICT job roles will be generated globally by 2022 as a result of the new division of labour between humans, machines and algorithms. In addition to the strong demand of technology skills, management skills including creative thinking, problem-solving and negotiating are also highly required for the ICT workforce.

Technology	Percentage of respondents that likely to adopt
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(source: www.weforum.org)

Identification of Competency Standards for Updating and the Vocational Qualifications Pathways (VQP)

51. Having reviewed the development of ICT industry and the impact of development of emerging technologies, this section provides a suggested list of emerging areas and management skills for updating the competency standards in order to support the Hong Kong ICT industry development, and for the technology workforce catching up with the competence requirements in view of technology development. To make sure the competency requirements are relevant and applicable to that of principal job posts in the industry, the VQP under respective emerging area has been drawn up with reference to the Manpower Survey Reports and in consultation with relevant stakeholders to serve as a basis for working out the competency requirements. The emerging areas

²⁴ www.weforum.org

and management skills identified are listed below:

1	Emerging Area	AI/Machine Learning
	Proposed Functional Area(s)	Design, Development and Maintenance / Software Products & Software Services Application Support / Operation and Support
	Details of competency requirements	Architecture design of the software/system, requirement identification of software release, risk assessment, testing, online payment, payment security

2	Emerging Area	Cloud Computing
	Proposed Functional Area(s)	Architecture / Software Products & Software Services Network Support / Operation and Support
	Details of competency requirements	Cloud adoption – infrastructure concern, business workflow reconfiguration, risk management and resources optimization for cloud computing

3	Emerging Area	Information Security
	Proposed Functional Area(s)	Information Security / Software Products & Software Services Security Support / Operation and Support
	Details of competency requirements	Cybersecurity policy setup, evaluation and management of cybersecurity threats, development and implementation of security measures, plan for disaster recovery, stakeholder management in relation to cybersecurity issues

4	Emerging Area	Data Science
	Proposed Functional Area(s)	Design, Development and Maintenance / Software Products & Software Services Application Support / Operation and Support
	Details of competency requirements	Database administration, predictive analytics, data visualization, data management/policy

5	Emerging Area	eSports Technology
	Proposed Functional Area(s)	DMT architecture / Digital Media Technology
	Details of competency requirements	Network infrastructure setup, online broadcasting, cost optimization, troubleshooting,

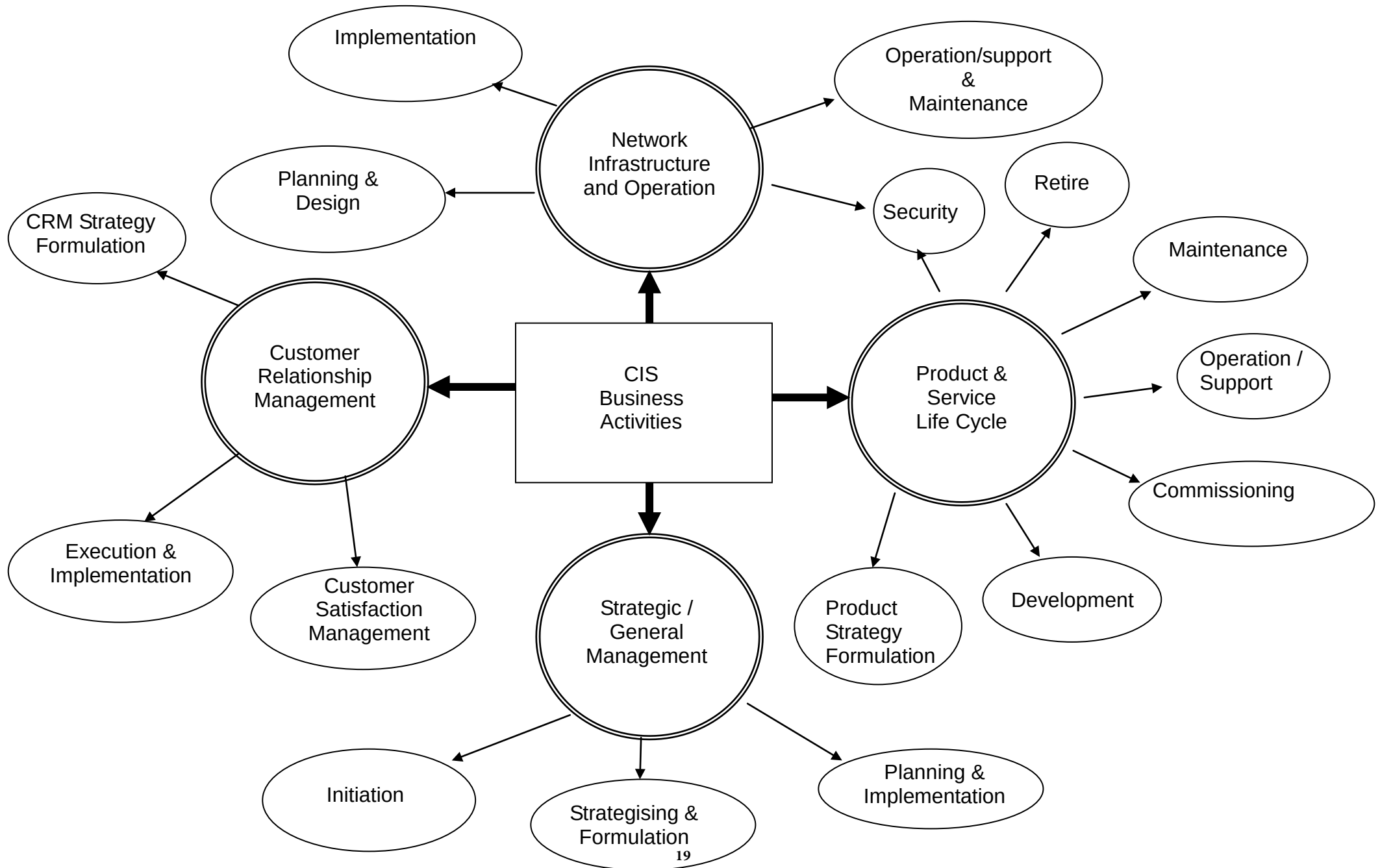
6	Emerging Area	Internet of Things (IoT)
	Proposed Functional Area(s)	Architecture / Software Products & Software Services Systems & Hardware Support / Operation and Support
	Details of competency requirements	Business operation model with IoT, hardware/software requirements

7	Management Skills	
	Proposed Functional Area(s)	Strategic Management / Software Products & Software Services Project Management / Software Products & Software Services
	Details of competency requirements	Innovation management, the role of ICT in business strategy setup, regulatory compliance (including Mainland China and Europe Union ICT policies)

-END-

Chapter 2

Functional Map Showing the Communications and Information Services Branch



Chapter 3

Units of Competency

UoCs in Network Infrastructure & Operation

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform installation of Optical Fibre cables at Residential / Commercial Buildings
2. Code	ITCSNO201A
3. Range	This UoC includes installation of indoor Optical Fibre cables for voice, data or multi-media services at user end.
4. Level	2
5. Credit	2
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area • Comprehend Site Plan/Drawing • Follow health and safety procedures • Follow equipment and cabling installation instructions • Posses knowledge of cabling procedure and techniques • Proficient with using tool to splice, join and recoat fibre cables • Understand structured cabling system • Possess cable testing techniques • Use of appropriate cabling tools and test equipment • Use of hand-held terminal/PDA/Notebook computer 6.2 Perform installation of Optical Fibre cables at Residential / Commercial Buildings Be able to: • Obtain cabling work orders from team leader or direct from computer system • Perform components/parts/tools collection for the cabling job • Perform fibre cabinet, fibre tray and splitter installation • Perform optical fibre cabling • Perform optical fibre termination (for fibre cables) with fibre connector or splice by stripping (remove protective coating) cables, then cleaned to ensure the end face free from dust/dirt (can be inspected by microscope) as well as the fibres are aligned and fused together followed by recoating or application of splice protector • Label or mark cables • Carry out attenuation tests • Make a recording of work performed and complete job order report 6.3 Exhibit professionalism • Follow safety procedures at every step during the installation. • Perform Installation of cables at the highest quality and standard and seek supervisor advice when encounter difficulties. • Communicate job status and work progress to customer to acquire their trust and confidence. • Represent the organisation in a professional manner.
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - understand the job requirement from supervisor or job order - identify different types of cables and have the right cables and tools for the job - carryout the cabling preparation, installation and related works to the required quality and standards - perform testing with appropriate tool to ensure the cable is functioning to required standard - complete the necessary job completion documentation - communicate job status to customer so that they are satisfied with the completed job
Remark	The competencies in this UoC also apply to optical fibre cable maintenance

Functional Area: Network Infrastructure & Operation (Implementation)

Functional Area: Network Infrastructure & Operation (Implementation)										
1. Title	Perform installation of metallic cables at residential / commercial buildings									
2. Code	ITCSNO202A									
3. Range	This UoC includes installation of metallic cable for voice, data or multi-media services at user end, such as coaxial, UTP, 2-wire telephone, etc.									
4. Level	2									
5. Credit	2									
6. Competency	<table><tr><td></td><td><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Comprehend Site Plans/Drawings • Understand health and safety procedures • Comprehend equipment and cabling installation instructions • Capable of following cabling procedures and techniques • Possess basic knowledge of structured cabling system • Understand cable testing techniques • Capable of using appropriate cabling tools and test equipment • Capable of using hand-held terminal/PDA/notebook computer, etc </td></tr><tr><td>6.2 Perform installation of metallic cables at residential / commercial buildings</td><td>Be able to: • Obtain cabling work orders from team leader or direct from computer system • Perform components/parts/tools collection for the cabling job • Perform IP and DP (Distribution Point) box installation • Perform vertical and horizontal cabling • Perform cable termination, at MDF (Main Distribution Frame)/IP/patch panel • Perform labelling or marking of cables • Carry out functional and acceptance tests • Make a record of work performed and complete work order report for sign off </td></tr><tr><td>6.3 Exhibit professionalism</td><td> • Follow safety procedures at every step during the installation. • Perform installation of cables conforming to required quality and standards and seek supervisor advice when encounter difficulties • Communicate job status and work progress to customers to acquire their trust and confidence • Represent the organisation in a professional manner </td></tr></table>			<u>Performance Requirement</u>	6.1 Possess the knowledge in the subject area	• Comprehend Site Plans/Drawings • Understand health and safety procedures • Comprehend equipment and cabling installation instructions • Capable of following cabling procedures and techniques • Possess basic knowledge of structured cabling system • Understand cable testing techniques • Capable of using appropriate cabling tools and test equipment • Capable of using hand-held terminal/PDA/notebook computer, etc	6.2 Perform installation of metallic cables at residential / commercial buildings	Be able to: • Obtain cabling work orders from team leader or direct from computer system • Perform components/parts/tools collection for the cabling job • Perform IP and DP (Distribution Point) box installation • Perform vertical and horizontal cabling • Perform cable termination, at MDF (Main Distribution Frame)/IP/patch panel • Perform labelling or marking of cables • Carry out functional and acceptance tests • Make a record of work performed and complete work order report for sign off	6.3 Exhibit professionalism	• Follow safety procedures at every step during the installation. • Perform installation of cables conforming to required quality and standards and seek supervisor advice when encounter difficulties • Communicate job status and work progress to customers to acquire their trust and confidence • Represent the organisation in a professional manner
	<u>Performance Requirement</u>									
6.1 Possess the knowledge in the subject area	• Comprehend Site Plans/Drawings • Understand health and safety procedures • Comprehend equipment and cabling installation instructions • Capable of following cabling procedures and techniques • Possess basic knowledge of structured cabling system • Understand cable testing techniques • Capable of using appropriate cabling tools and test equipment • Capable of using hand-held terminal/PDA/notebook computer, etc									
6.2 Perform installation of metallic cables at residential / commercial buildings	Be able to: • Obtain cabling work orders from team leader or direct from computer system • Perform components/parts/tools collection for the cabling job • Perform IP and DP (Distribution Point) box installation • Perform vertical and horizontal cabling • Perform cable termination, at MDF (Main Distribution Frame)/IP/patch panel • Perform labelling or marking of cables • Carry out functional and acceptance tests • Make a record of work performed and complete work order report for sign off									
6.3 Exhibit professionalism	• Follow safety procedures at every step during the installation. • Perform installation of cables conforming to required quality and standards and seek supervisor advice when encounter difficulties • Communicate job status and work progress to customers to acquire their trust and confidence • Represent the organisation in a professional manner									
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. understand the job requirements from supervisors or job orders ii. identify different types of cables to have the right cables and tools for the job iii. carry out the cabling preparation, installation and related works conforming to required quality and standards iv. perform testing with appropriate tools to ensure the cable is functioning to required standard v. complete the necessary job completion documentation vi. communicate job status to customers									
Remark	The competencies in this UoC also apply to metallic cable maintenance									

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform installation of underground cables	
2. Code	ITCSNO203A	
3. Range	This UoC includes installation of the underground cables. The installation process includes threading of cables through already prepared ducts/pipes at manholes/pits/trenches openings and joining of cables. Cables can be metallic or fibre.	
4. Level	2	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend cabling Plans/Drawings • Understand work safety procedures and regulations • Use cabling tools and follow installation instructions, from manuals when necessary • Possess knowledge of site setup and outdoor cabling procedures • Experienced in installing outdoor cabling • Use appropriate cabling tools • Able to work with colleagues • Capable of identifying various types of underground cables 6.2 Perform installation of underground cables Be able to: • Work with team leader to understand work orders including drawings, plans, requirements, established procedures, and material lists, cable sizes, cable types, duct sizes and duct types, existing joints, amplifiers, etc. Site inspection may also be required. • Determine and obtain relevant work permits for access and perform work according to requirements and/or established procedures • Obtain the necessary resources for the job order, including equipment, tools and personal protective equipment required for the job • Prepare the site for the cabling job including cleaning, erecting barriers, pumping flooded manhole/trench, cleaning of ducts, etc • Prepare cable dispensing method (cable drums, cable spool) and pulling mechanisms to prevent cable kinking, burning, sheath damage, cable stretching, etc • Work with colleagues to feed the cable into the duct with suitable tension to ensure cable is not damaged • Perform cable jointing or connect to amplifiers, if required • Perform cable tests to the required standard • Perform labeling or marking of cables • Perform cleaning and tidying the work area, including replacement of manhole/trench covers • Perform work completion report 6.3 Exhibit professionalism • Observe and follow safety procedures at every step of the cable laying job	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - comprehend the work order and prepare the necessary cables, tools/equipment and other resources for the job. - perform site preparation complying to the organisation work and safety procedures and regulations - work with colleagues to feed the cables into the ducts with proper tension and without damaging the cable - perform cleaning of work site - perform completion report for filing and supervisor signoff	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Using monitoring equipment to monitor network thresholds	
2. Code	ITCSNO204A	
3. Range	This UoC specifies the use of monitoring equipment to monitor network thresholds. Should the network traffic has fallen or exceeded certain threshold an alarm is triggered which may requires certain action to be performed. Note: the threshold may varies for different operating times, and there may be a number of components that are being monitored concurrently which include: switches, routers, SONET equipment, fibre optic equipment, microwave radios, etc.	
4. Level	2	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Experienced with operating alarm management tools such as logs, system messages, software systems or simply flashing lights - Experienced with the operational functions of network monitoring tools and able to refer to documentation manual - Comprehend network diagrams and access network plans - Knowledgeable of the operating characteristics of the network components 6.2 Using monitoring equipment to monitor network thresholds Be able to: - Determine the objective of performing monitoring thresholds, such as: to meet SLA (Service Level Agreement) commitment, to collect statistic for capacity planning, etc - Acquire capacity trigger criteria from appropriate parties such as marketing, network engineering, planning, product manuals, etc - Set monitoring equipment to monitor the threshold points. The monitoring equipment should produce the required statistics or information for analysis and if necessary trigger alarms - Handle alarms according to NOC operational policies. Fault management actions may be required such as adjusting network capacity and escalation if fault cannot be identified - Produce a report from the threshold statistics and forward it to appropriate stakeholders for analysis and capacity planning 6.3 Exhibit professionalism - Follow safety procedures at every step - Aware of drills are required to ensure the monitoring equipment and people are operating efficiently and suitable corrective actions are taken when alarms occurred	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - identify and formulate baseline to be used for monitoring - setup or configure suitable monitoring equipment to perform the monitoring - take appropriate actions when “alarms” (flashing lights, console messages, etc) are triggered.	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Maintain records of system adjustments
2. Code	ITCSNO205A
3. Range	This UoC describes the competencies for maintaining internal records of system adjustments. System adjustments imply minor or major changes in setting of the network system and related systems include telecommunication systems (routers, switches, etc.) or support systems (OSS, alarm monitoring, etc.). The recording system may be a simple paper filing system or an online database Change Control System (CCS) which is used by a group of people or departments.
4. Level	2
5. Credit	1
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Have basic understanding of network system and equipment used in the network infrastructure • Understand the importance of maintaining records and history of changes made in systems and components • Knowledgeable of the principles of record keeping or change control methodology • Able to follow internal record keeping procedures and/or use of an online change control system • Able to read and interpret the nature of changed details • Able to maintain records accurately 6.2 Maintain records of system adjustments Be able to: • Locate the raw incoming details regarding system changes. The format can be in hard copy form, verbal, email, fax, etc. If it is verbal then it must be transcribed into a hard-copy format • Assess the completeness of incoming details against the organisation checklist and liaise with appropriate parties for missing details • Locate the unique reference ID (UID) from central index for the record of the system that is being updated. If no record exists, a new record creation procedure should be followed • Locate the concerned stored record and verify the located record is correct for the concerned change • Perform update of the record in accordance with the required procedures and formats. Transcription of the incoming raw details to a standard format may be required • Return the records to correct filing location • Perform job completion procedures such as quality control check, sign off, etc 6.3 Exhibit professionalism • Follow the organisation standard policies and procedures when performing the record maintenance work
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - systematically locate the appropriate system changed record and create a new record if no record exists - perform the record maintenance update effectively that meets the organisation's quality standard
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Record reported problems
2. Code	ITCSNO206A
3. Range	This UoC describes the competencies for recording reported problems. Problem reports may come from various sources such as site engineers, network/service engineers, operations support team, customers support desk, customers, etc.
4. Level	2
5. Credit	1
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Understand the importance of maintaining records of problems • Able to follow the principles and procedures of maintaining problem reports on a paper recording system or an online change control or error recording system • Able to read and interpret nature of reported problem • Able to explain and clarify reported details • Capable of maintaining records accurately 6.2 Record reported problems Be able to: • Collect problem reports from different sources and stamp with received date and other required reference details • Assess the completeness of incoming report against the organisation checklist and liaise with appropriate parties for clarification of missing or illegible details • Allocate a new problem number from the record keeping system • Perform incorporation of problem details into the newly created record in accordance with the required procedures and formats. Transcription of the raw details to a standard form may be required • Return the records to correct filing location • Perform job completion procedures such as quality control check, sign off, filing of original problem report, etc 6.3 Exhibit professionalism • Follow the organisation standard policies and procedures when performing the record maintenance work
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - collect problem reports with clearly marked reference details - accurately interpret the nature of the problem report and verify the required information is completed - communicate effectively with relevant parties to clarify reported problems and provide a status or an update of actions performed - systematically create a new entry in the problem report filing or recording system and transcribe the details of reported problems in accordance with procedures
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Record problem/fault reports
2. Code	111122L2
3. Range	This UoC defines the competencies for performing recording of problems or faults reported by customers
4. Level	2
5. Credit	1 (For Reference Only)
6. Competency	Performance Requirements 6.1 Possess the knowledge in the subject area ● Be able to: ■ Understand principles of ethical work practices, roles and responsibilities of technical support ■ Understand the organisation's "Customer Service" policies and escalation procedures ■ Understand the procedures and use of systems for recording and accessing information such as customer records systems, error reporting systems, error logging systems, ticketing systems, etc. ■ Understand the device management and remote management ■ Aware of health and safety procedures, etc. 6.2 Record problem/fault reports ● Be able to: ■ Acquire details of customer reported issues. These may be details from problem report channels (emails, fax, chat, etc.) or details taken by peers at the hotline support or in direct communication with customers. If necessary, call customers to clarify the reported faults/problems ■ Create a new call/problem report entry in the internal recording system. This may be a computerised system or simply a paper filing system ■ Record details of the reported issues ■ Record diagnostics, analysis, solutions, actions, if any ■ Forward the recorded reports to appropriate parties for action, such as: technical support, site engineers, billing, sign off personnel, etc. ● Be able to know the enhancement of accessibility of devices and computer systems across multiple processing environment 6.3 Exhibit professionalism ● Follow the organisation's standards and policies for handling problem reports

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: ● understand the recording procedures and follow the defined procedures ● use of recording systems (online system or printed) ● record the information into the system accurately ● have self-initiative to seek clarification when uncertainties arise on certain details
8. Remark	This UoC replaced ITCSNO207A “Record problem/fault reports”

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify power requirements
2. Code	ITCSNO301A
3. Range	Electric power is an integral need of modern network equipment. Without the proper implementation of correct power supply, network products will not perform to their maximum and may have reliability issues. This UoC concerns identifying power requirements at “Access Network” design. For power budgeting, we have to consider the current as well as estimated future number of PSE (Power Sourcing Equipment) and PD (Power Device). The type of network can be data and/or voice (VOIP) wireline or mobile.
4. Level	3
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience in network capacity planning (current and growth forecast) • Be aware of the current and emerging network power management technologies such as PoE (Power over Ethernet) • Comprehend network structure plans and building infrastructure plans • Extensive experience in deploying various network architectures, network technologies and network PSEs such as hubs, switches, patch panel, network closets, etc, PD such as video IP phones, wireless Access Points, security cameras, workstations, printers, etc. • Possess extensive knowledge of power standards such as IEEE 802.3at and supporting cable requirements such as Category 5 or higher is needed for PoE • Extensive experience in operating power measurement and calculation tools • Understand health and safety procedures and government regulations 6.2 Identify power requirements Be able to: • Comprehend the network diagram and determine Access Network location points • Identify the number of PSE and PD in the local network infrastructure • Classify the PD into different power supply format: - o Endspan (direct power) - o Midspan (direct power) - o External power • Itemise PSE and PD and document the quantity and power usage of each PSE and PD at different locations within the local network infrastructure • Submit the report to appropriate stakeholders or network designers/planners 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine the location of Access Network connection point and the type of connection equipment as located from the network diagram/map - accurately document where, what, types of power supply used and the amount of power needed per component - produce the document in stakeholder’s required format which can assist in the network design/planning or management
Remark	• Endspan are power transmitted on data cable direct with on pin pair 1&2 and 3&6 • Midspan are power transmitted on data cable direct with on pin pair 4&5 and 7&8

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Liaise with appropriate internal department on order purchasing	
2. Code	ITCSNO302A	
3. Range	This UoC concerns inter-departmental communication when purchasing network equipment/parts from vendors. Most large network operators have a purchasing department to perform procurement and normal purchasing policy which stipulates that all purchasing must be via this department. Hence, network engineering department, NOC, or site engineers will need to interface with purchasing when requesting for new parts or components.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area 6.2 Liaise with appropriate internal department on order purchasing 6.3 Exhibit professionalism - Experienced with network equipment requirement specifications such as function, performance, size, etc - Knowledgeable of the organisation's purchasing policies and the use of appropriate documents for purchase requests - Experienced with product sourcing and evaluation - Experienced with using internal systems related to the vendors/suppliers equipment - Understand health and safety procedures, government regulations, compliances, etc Be able to: - Identify the network equipment requirements (ref ITCSNO405A) - Determine which vendors/suppliers stock such components/parts by referencing to the vendor/supplier list (e.g. at purchasing department) - Perform supplier sourcing if no supplier/vendor stocks the required components/parts (ref ITCSNO408A) - Perform purchase request using the organisation standard requesting form - Forward the purchase request documents to purchasing department - Complete the necessary administration procedures, file copy of purchase request internally - Regularly check the order status from purchasing department and update appropriate stakeholders with the purchase status - Follow purchasing requests and documentation in accordance with organisation policies and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - liaise with colleagues to determine the requested network equipment to be purchased - use internal systems to identify internal product/equipment code for the requested equipment - fill in the required purchasing details correctly and send to purchasing department for action - create/update appropriate internal records of the purchase request in accordance with the organisation standard	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Carryout site survey
2. Code	ITCSNO303A
3. Range	This UoC concerns with site survey of suitable sites for telecommunication network (fixed or mobile) construction. Site may be local switch station, mobile network (Tacs, 2G, 3G, etc.) station, cell site for antennas, etc.
4. Level	3
5. Credit	4
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend network infrastructure plans, constructor drawings, rooftop structure mapping • Experienced with network requirements • Knowledgeable of network architecture and technologies (analogue and digital), such as switching, transmission, etc • Knowledgeable of structural and civil engineering, land “Right of Way”, • Knowledgeable with geographical maps and landscapes • Understand health and safety procedures, government regulations, compliances and has appropriate government recognised certifications such as electrical engineer, etc. 6.2 Carryout site survey Be able to: • Prepare for the survey by understanding detailed requirements with planning staff, determine ownership (building management representative), title search, coordinate site visit with site owner • Undertake survey of the sites, buildings, facilities to determine the suitability of meeting the requirement such as: access, security, environment, power, earthing and capacity for growth • Undertake survey of environmental conditions such as regulatory/statutory requirements, weather conditions and impacts, owner/community attitude • Document survey report in accordance with the organisation standard format, detailing findings, various options with cost/benefits and recommendations 6.3 Exhibit professionalism • Follow safety procedures while performing the site survey of the site • Perform documentation in accordance with organisation requirement and standards
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - study network infrastructure plans and work with appropriate departments/colleagues to acquire site requirements - coordinate with appropriate parties (building owners, management offices, contractors, etc.) to arrange site visit - study the site systematically to determine its suitability to erect/construct/house the required network equipment - document the site visit details as required by the organisation and make recommendation on the suitability
Remark	

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Draw site/facilities plan	
2. Code	ITCSNO304A	
3. Range	This UoC concerns with the production of site/facility plan (drawing) for telecommunication network (fixed or mobile) construction. Site may be local switch station, mobile network (Tacs, 2G, 3G, etc.) station, cell site for antennas, etc.	
4. Level	3	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Draw site/facilities plan 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Comprehend network infrastructure plans, constructor drawings, rooftop structure mapping, etc. • Experienced with structural and civil engineering, land “Right of Way” • Knowledgeable in drafting code of practice and using appropriate tools for design drawing • Extensively experienced with draft drawings • Experienced with facility requirements, such as air-conditioning, power supply, cabling, termination systems, etc • Comprehend organisation policy and documentation and able to gather requirements effectively from customer or work associates. • Understand health and safety procedures, government regulations, fire regulations, compliances, etc. Be able to: • Obtain information on existing building site and propose installation such as building plans. • Identify and evaluate different installation options i.e. cost options, facilities options, cabling options, etc • Draft the required drawings such as floor framing plan, wall thickness, floor plans (entry points of risers), facility mounts and capacity (including future expansion), outlets, power feeds, equipment hosting locations • Distribute the plan/drawing to relevant parties for review/approval • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors • Ensure all works conform to industry drawing standards
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - gather the necessary details or information on the concerned site, such as building floor plans, cabling plans, access details, etc - determine any restricted elements of the building, such as height, size, power point, etc. which need to take into consideration as they affect the site drawing/design - consider the various needs of the network equipment, produce the site design/drawing/plan to conform to official standards (for government planning permission) or contractor’s requirements	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Submit drawing plans to appropriate parties for approval	
2. Code	ITCSNO305A	
3. Range	This UoC concerns with the submission of telecommunication site/facility plan (drawing) to appropriate parties (internal or government departments) for approval. Site may be local switch station, mobile network (Tacs, 2G, 3G, etc.) station, cell site for antennas, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with various types of drawing such as network infrastructure plans, constructor drawings, rooftop structure mapping, etc • Knowledgeable of organisation policy and documentation as well as administrative procedures such as ISO9001 • Knowledgeable of drawing submission requirements and regulations • Knowledgeable of local government's building regulations, procedures and requirements • Understand health and safety procedures, government regulations, fire regulations, compliances, etc. 6.2 Submit drawing plans to appropriate parties for approval Be able to: • Gather the drawings/plans such as floor plan, elevations, plot plan, wall section, foundation plan (new building) which require engineer stamped, etc • Verify all appropriate drawings/plans are drawn to required standards • Package the drawings/plans with other appropriate required documents and distribute to appropriate parties. This may be for internal departments or government planning permission departments • Verify that the package contains all the required items as stated by the approving body • Document (in the form of a checklist) and record what, whom, when, how these drawings/plans were handled and delivered to 6.3 Exhibit professionalism • Handle and check documentation in accordance with organisation or international standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - verify that plans are completed to the required standard format for submission including plans are numbered, dated, signed off, stamped, etc - collect the necessary plans/drawings and package as required for submission for approval by government or internal departments by following documentation handling standards	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform installation, configuration and testing of network equipment and devices
2. Code	111106L3
3. Range	This UoC concerns initial installation, checkout and enablement of continuous operation of network equipment and devices at the end user's site. The installation of equipment and devices may need connecting to the "Access Network" or enabling communicating effectively with other network equipment. Equipment's include broadband modem, optical line terminal (OLT), optical network unit (ONU) / optical network terminal (ONT), router, switch, wireless equipment, voice telecom equipment (PABX/Keyline, etc.), VOIP equipment, IoT gateways, sensors and actuators, etc.
4. Level	4
5. Credit	6 (For Reference Only)
6. Competency	Performance Requirements 6.1 Possess the knowledge in the subject area ● Be able to: ■ Comprehend and follow "Work Order" requirements and schedules ■ Follow equipment and/or IoT devices installation instructions from supervisor ■ Comprehend product/equipment/device manuals ■ Comprehend site plan/drawings, wiring diagrams, equipment and/or device drawings, etc. ■ Possess experience in network cabling/equipment/device installation ■ Be able to conduct mechanical and electronic preventative maintenance to predict problems & correct anomalies ■ Apply basic network principles or protocols knowledge for simple device configuration, like IP address setup in network devices ■ Operate troubleshooting tools including personal computer and its operating system, RF monitors, cable testers, etc. ■ Understand the basic functions of the testing tools ■ Communicate effectively with customers to understand network or equipment problems and able to give work progress/status so as to maximise customer satisfaction 6.2 Perform installation, configuration and testing of network equipment and devices ● Be able to:

	■ Verify work order with customers and confirm an installation appointment ■ Gather and prepare equipment/devices for installation ■ On arrival at the premises, communicate with customers to understand the network issues and provide a brief description of the job nature ■ Use site plans/drawings to locate local connection (TNT – Telecom Network Termination) /interface to Access Network (ETP- External Terminating Point)/Lead-in cable, if needed. ■ Install any local transmission media (e.g. 2 wire, UTP, coaxial, wireless), if necessary and CPE. Perform tests to ensure correct termination ■ Install local network equipment (including broadband or other transceiver such as DSL, modem, VOIP, etc.) and/or IoT edge devices (including sensors and actuators). DSL splitting at DTP (Disconnect Test Point) may be required ■ Connect local network equipment and/or IoT devices to telecommunication outlets ■ Determine the correct power supply for the network equipment and/or IoT devices such as power of ethernet (POE) ■ Install appropriate software and perform necessary configuration settings, such as IP address, if applicable ■ Perform the tests to determine working order of the installed equipment and/or devices ■ Fill in “Work Order” completion form and communicate with customer to ensure customer is satisfied with the work and request “Work Order” to be signed off 6.3 Exhibit professionalism ● Be able to: ■ Communicate with customers in a professional manner and keep customers updated of work status ■ Follow safety procedures at every step of installation procedure ■ Ensure equipment and/or devices are installed to required quality standard and conformed to the organisation and international standards
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: ● communicate effectively with client/customer or supervisor to understand and verify work orders ● prepare the network equipment and/or IoT devices for installation according to work order ● install, configure and test the network equipment and devices to required job order and manufacturer specification ● perform tests according to the job order specification ● complete the necessary documentation and ensure the installation

	job is satisfactorily signed off
8. Remark	Equipment/devices installation can be performed in-house or at customer site. Hence, soft skills in dealing with customer are essential for troubleshooting and keeping customer informed of job status. [This UoC replaced ITCSNO306A “Perform installation, configuration and testing of network equipment”]

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Installation of network switching equipment	
2. Code	ITCSNO307A	
3. Range	The scope of this UoC includes core exchange switching equipment, wireline, wireless or mobile equipment which may be mechanical or digital i.e. traditional voice switching or NGN IP network equipment, etc.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend and follow site plan/drawing • Comprehend equipment installation instructions • Knowledgeable of network protocols such as TCP/IP • Knowledgeable of Mobile Transmission principles • Possess experience with the functions and operations and installation of mechanical or softswitching systems • Knowledgeable of various Access Network technologies like xDSL, WiMAX, public WIFI, 3GPP, etc • Knowledgeable of work health and safety procedures 6.2 Installation of network switching equipment Be able to: • Liaise with appropriate people to confirm on requirements of the work order/plan • Itemise and keep inventory of all required parts • Identify placement of the equipment from site plans/drawings • Determine suitable power points and construct power cable to reach the power point, if necessary • Install the equipment as per instructions of the manufacturers • Connect power • Connect equipment to transmission media • Test equipment to ensure it is functioning as per requirement of the manufacturers • Create a job completion report 6.3 Exhibit professionalism • Follow safety procedures at every step during the installation • Ensure equipment are installed to required quality standard	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - confirm details of work order with appropriate people so that appropriate equipment may be purchased or prepared for installation - read site plans/drawings and prepare the site for installation of the switching equipment - install and test the functionality of the switching equipment to ensure they are operating to the required standard	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform installation of wireless antennas	
2. Code	ITCSNO308A	
3. Range	This UoC includes installation of directional or omni directional wireless antennas in public areas for mobile technologies like GSM/UMTS.GPS, WIMAX, LTE, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend and follow Site Plan/Drawing • Comprehend antenna installation instructions • Knowledgeable of network protocols such as TCP/IP • Knowledgeable of Mobile Transmission principles • Possess knowledge of antenna and RF principles • Experienced with installation of RF antenna • Knowledgeable of various Access Network technologies like GSM, WiMAX, LTE, public WIFI, 3GPP, etc 6.2 Perform installation of wireless antennas Be able to: • Identify the work requirements from work orders or from supervisors • Perform preliminary site preparation such as: power points, network access points, etc. • Perform antenna mount and fixtures preparations • Install/mount the antennas • Adjust the angle of the antenna to maximise reception/transmission • Connect power supply • Connect the antenna link to the access network • Perform testing of the antenna • Complete installation report 6.3 Exhibit professionalism • Follow safety procedures at every step during the installation • Ensure equipment are installed to the required quality standard	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - work with colleagues to understand the antenna installation requirements such as antenna type, positions, etc - prepare the installation and install the required antenna to conform to the work requirements - perform testing of the antenna to ensure it is operating to the required specification as per indicated by the manufacturer or the organisation	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Installation of network equipment at end user's site	
2. Code	ITCSNO309A	
3. Range	This UoC concerns installation of equipment at the End User's site connecting to the "Access Network". Equipment including xDSL Broadband modem, data encoder, router, LAN switch office wireless equipment, voice telecom equipment. VOIP equipment, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Meet "Work Order" schedules • Comprehend "Work Order" requirements • Experienced with planning installation sequence of network equipment • Comprehend equipment installation instructions and understand product manuals • Comprehend site plans/drawings • Experienced with installation of network cables • Possess basic knowledge of network protocols such TCIP/IP • Experienced with personal computers and their operating systems • Understand the basic functions of the applications 6.2 Installation of the equipment at end user's site Be able to: • Verify work order with customers and confirm installation appointments • Gather and prepare equipment for installation • Use site plans to locate local connection/interface to Access Network • Install local transmission media, if necessary • Install local network equipment • Connect local link to Access Network • Install transceiver equipment (e.g. DSL modem, etc.) • Connect power to equipment • Connect equipment to local network • Install appropriate software, if applicable • Perform tests to ensure the equipment is functioning as required • Fill in "Work Order" completion form • Communicate the work status to users and request work orders signoff 6.3 Exhibit professionalism • Liaise with customers in a professional manner and keep customers updated of work status • Follow safety procedures at every step of installation procedure • Ensure equipment are installed to required quality standard and conformed to the organization and/or international standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - verify work orders with clients or supervisors - prepare the network equipment for installation according to work orders - install and configure the network equipment to required job orders and/or manufacturer specifications	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Implementing and supervising network cabling at residential / commercial buildings	
2. Code	ITCSNO310A	
3. Range	This UoC concerns supervising network cabling which covers indoor and outdoor installation and applies to communication applications (digital or analogue) including telephony, data, video broadcasting, computer networks, etc. Cabling includes metallic cable such as telephone, coaxial, and UTP, optical cable including outdoor and indoor single-mode or multi-mode.	
4. Level	3	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend work orders or contracts. • Determine what resources are required for cabling projects, which may include: staff, finance, facilities and equipment, time availability, consumables and cabling hardware, etc • Understand related safety procedures • Possess the skills to communicate the installation procedures and cabling techniques to team members • Possess basic knowledge of cabling industry standards such as ANSI/TIA/EIA and cable types for overground, underground, UTP (Cat 1- Cat 6), Optical Fibre (single mode, multi mode) etc. • Experienced with various techniques and operation tools for joining metallic and fibre cables • Experienced with cable quality standards and use of tools to measure cable performance that meets customer's expectation 6.2 Implementing and supervising network cabling at residential / commercial buildings Be able to: • Determine and confirm the job order requirement from relevant documents or persons. This includes: cabling needs, time and scheduling requirements, etc • Plan the cabling project and communicate with relevant parties such as project manager, customer (internal and/or external) and installation team • Assist in preparation of network infrastructure cabling design and/or financial cost planning. Budget projection is estimated and needed to be approved within contract pricing • Identify the availability and suitability of human resources in accordance to the type of cabling needs. Recruitment and training may be required • Monitor cabling activities to ensure that it conforms to the required quality standard of the vendor/legislative/industry requirement • Carry out work reallocation as required to ensure cabling job is completed to the clients' and the organisation's expectation • Perform cabling checks and tests to ensure conformation to relevant signoff procedures • Perform job completion reports and indicate any necessary actions and/or recommendations for effective improvement, if necessary. Distribute reports to relevant parties 6.3 Exhibit professionalism • Ensure cabling job is completed adhering to industry standards • Follow safety procedures at every step during the installation	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - plan cabling jobs to fulfil the company and customers requirements - coordinate appropriate and sufficient team members to complete the cabling job in accordance with schedule and quality standards - monitor the job progress to ensure job is completed on schedule or appropriate action is taken - communicate the job requirements and reporting of status effectively to stakeholders	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform configuration of core networks equipment	
2. Code	ITCSNO311A	
3. Range	The scope of this UoC includes core exchange switching equipment, such as softswitches. The functions needed for such configuration may include: operational settings, statistical settings, telecom features like CLI, IP Phone feature, etc.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Perform configuration of core networks equipment 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Comprehend the manufacturer documentation of the concerned equipment • Understanding the overall network architecture and network/customer requirement • Possess knowledge in various network protocols like TCP/IP, SIP, SDP, MGCP, RSVP-TE, CR-LDP, OSPF-TE, IS-IS-TE, Diameter, COPS, SS#7, etc • Experienced with the functions and operations of network equipment like soft switches, core routers, networking and application servers, etc • Experienced in usage of testing equipment and protocol analysers • Experienced in configuring network equipment Be able to: • Locate the switches, core routers and other network devices including servers • Prepare a fall back plan by recording or backing up of current settings • Prepare the necessary environment or tools to perform the configuration, such as remote access connection, terminals, Web browsers, etc • Load up the network equipment with proper software • Configure the switches, core routers and other network devices according to the requirements • Perform all necessary tests including stress tests to ensure the equipment is performing and conforming to the requirements • Complete test report • Record all configuration procedures and settings for on-going configuration management and maintenance • Follow safety procedures at every step of the configuration work • Ensure work is completed to the highest standard and conformed to the manufacturer's specifications
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine configuration details of the network equipment according to requirements - locate the correct network equipment from drawings/plans - perform the configuration as required by the job order and conform to the manufacturer's network equipment specifications - perform appropriate tests to ensure configuration work is working or performing to the required specifications - document installation details and test results to conform with the organisation standards	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform configuration of transmission equipment	
2. Code	ITCSNO312A	
3. Range	The scope of this UoC includes configuration on equipment that controls the transmission of signals/data on wireless or cable, GSM gateways, fibre multiplexers, echo canceller, DACS, WAN routing, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend the features of the transmission media • Experienced with broadband, narrow band, channel multiplexing/de-multiplexing techniques • Possess knowledge of TCP/IP and other relevant transportation protocols • Able to use configuration tools and operational instructions/manuals • Comprehend the usage of testing devices and protocol analysers • Capable of analysing and troubleshooting transmission equipment 6.2 Perform configuration of transmission equipment Be able to: • Load up the transmission devices with proper software, if necessary • Operate configuration tools • Perform the required configurations • Prepare testing tools or environment to test the newly configured device • Perform tests to ensure the transmission conforms to requirements or standards • Create test reports to demonstrate the configuration is working to requirement • Record all configuration procedures and settings 6.3 Exhibit professionalism • Follow safety procedures at every step • Ensure the configuration is performed to the required quality and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - ensure the required version of software/firmware of the network devices is installed correctly - perform the configuration in accordance to requirements or manufacturer's specification - test the newly configured device to ensure it is performing to the job requirement or manufacturer's specification	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform configuration of access network/equipment	
2. Code	ITCSNO313A	
3. Range	The scope of this UoC specifies configuring or reconfiguring of wired/fixed line access network or mobile access network. Associated equipment include telephone exchange, auto soft-switching system or VOIP equipment and for mobile access networks includes GSM, UMTS, WiMAX, LTE, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Able to comprehend the manufacturer documentation of the concerned equipment • Experienced with the TCP/IP protocol and able to configure IP address and routing • Experienced with the operation and maintenance of switching devices • Able to use configuration tools according to operational instructions • Extensively experienced with the equipment that is being maintained, configured or reconfigured • Able to comprehend the access network plan 6.2 Perform configuration of access network/equipment Be able to: • Determine the configuration requirements from colleagues or work orders • Locate and identify the access network equipment that are needed to be configured • Determine how configurations can be performed from product manuals or liaise with fellow colleagues • Prepare the necessary environments or equipment to perform the configurations, such as remote access connections, terminals, Web browsers, etc. • Formulate a fall back plan by recording or backing up of current settings • Perform the required configuration process • Perform tests to ensure the equipment is performing and conforming to the requirement • Make a full recording of configuration and report of the work performed • Complete signoff procedures with supervisors or stakeholders approval 6.3 Exhibit professionalism • Follow safety procedures at every step of the configuration • Ensure the configuration is performed to the required quality and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - read and understand the network access configuration job specifications - locate the switch or network equipment - prepare the environment for configuration jobs, including creating a contingency plan, verifying the correct version of software/firmware, etc. - perform the configuration in accordance to the requirements or manufacturer's specification - formulate testing procedures to determine the newly configured device is performing to the job requirements or manufacturer's specification - document the completed work effectively and acquire completion signoff	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform network functional tests
2. Code	ITCSNO314A
3. Range	This UoC defines the competency required for performing functional tests of: telephone network, Local Area Network (LAN), Wide Area Network (WAN), Metropolitan Area Network (MAN), wireless (Mobile or WiFi) or wired line, etc.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess planning skills, analysing skills, testing techniques, with detailed knowledge in networks (wired and/or wireless) • Capable of following test plans, network infrastructure diagrams and configuration settings. • Experienced with using testing tools and setting up of test environment • Have good communication skills while coordinating network tests • Possess knowledge of health and safety rules and hazards relating to the equipment and/or tools being used during testing 6.2 Perform network functional tests Be able to: • Identify the functional tests required from test plans or work orders • Identify the required scope (testing tasks) of the acceptance and benchmark to achieve i.e. the required result. Note that the indicator/benchmark may be manufacturer's specification • Plan the test and setup environment for testing • If necessary, brief and coordinate with other involved parties on the network tests • Carry out the test. More than one cycle may be required • Document the test results to a predefined format • Validate the test results against expected results and certify the network is functioning as per specified or indicate test failure with appropriate explanation 6.3 Exhibit professionalism • Follow safety procedures at every step during the setup of testing environment for equipment testing and while performing testing • Ensure all documentations performed to the required quality standard
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - follow test plan requirements - set up test environments for the required tests - complete the required tests and document the results and findings in accordance to the organisation's required standards and formats
Remark	

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform performance tests based on requirements	
2. Code	ITCSNO315A	
3. Range	This UoC defines the competency required to carry out performance tests of: telephone network, Local Area Network(LAN), Wide Area Network (WAN), Metropolitan Area Network(MAN), wireless (Mobile or WiFi) or wired line, and/or related equipment	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess planning skills, analysing skills, testing techniques, with detailed knowledge on networks • Experienced with test plans, network infrastructure diagrams and configuration settings • Experienced with using testing tools and setting up of test environment • Possess good communication skills while coordinating network tests • Knowledgeable of health and safety rules and hazards relating to the equipment and/or tools being used during testing 6.2 Perform performance tests based on requirements Be able to: • Locate the test plans or work orders • Identify the performance characteristics required and/or benchmarks to achieve. The characteristics/benchmarks may be acquired from manufacturer's specification • Setup the appropriate tools and environments for measuring or recording of the test • Perform the tests. More than one cycle may be required • Observe and record the performance of test results • Analyse the results. Identify parameters that may influence the test results and record whether the tested network or equipment met the required performance 6.3 Exhibit professionalism • Follow safety procedures at every step during the setup of testing environment for equipment testing and while performing testing • Ensure all documentation performed to the required quality standard	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - follow test plan requirements - prepare test environments with performance measuring tools to be used for testing - complete the required tests and document the results and any performance findings in accordance with the organisation's required standards and formats	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform integration tests	
2. Code	ITCSNO316A	
3. Range	An essential part of network deployment is to ensure the implemented network can be integrated with other networks. This UoC concerns performing network integration testing with internal networks (intra-networks). Network in this context can be data and/or voice (VOIP), wireline or mobile network. Tests include physical network interfaces, transmissions, OSS compatibility and functionality tests like, authentication, billing, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Experienced with formulating network test plans, performing tests and analysing results - Possess basic knowledge of various protocols and network technologies standard for wired-line and mobile network such as ATM, IP, GSM, LTE, NGN, MPLS, etc. - Comprehend test plans, network infrastructure diagrams and configuration settings - Capable of operating network testing tools and set up testing environments - Experienced with the features and functions of internal networks such as network access security, network event monitoring, mobile users logging, OSS functions, cost management, network administration, etc. - Possess knowledge of network deployment and network interconnectivities from layer 1 to layer 7 of the OSI reference model - Comprehend health and safety rules and hazards related to the equipment and/or tools being used during testing 6.2 Perform integration tests Be able to: - Read the test plans and comprehend the testing requirements - Setup the appropriate tools and environments for measuring or recording of the tests - Perform the test cases as per required by the test plans. More than one cycle may be required and interdepartmental coordination may be necessary for some tests, such as traffic linking, traffic routing, event triggering, etc - Analyse the test results to ensure the tests were satisfactorily completed - Document the testing details and package the test results to formulate a test report to relevant stakeholders (supervisors, network designers, etc.) 6.3 Exhibit professionalism - Perform all tests as required by the test plan and suggest improvements to supervisors or test designers - Adhere to safety standards and precautions while performing the tests	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - follow test plan requirements - prepare satisfactory test environments with test recording tools to record the completed tests for further analysis - work with colleagues, effectively, in the preparation and performing of the tests - complete the required tests and document the results with any special findings such as incompatibilities - package the test report that conforms to the organisation's required standards and formats for submission to appropriate stakeholders	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform network equipment repairs	
2. Code	ITCSNO317A	
3. Range	This UoC includes repairing software or hardware equipment like telephony, switches (telephony or digital), transmission and wireless system equipment, routers, home media equipment, broadband modems, electronic equipment, multiplexors, concentrators, transceiving equipment, etc. Software repair implies software patch installation or configuration changes	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend work orders and problem reports • Comprehend the documentation related to the equipment • Comprehend and follow the operational instructions manuals • Experienced with the software application and its functions, if applicable • Be able to operate software tools, if applicable • Knowledgeable of health and safety procedures • Possess knowledge of radio frequency theory and associated hazards, if applicable • Experienced with planning repair process and setting up the environment for the repair work • Experienced with troubleshooting and testing of equipment 6.2 Perform network equipment repairs Be able to: • Identify the magnitude of the repair work either from problem analysis report (ref. ITCSNO417A) or work order • Plan a repair procedure, including how to determine and confirm the equipment is repaired • Identify resources required e.g. tools, parts and test equipment to be obtained. If equipment affects multi areas then coordination with appropriate parties will be needed • Perform the repair work. Routines are undertaken in accordance with manufacturer's documented instructions. For software correction it may require replacing or upgrading with software patch or performing reconfiguration of settings • Perform tests to ensure repaired equipment functions as per required specification. Ensure any software configuration is made to enable the equipment function in a normal manner • Perform reporting of completed work by recording all diagnostics and actions taken. Escalation may be needed or reported if the equipment is beyond repairing 6.3 Exhibit professionalism • Follow safety procedures at every step during the repairing process • Ensure all repaired equipment are functioning to manufacturer's required specification	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine the type of network equipment repair required and the related complexity - plan the repair tasks systematically which include repair verification and fallback procedure, particularly when software upgrade or reprogramming is required - perform the repair work as planned and verify the completion according to the plan and required operating specification	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform maintenance and repair of feeder cables	
2. Code	ITCSNO318A	
3. Range	This UoC concerns maintaining or repairing feeder cables which include any metallic cable such as telephone, coaxial, and data cable; and optical cable such as outdoor or indoor, single-mode or multi-mode	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend wiring plans/drawings • Experienced with fault finding and faults diagnosing using tools • Able to operate diagnostic tools as well as cable splicing and joining tools • Experienced with cabling procedures and techniques, optical fibre standards and repairs • Able to use testing tools • Experienced with planning repair works and keeping report status of the required work 6.2 Perform maintenance and repair of feeder cables Be able to: • Identify the magnitude of maintenance work required, initially with a visual check such as loss of joint connection, terminations of distribution points, broken cable shielding, and follow with appropriate testing tools, if required • Plan a maintenance/repair procedure, such as whether it is needed to reproduce the problem or reproduce the fault or 2 points receiving signals, etc. Also plan how to demonstrate the repair work is completed successfully and meet the required quality and standard • Perform the repair or replacement of cable in accordance with the organisation guidelines or manufacturer's requirements • Perform tests to ensure maintained/repaired cable is functioning as required • Perform labelling, tidying and cleaning procedures. • Perform reporting of completed work by recording all diagnostics and actions taken. Escalation is needed if repair work is beyond own capability 6.3 Exhibit professionalism • Follow safety procedures at every step during the repairing process. • Ensure that the repaired cable is operating at the manufacturer's required level • Ensure all completed works are logged and documented in accordance to the organisation policy and standard	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - perform preliminary visual check of the feeder cable to determine any broken, cracked, loose joint cable, etc - discover hidden cable problems by using specialised tools - plan the repair work required which includes replacing cable, distribution joint equipment, etc - verify on completion of repair by testing the cable to ensure it can transmit signals and perform to the required level - perform cleaning and tidying work when repair work is completed to leave the area as close as possible to the original state	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform maintenance and repair of radio antenna
2. Code	ITCSNO319A
3. Range	This UoC includes maintaining or repairing of radio antenna. These antennas are of terrestrial and may be installed on masts, towers, poles or buildings. These antennas are components of mobile network
4. Level	3
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend work order • Interpret network plans/drawings • Knowledgeable of antenna drawings and antenna assemblies • Able to locate and diagnose faults with or without using specialised tools • Able to operate testing and RF alignment tools • Experienced with repairing RF equipment • Knowledgeable of radio frequency theory and its hazards • Knowledgeable of occupational health and safety, particularly dealing with work on high buildings 6.2 Perform maintenance and repair of radio antenna Be able to: • Identify the magnitude or nature of repair work from work orders or supervisors • Plan a maintenance/repair procedure such as identifying type of antennas to repair, probable faults and types of repair required, the equipment and parts required, the tests to perform, etc • Prepare for the repair work, such as notifying the site management and partners, gathering the appropriate tools, documents and the appropriate parts, etc. • Perform the repair and/or replacement of antenna parts. • Calibrate and configure the RF transmission settings of the antenna as per required by the vendor's specification or the direction of the supervisor • Perform tests to ensure the maintained/repaired antenna is functioning as required • Perform labelling, tidying and cleaning procedures. Old parts may be returned to appropriate departments for refurbishment or disposal • Document all diagnostics, and actions taken during the repairs • Complete the necessary job completion administrative procedures 6.3 Exhibit professionalism • Follow safety procedures at every step during the repairing process. • Ensure that the repaired antenna is operating at the required level • Ensure all completed works are logged and documented in accordance to the organisation's standards and policy
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - read work orders or follow supervisor's instruction to understand the required types of repair - plan and perform preliminary preparations for the repair work - perform the repair/maintenance of the antenna according to the required standard - align and configure the antenna to the operating requirements - verify on completion of repair by testing the antenna to ensure it can transmit signals and perform to the required level - perform cleaning and tidying work when repair work is completed to leave the area as close as possible to the original state - complete administrative work satisfactorily and obtain signoff by supervisors or stakeholders
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform monitoring of network alarms	
2. Code	ITCSNO320A	
3. Range	The scope of this UoC specifies monitoring a variety of alarms such as network failures, security breaches, traffic overloads, peak loads, animal damages, associated with switching equipment, routers, transmissions paths, cables, mobile transmitters, etc.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with alarm management tools such as logs, system messages, software systems or simply flashing lights • Comprehend network diagrams • Experienced with operation and maintenance of switching devices or other network equipment • Able to operate network monitoring equipment • Extensively knowledgeable of the actions associated with different levels of alarms • Knowledgeable of the organisation's policies and guidelines on handling network alarms • Able to perform analysis of alert and decide when escalation is required 6.2 Perform monitoring of network alarms Be able to: • Verify alarm is not falsely activated • Perform alarm analysis (what types of alarms have been triggered), prioritise the handling order if more than one alarm is triggered and follow handling procedures in accordance with the organisation policies and guidelines • Discuss with relevant parties or groups in an attempt to isolate or identify problems of likely cause • Initiate escalation procedures if and when it is found that the problem rectification requires higher level decision or assistance • Co-ordinate fault rectification with appropriate parties • Reset alarms or arrange resets with external parties. Continue to monitor to ensure no re-occurrences • Make a recording of the alarms in accordance with the organisation's reporting and documenting policies and standards 6.3 Exhibit professionalism • Follow the guidelines of the organisation when handling alarms including escalation instructions • Ensure drills and practices are regularly taken to ensure efficient and correct actions are taken when alarms occurred	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - use monitoring equipment and/or work with colleagues to determine the cause and what, where in the network that triggered the alarm - formulate and perform rectification or coordinate with appropriate parties to rectify the network issues in the minimal time and in accordance to the organisation guideline and procedures - judge whether the issue is contained or should be escalated to higher level	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform monitoring of network traffic throughput	
2. Code	ITCSNO321A	
3. Range	The scope of this UoC specifies monitoring network traffic flow, data pattern, traffic loads, etc. The network traffic being monitored may be wireline or wireless on LAN, WAN or MAN. The monitored information will trigger alarms if network throughput falls below or above set thresholds	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Experienced with network management and monitoring tools such as logs, system messages, software systems, etc. - Comprehend network diagrams and understand the criticality of network traffic control - Extensively knowledgeable of network monitoring strategies and alert handling procedures - Experienced with the operations of switching and routing devices - Able to perform analysis of alert and decide when appropriate action is required 6.2 Perform monitoring of network traffic throughput Be able to: - Plan where, when and how network traffic monitoring be placed in the network infrastructure - Set monitoring equipment to record traffic flows through the concerned circuits and routes - Setup appropriate network traffic monitoring tools to trigger alarms when traffic threshold is above or below a predefined level - Handle network traffic alarm issues by determining the traffic status following the organisation guidelines and policies (refer to ITCSNO320A) - Identify, assess and take appropriate actions on potential traffic congestion, such as increasing bandwidth, re-routing traffics, etc. - Collect data on traffic pattern and document the results including historical data and forward report to network planners or appropriate parties 6.3 Exhibit professionalism - Follow the guidelines of the organisation when handling alarms including escalation instructions - Ensure drills and practices are regularly taken to ensure efficient and corrective actions are taken when network traffic flow is abnormal	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine where and how traffic monitoring can be effectively performed in the network infrastructure so that it can monitor the operating traffic of the network - setup correctly monitoring equipment to trigger alarms when traffic exceeds or falls below certain threshold - perform appropriate action based on the organisation's policies and guidelines - collect sufficient network performance statistics for network planners to use	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform monitoring of network connection status	
2. Code	ITCSNO322A	
3. Range	The scope of this UoC concerns the monitoring of network connection status. To perform the monitoring process one needs to be aware of various details (alarm settings) concerning the monitoring points i.e. what, where and how monitoring is carried out. Network status can be alerts regarding connection failures, cable damages, antenna failures, security, traffic overflow, loose attachments, etc. Networks can be voice, data, T1, T3/DS3, backbone, fibre connections, FTTB, FTTH, mobile network, etc.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Experienced with the use of network management and monitoring tools such as logs, system messages, software application, purpose built monitoring devices, SNMP, etc. - Able to comprehend network architectures, diagrams and demographic layout of networks i.e. where monitoring trigger points are set - Knowledgeable of the network operation centre procedures and network alert handling - Knowledgeable of the organisation's network monitoring policies and procedures - Able to liaise with internal or external parties on alert handling 6.2 Perform monitoring of network connection status Be able to: - Work with colleagues or documentation to familiarise with network connection monitoring details such as: what threshold trigger alerts, where the monitoring tools are installed, what action to take, etc - Handle alarm events after analysing statistics from network monitoring tools, logs, etc (ref ITCSNO320A) - Collect the necessary information and work with appropriate parties to investigate, troubleshoot, correct, or perform other appropriate actions - Formulate an incident report in accordance with organisation standards and policies 6.3 Exhibit professionalism - Follow the guidelines of the organisation when handling alarms including escalation instructions - Ensure drills and practices are regularly taken to ensure efficient and corrective actions when alarm triggers	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - familiarise with network monitoring equipment, features, thresholds, alarms settings, so that correct actions will be enacted when alarm is triggered - handle an alarm with the appropriate action or escalate to next level for advice or decision in conjunction with the organisation's policies and guidelines - collect sufficient network information/statistics for network planners to use	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform maintenance of software switching systems	
2. Code	ITCSNO323A	
3. Range	This UoC concerns the maintenance of software switching (SOFTSWITCH) systems. Maintenance work may involve running standard automatic checking routines provided by vendors or locally developed applications. Software enhancement, patches, routing or configuration adjustments may be required.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Experienced with software engineering processes such as gathering functional requirements and software designing, programming, testing and module or system integration - Knowledgeable of the software switching functions, API (Application Programming Interface), various technical documents such as operation manuals, drawings, configuration manuals, and maintenance manuals - Knowledgeable of the organisation maintenance policies regarding vendor or supplier products - Knowledgeable of vendor product usage / license policies regarding enhancement or maintenance of switching devices - Experienced with network software tools, network technology and protocols - Experienced with troubleshooting, fault management, and software debugging techniques - Familiar with vendor's switching systems - Able to use computerised system software in telecommunication systems, embedded systems, firmware, etc 6.2 Perform maintenance of software switching systems Be able to: - Confirm the type/level/task of maintenance required from internal maintenance schedule or colleagues - Plan the maintenance procedures and co-ordinate with various affected parties, if necessary - Use appropriate tools to perform auto check routines to determine any problems or inefficiencies - Perform problem fixing and/or enhancement of the software switch, such as installing new software patches and perform new configuration adjustments - Perform automatic/manual tests to ensure the enhancements or maintenance work performing are per required and conforms to vendor's requirements or standards - Document and log the completion of maintenance work in accordance with the organisation standards and procedures 6.3 Exhibit professionalism - Respect vendor product license/usage agreements - Follow the organisation software development and maintenance standards, quality assurance policies	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - systematically troubleshoot switching problems and derive a solution for resolving the issues - use product manuals to understand device specifications - acquire configuration details for adjusting network switching components	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform reconfiguration of IP network equipment	
2. Code	ITCSNO324A	
3. Range	The scope of this UoC concerns with defining competencies for reconfiguration of IP network equipment. Network equipment can be any components or devices of the core, access or user's network such as switches, routers, radio transmitters, microwave towers, seabed cables, or any software systems, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the IP functions and features of the network device/equipment that is being worked on • Knowledgeable of TCP/IP and other relevant transmission protocols • Experienced with configuring IP equipment (gateways, terminals, routers, etc) • Able to use configuration tool and interpret configuration requirements from operational instructions/manuals, if necessary • Experienced with using testing devices and protocol analysers for testing and measuring IP equipment • Able to determine the impacts of IP configuration on the application or network 6.2 Perform reconfiguration of IP network equipment Be able to: • Comprehend the job order to determine which and what IP devices/equipment require reconfiguration. Also determine the reason for reconfiguration e.g. equipment faults, poor performance, software update, etc • Perform the preliminary preparation of the reconfiguration procedure, such as locate technical manuals of the device/equipment, identify location of the network device/equipment, collect the correct tools for assisting in reconfiguration and testing of the network device/equipment, etc • Perform a backup record of the current IP settings, which can be used for rollback if the reconfiguration was unsuccessful • Perform the required reconfiguration of the devices/ equipment • Prepare testing tools or environment to test the reconfigured devices/equipment • Collect statistics and other related information or test results which indicates the reconfiguration was successful • Record the reconfiguration procedures and new settings to formulate the work completion report and seek supervisor or appropriate stakeholder for signoff 6.3 Exhibit professionalism • Follow the required safety procedures while performing the reconfiguration work • Ensure the reconfiguration work is performed to meet the required quality and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - read the work order and perform the preliminary preparations correctly - perform the reconfiguration work successfully - test the reconfigured equipment to ensure it is performing to the manufacturer and/or job requirements and does not have adverse effects on system applications or the network - formulate a completion report with appropriate information that can certify the successful completion of the reconfiguration work - ensure the work is signed off by appropriate person	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform reconfiguration of core systems	
2. Code	ITCSNO325A	
3. Range	The most visible part of a core telecom network (IP, NGN, ATM, GSM, etc.) to its users is the transmission mechanism part. But the less visible and equally essential part of the core network is the OSS/BSS (Operation Support Systems/Business Support Systems) which supports the service providers' day to day operations. The scope of this UoC describes the competencies for reconfiguration of the core network system. Network systems referred to, in this context, are software systems like OSS/BSS which will be required to be reconfigured when some business services are added or changed. Reconfigurations may be required even for a simple change of service by a subscriber who changes its telephone service or the operator may require to change the settings at the telephone exchange or apply changes on its billing system, etc.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Familiar with functions and facilities of the OSS system that enable configuration / reconfiguration of the core network - Knowledgeable of the core network infrastructure - Experienced with configuring network components (gateways, terminals, routers, etc) - Experienced with the SNMP protocol and associated tools for configuring core network components - Able to comprehend operation instructions/manuals - Able to use testing devices and protocol analysers - Able to analyse the impacts of parameter changes in OSS systems on overall core network 6.2 Perform reconfiguration of core systems Be able to: - Comprehend the job order to determine which services require reconfiguration and the magnitude of the reconfiguration work - Formulate a plan of the reconfiguration work procedure which should include testing or monitoring procedures that can determine the success of the reconfiguration - Determine what tools are required to perform the reconfiguration work i.e. tools provided by the OSS or tools that are developed internally - Make a backup or a recording of the current system configuration details prior performing reconfiguration work - Perform the required reconfiguration - Perform suitable tests to ensure the configuration is correct - Collect statistics and other related information of test results - Document the reconfiguration procedures and settings to formulate the work completion report and seek supervisor or appropriate stakeholder for signoff 6.3 Exhibit professionalism - Follow the required safety procedures while performing the reconfiguration work - Ensure the reconfiguration work is performed to meet the required quality and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - read the work order and perform the preliminary preparation correctly - perform the reconfiguration work successfully - test the reconfigured system to ensure it is performing to the job requirement and does not have adverse effects on the physical network or other network systems - formulate job completion report with appropriate information that can certify the successful completion of the reconfiguration work - ensure the work is signed off by appropriate stakeholder	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Be familiarised with vendor software systems	
2. Code	ITCSNO326A	
3. Range	This UoC concerns being up to date with functional changes in the vendor software used in network systems or components such as software switches, NGN network products, IP network products, routers, firewalls, etc.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Experienced with software engineering process such as gathering functional requirements as well as software testing and system integration - Knowledgeable of the network infrastructure and what hardware and software is used - Knowledgeable of the organisation policy in software review and update - Knowledgeable of what SLA (Service Level Agreement) is made with vendors on software update, in particular the requirement of notification on software changes - Able to use computerised system software, telecommunication systems, embedded systems, firmware, etc. - Experienced with vendor relationship management - Experienced with managing documentation processes 6.2 Be familiarised with vendor software systems Be able to: - Maintain the service relationship with vendors/suppliers effectively by establishing a continuous channel, with vendor, on software changes and supply of software updates. This should follow the organisation's policy on vendor selection and SLA made with the vendor - Acquire new software updates from vendor after being notified the availability of new updates. Log and register new vendor updates into internal change management system - Perform installation of the new updates, operate the new software functions, perform configuration and ensure that it has not affected or degraded old functions and then confirm new functions are operating correctly - Test new functions or updates of software changes from vendor. The testing may be performed in isolated mode to determine that it does not affect the overall system when applied - Document and notify internal departments of availability of vendor new software updates, new functions (if any), tests performed, testing results, recommendation (suitability, benefits, drawbacks) of applications, how to perform updates following the organisation standards and policies 6.3 Exhibit professionalism - While dealing with vendors, represent the organisation in the most professional and ethical manner - Ensure all documents produced follow the organisation's required formats and standards - Follow safety procedures while performing product evaluation	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - work with vendors to maintain/build good working relationships and to ensure vendors to supply new product details and updates, particularly new updates (firmware and software patches) for network components - evaluate new and/or updated functions to determine new or updated features - document the product functions/features that are relevant for internal use in a format that is required by the organisation and readily accessible by other departments	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

Functional Area: Network Infrastructure & Operation (Operation/Support & Maintenance)									
1. Title	Allocate sufficient resources to operate NOC								
2. Code	ITCSNO327A								
3. Range	Determining optimal resources required to run a Network Operation Centre (NOC) efficiently and effectively is a big challenge to any Operation Centre Manager. This UoC concerns allocation of resources to be used in a NOC. The resources may be financial, personnel or equipment-wise.								
4. Level	3								
5. Credit	2								
6. Competency	<table><tr><td colspan="2"><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> - Fully knowledgeable of the NOC's day-to-day work duties, resource scheduling and deployment policies and procedures - Possess extensive knowledge of the organisation's service policies - Possess extensive knowledge of the objectives and service level commitments of the NOC - Possess extensive experience in planning and resource scheduling - Possess extensive experience in project management, resource planning and allocation methodologies </td></tr><tr><td>6.2 Allocate sufficient resources to operate NOC</td><td>Be able to: - Work with colleagues to determine what the daily tasks schedule is and what resource allocation is required - Determine what current resources are available - Allocate the resources based on the availability and the department/organisation's resource allocation policies - Document and record the allocated resources - Monitor the tasks and allocated resource usage. Dynamic adjustment of resource allocation may be required for critical tasks. Ideally the resource usage information is recorded and be used in the next cycle of resource allocation - File the resource allocation documents for review purpose </td></tr><tr><td>6.3 Exhibit professionalism</td><td> - Ensure all reports and documents are created in the format conforming to the organisation standards and policies - Always take into consideration and strike a proper balance among all related technological, environmental and legal factors </td></tr></table>	<u>Performance Requirement</u>		6.1 Possess the knowledge in the subject area	- Fully knowledgeable of the NOC's day-to-day work duties, resource scheduling and deployment policies and procedures - Possess extensive knowledge of the organisation's service policies - Possess extensive knowledge of the objectives and service level commitments of the NOC - Possess extensive experience in planning and resource scheduling - Possess extensive experience in project management, resource planning and allocation methodologies	6.2 Allocate sufficient resources to operate NOC	Be able to: - Work with colleagues to determine what the daily tasks schedule is and what resource allocation is required - Determine what current resources are available - Allocate the resources based on the availability and the department/organisation's resource allocation policies - Document and record the allocated resources - Monitor the tasks and allocated resource usage. Dynamic adjustment of resource allocation may be required for critical tasks. Ideally the resource usage information is recorded and be used in the next cycle of resource allocation - File the resource allocation documents for review purpose	6.3 Exhibit professionalism	- Ensure all reports and documents are created in the format conforming to the organisation standards and policies - Always take into consideration and strike a proper balance among all related technological, environmental and legal factors
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6.1 Possess the knowledge in the subject area	- Fully knowledgeable of the NOC's day-to-day work duties, resource scheduling and deployment policies and procedures - Possess extensive knowledge of the organisation's service policies - Possess extensive knowledge of the objectives and service level commitments of the NOC - Possess extensive experience in planning and resource scheduling - Possess extensive experience in project management, resource planning and allocation methodologies								
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6.3 Exhibit professionalism	- Ensure all reports and documents are created in the format conforming to the organisation standards and policies - Always take into consideration and strike a proper balance among all related technological, environmental and legal factors								
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. identify areas and types of resources required to operate the NOC efficiently and effectively ii. determine the availability of resources and perform the allocation of resources using an allocation methodology or guideline from the organisation's resource allocation standards and policies iii. formulate suitable procedures to monitor the effective usage of the allocated resources and determine whether adjustment is required at next cycle iv. catalogue the full history of the resource allocation process								
Remark									

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Maintain version control for software updates
2. Code	ITCSNO328A
3. Range	This UoC describes the competencies for maintaining version control for software update of network systems. Related software are either internally developed applications or vendor supplied patches of firmware or applications. Systems imply either telecommunication systems (routers, switches, etc.) or support systems (OSS, alarm monitoring, etc.). The version control system is an online database system which is used by a group of people or departments.
4. Level	3
5. Credit	1
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with network systems and equipment used in the network infrastructure • Critically understand the importance and principles of version control • Possess extensive experience with the organisation's version control mechanism such as the version control coding system that identifies the network systems, the required details to be entered into the versioning system, etc • Experienced with using online version control systems • Experienced with designing and formulating version control procedures • Capable of maintaining records accurately 6.2 Maintain version control for software updates Be able to: • Locate the software update report and determine the completeness of the updated report in particular the system or component ID, software ID and sequence or release number, etc • Locate the unique reference ID (UID) of the concerned updated system or device from the version control system. If the system or devices is new to the version control system then a new UID index record is needed to be created for this related system or device • Locate the concerned stored record and verify that the located record matches the concerned changes • Create a new detail update record and enter the software update details into the record. A new version reference number (VRN) may be generated for the new detail record. The detail record reference number should be automatically be linked with the UID of the updated system or device • Verify that the VRN is linked to the correct UID of updated system or device • Perform job completion procedures such as quality control check, sign off, etc. 6.3 Exhibit professionalism • Follow the organisation standard policies and procedures when performing the record maintenance work
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - correctly locate the UID of the system or device that has software updated - enter the updated details into the version control system and verify that it is related to the changed system or device - complete the signoff procedures satisfactorily
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)										
1. Title	Work with implementation team to ensure network is operating to required standard									
2. Code	ITCSNO329A									
3. Range	This UoC defines the competencies for teamwork, where the operation team works with the implementation team to ensure the implemented network is installed and operating as per required.									
4. Level	3									
5. Credit	2									
6. Competency	<table><tr><th colspan="2"><u>Performance Requirement</u></th></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Able to comprehend and follow network deployment/implementation plans • Knowledgeable of network architecture, network technologies and its operating characteristics, including routing, transmission, etc • Experienced with problem solving, analysis, diagnosis and evaluation techniques • Possess work ethics, roles and responsibilities for individual team member • Possess good communication skills in relation to communicating problem analysis, evaluation and presentation of information to different levels of stakeholders • Understand health and safety procedures, government regulations, compliances, etc </td></tr><tr><td>6.2 Work with implementation team to ensure network is operating to required standard</td><td> Be able to: • Determine the roles, responsibilities or tasks within the team • Coordinate with implementation team to identify the tasks, activities and deliverables • Clarify the assigned tasks and create an action plan including tasks and goals to be achieved • Conduct the task activities according to the activities plan • Review with implementation team on the results to confirm that the required standard was achieved • Document task activities and results in accordance with the organisation's standards and policies • Present the documents to appropriate party for quality auditing </td></tr><tr><td>6.3 Exhibit professionalism</td><td> • Exhibit interpersonal skills when working with colleagues • Follow safety procedures at every step while performing the implementation of the network • Ensure all documentation format follows the organisation's standards and policies </td></tr></table>		<u>Performance Requirement</u>		6.1 Possess the knowledge in the subject area	• Able to comprehend and follow network deployment/implementation plans • Knowledgeable of network architecture, network technologies and its operating characteristics, including routing, transmission, etc • Experienced with problem solving, analysis, diagnosis and evaluation techniques • Possess work ethics, roles and responsibilities for individual team member • Possess good communication skills in relation to communicating problem analysis, evaluation and presentation of information to different levels of stakeholders • Understand health and safety procedures, government regulations, compliances, etc	6.2 Work with implementation team to ensure network is operating to required standard	Be able to: • Determine the roles, responsibilities or tasks within the team • Coordinate with implementation team to identify the tasks, activities and deliverables • Clarify the assigned tasks and create an action plan including tasks and goals to be achieved • Conduct the task activities according to the activities plan • Review with implementation team on the results to confirm that the required standard was achieved • Document task activities and results in accordance with the organisation's standards and policies • Present the documents to appropriate party for quality auditing	6.3 Exhibit professionalism	• Exhibit interpersonal skills when working with colleagues • Follow safety procedures at every step while performing the implementation of the network • Ensure all documentation format follows the organisation's standards and policies
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6.3 Exhibit professionalism	• Exhibit interpersonal skills when working with colleagues • Follow safety procedures at every step while performing the implementation of the network • Ensure all documentation format follows the organisation's standards and policies									
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. participate in a team or act individually ii. effectively communicate with the implementation team to determine the required deliverables iii. plan, prioritise and complete the tasks to meet the implementation required standards and deadlines									
Remark										

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

Functional Area: Network Infrastructure & Operation (Operation/Support & Maintenance)										
1. Title	Conduct initial problem analysis									
2. Code	ITCSNO330A									
3. Range	This UoC defines the competencies for performing initial network problem analysis and make a recommendation or provide an initial solution. This is usually the task of front line support technician or customer site engineer who performs an initial analysis of the reported problem. Escalation may be required if no solution can be offered.									
4. Level	3									
5. Credit	3									
6. Competency	<table><tr><td></td><td><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Knowledgeable of the organisation's service level commitments and follow work orders • Familiar with the organisation's technical support structure and escalation procedures • Knowledgeable with a broad network technologies, network protocols, network infrastructure, features and operating characteristics of network components • Experienced with problem troubleshooting and resolving skills • Experienced with the use of network tools to perform problem analysis such as: cable tester, ping, netstat, traceroute, protocol analyser, frequency/spectrum monitor, etc. • Knowledgeable of the organisation's problem reporting standards • Knowledgeable with health and safety procedures, government regulations, compliances, etc </td></tr><tr><td>6.2 Conduct initial problem analysis</td><td> Be able to: • Coordinate with appropriate parties to confirm work orders such as hotline support desk or supervisor to understand the reported issues/problems • Choose an appropriate fault finding method and prepare suitable equipment to be used for network problem monitoring or identification such as logs, protocol analysers, etc • Use various means to reproduce the reported symptoms and determine where the network issues lie i.e. software, hardware, network connection, network component, equipment configuration, switching, cable, etc • Create a list of possible causes of issues/problems and order it in its likelihood • Formulate a possible solution to the problem. Communicate with peers to confirm solution or seek additional help, if necessary • Inform appropriate parties of progress and offer a solution • Document the activities and any recommendation in accordance with the organisation standards and policy. Submit the report to appropriate stakeholders, such as customer service, supervisor, or peers to rectify the issue/problem etc </td></tr><tr><td>6.3 Exhibit professionalism</td><td> • Ensure tasks are performed in accordance within these policies and standards • Exhibit good working relationship with peers </td></tr></table>			<u>Performance Requirement</u>	6.1 Possess the knowledge in the subject area	• Knowledgeable of the organisation's service level commitments and follow work orders • Familiar with the organisation's technical support structure and escalation procedures • Knowledgeable with a broad network technologies, network protocols, network infrastructure, features and operating characteristics of network components • Experienced with problem troubleshooting and resolving skills • Experienced with the use of network tools to perform problem analysis such as: cable tester, ping, netstat, traceroute, protocol analyser, frequency/spectrum monitor, etc. • Knowledgeable of the organisation's problem reporting standards • Knowledgeable with health and safety procedures, government regulations, compliances, etc	6.2 Conduct initial problem analysis	Be able to: • Coordinate with appropriate parties to confirm work orders such as hotline support desk or supervisor to understand the reported issues/problems • Choose an appropriate fault finding method and prepare suitable equipment to be used for network problem monitoring or identification such as logs, protocol analysers, etc • Use various means to reproduce the reported symptoms and determine where the network issues lie i.e. software, hardware, network connection, network component, equipment configuration, switching, cable, etc • Create a list of possible causes of issues/problems and order it in its likelihood • Formulate a possible solution to the problem. Communicate with peers to confirm solution or seek additional help, if necessary • Inform appropriate parties of progress and offer a solution • Document the activities and any recommendation in accordance with the organisation standards and policy. Submit the report to appropriate stakeholders, such as customer service, supervisor, or peers to rectify the issue/problem etc	6.3 Exhibit professionalism	• Ensure tasks are performed in accordance within these policies and standards • Exhibit good working relationship with peers
	<u>Performance Requirement</u>									
6.1 Possess the knowledge in the subject area	• Knowledgeable of the organisation's service level commitments and follow work orders • Familiar with the organisation's technical support structure and escalation procedures • Knowledgeable with a broad network technologies, network protocols, network infrastructure, features and operating characteristics of network components • Experienced with problem troubleshooting and resolving skills • Experienced with the use of network tools to perform problem analysis such as: cable tester, ping, netstat, traceroute, protocol analyser, frequency/spectrum monitor, etc. • Knowledgeable of the organisation's problem reporting standards • Knowledgeable with health and safety procedures, government regulations, compliances, etc									
6.2 Conduct initial problem analysis	Be able to: • Coordinate with appropriate parties to confirm work orders such as hotline support desk or supervisor to understand the reported issues/problems • Choose an appropriate fault finding method and prepare suitable equipment to be used for network problem monitoring or identification such as logs, protocol analysers, etc • Use various means to reproduce the reported symptoms and determine where the network issues lie i.e. software, hardware, network connection, network component, equipment configuration, switching, cable, etc • Create a list of possible causes of issues/problems and order it in its likelihood • Formulate a possible solution to the problem. Communicate with peers to confirm solution or seek additional help, if necessary • Inform appropriate parties of progress and offer a solution • Document the activities and any recommendation in accordance with the organisation standards and policy. Submit the report to appropriate stakeholders, such as customer service, supervisor, or peers to rectify the issue/problem etc									
6.3 Exhibit professionalism	• Ensure tasks are performed in accordance within these policies and standards • Exhibit good working relationship with peers									
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate effectively with customers and peers to understand the work orders or network problems they are experiencing ii. perform simple troubleshooting and problem analysis iii. formulate and recommend a suitable solution									
Remark										

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform service restoration	
2. Code	ITCSNO331A	
3. Range	When a network goes off line due to fault or regular maintenance, its service will need to be restored ASAP (as soon as possible) to minimise disruption to users. Network includes PSTN, IP data or voice, mobile or wireless network. This UoC defines the competencies for performing network service restoration	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess experience with network operations, network architecture and network alarm systems, such as degraded performance, power supply failure, loss of line, traffic congestion, etc • Possess extensive knowledge of the organisation Service Level policy • Understand the need of teamwork, coordination skills and communication skills • Possess knowledge of basic risk management • Experienced with basic planning and network information collection • Knowledgeable of network traffic management tools, analysis of the statistic or performance reports • Knowledgeable of health and safety rules and hazards related to the handling equipment and tools while performing the load balancing process 6.2 Perform service restoration Be able to: • Identify details of service outage i.e. planned or unplanned, extent, timeframe of outage, impact on users, outage status • Determine that all stakeholders are aware of the status of the outage. Stakeholders can be: customer support hotline, technical support personnel, etc • Coordinate with all stakeholders to formulate a service restoration plan conforming to the organisation's policy. The plans should include affected network components, activation timeframe, actions required, and contingency • Determine that the network is ready for service restoration by coordinating with technical engineers or NOC (Network Operation Centre) • Perform service restoration following the "restoration plan" • Perform appropriate tests to verify the restoration was successful • Collect evidence of unplanned outages for record keeping or analysis, such as loading statistics, alarm recording, logs, etc. • Document service restoration report in accordance to the organisation standards and policies. It should include all events and actions taken from the point of outage to the service restoration • Perform service restoration review, if necessary 6.3 Exhibit professionalism • Follow the health and safety guidelines and the organisation policies • Exhibit good teamwork and carry out the work in most professional manner	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - have initiative to use appropriate means to determine service problems and formulate service restoration plan conforming to the organisation's business plans/policies and operation standards - coordinate with appropriate stakeholders effectively to restore the services with minimal or no disruptions to other departments or people - provide full status report to keep stakeholder informed of service restoration progress	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Report equipment problems to vendors	
2. Code	ITCSNO332A	
3. Range	While performing network maintenance and support, engineers will invariably find that some issues/problems cannot be resolved within the organisation due to vendor dependant equipment. This UoC defines the competencies for reporting equipment problems to vendors.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Report equipment problems to vendors 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Comprehend network operations and network architecture and network alarm systems, such as degraded performance, power supply failure, loss of line, traffic congestion, etc • Comprehend the organisation's policy regarding to vendor management • Possess teamwork, coordination skills and good interpersonal skills (writing and over the phone) to liaise with vendor • Experienced with problem analysis, problem solving, and problem information collection • Experienced with vendor problem reporting procedures and use of internal problem reporting tracking system (may be paper based or computerised) • Understand health and safety procedures Be able to: • Analyse details of the reported problems following the established protocols/guidelines. Work with peers to confirm an internal solution cannot be provided • Collect the necessary evidence of the problematic components with a view for submitting to vendor • Acquire supplier details from supplier system, such as contact person, any contracting terms, reporting forms, and the required contents to be included in problem submission • Complete the necessary paperwork and submit problem report to vendor • Complete the necessary internal "vendor problem reporting" procedures in accordance with the organization policy. This may be an online recording/tracking system or could be paper based which requires form filling and filing of collected evidence • Following the organisation's guidelines and policies for vendor management
7. Assessment Criteria	The integrated outcome requirements of this UoCs are the abilities to: - verify the component or equipment is faulty - collect required evidence for reporting faults to vendor - follow the organisation guidelines and vendor's required reporting procedures and correctly record the fault report in internal logging procedures	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

Functional Area: Network Infrastructure & Operation (Operation, Support & Maintenance)										
1. Title	Liaise with vendor to acquire problem or equipment fixes									
2. Code	ITCSNO333A									
3. Range	One of the duties of network support is to perform software patches or fixes to system software of network components such as routers, switches, RF transmitters, etc. Some of these updates/fixes are vendors/suppliers regular patches or some are fixes for problems that were reported by fellow engineers. However, even with regular patches, there will be cases where a problem arises with no patches or updates received. This UoC defines the competencies for liaising with vendors/suppliers to acquire problem or equipment fixes. In an organisation, normally, there is a defined channel for requesting and receiving update or fixes from suppliers. The NOC (Network Operation Centre) may be this channel									
4. Level	3									
5. Credit	2									
6. Competency	<table><tr><td></td><td><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Possess extensive knowledge of the organisation’s policy for vendor management • Possess good teamwork, coordination skills and good interpersonal skills (written and over the phone) to liaise with vendor • Possess knowledge of problem reporting procedures and use of internal problem reporting/tracking system (may be paper based or computerised) • Knowledgeable of the organisation policies on vendor handling </td></tr><tr><td>6.2 Liaise with vendor to acquire problem or equipment fixes</td><td> Be able to: • Locate the problem report from internal record/tracking system and determine the status of the reported case • Confirm that no patches/fixes have been received from the vendors • Acquire vendor/supplier contact details from internal records • Determine and use the most appropriate means to contact the vendors/suppliers. A more direct means should be used if the fix is required urgently, such as by phone call • Use a tactful tone to enquire and request a committed schedule on delivery of the fix from the vendors/suppliers. Negotiation and exertion of pressure may be required • Update the internal record/tracking system of the problem to include: status, any agreed delivery status, etc. A status update may be required for certain internal staff or department </td></tr><tr><td>6.3 Exhibit professionalism</td><td> • Follow the organisation guidelines and policies for vendor management and recording/tracking of problems fixes • Always strike a proper balance among all stakeholders </td></tr></table>			<u>Performance Requirement</u>	6.1 Possess the knowledge in the subject area	• Possess extensive knowledge of the organisation’s policy for vendor management • Possess good teamwork, coordination skills and good interpersonal skills (written and over the phone) to liaise with vendor • Possess knowledge of problem reporting procedures and use of internal problem reporting/tracking system (may be paper based or computerised) • Knowledgeable of the organisation policies on vendor handling	6.2 Liaise with vendor to acquire problem or equipment fixes	Be able to: • Locate the problem report from internal record/tracking system and determine the status of the reported case • Confirm that no patches/fixes have been received from the vendors • Acquire vendor/supplier contact details from internal records • Determine and use the most appropriate means to contact the vendors/suppliers. A more direct means should be used if the fix is required urgently, such as by phone call • Use a tactful tone to enquire and request a committed schedule on delivery of the fix from the vendors/suppliers. Negotiation and exertion of pressure may be required • Update the internal record/tracking system of the problem to include: status, any agreed delivery status, etc. A status update may be required for certain internal staff or department	6.3 Exhibit professionalism	• Follow the organisation guidelines and policies for vendor management and recording/tracking of problems fixes • Always strike a proper balance among all stakeholders
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7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. use internal systems to determine the status or tracking of the reported issues ii. have interpersonal skills to work with vendors to identify the status of reported issues iii. negotiate a committed delivery schedule									
Remark										

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Maintain “white list” or “black list” for mobile account access to the network	
2. Code	ITCSNO334A	
3. Range	A telecom operator will require stringent control on allowing authorised mobile equipment to access its network and keep unauthorised users out. This can be done in the form of “Whitelist”, “Graylist” and “Blacklist” using IMEI (International Mobile Equipment Identity) of the device and EIR (Equipment Identity Registrar) of the mobile network system. This UoC describes the competencies for maintaining the lists to control mobile account access to the network. Work required includes maintaining local internal EIR which will be synchronised with CEIR (Central Equipment Identity Registrar) database. It is assumed that the IMEI is manually entered via OSS (Operational Support System).	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of security policies, operation principles and best practices • Possess extensive experience with mobile telecommunication systems and security access control • Extensively knowledgeable of how and when “whitelist”, “graylist, and “blacklist” is used within the organisation’s mobile network • Knowledgeable of OSS functions, particularly in the area of security control • Experienced in operating OSS control systems with commands or other scripting or programming languages • Knowledgeable of the industry standards and regulatory requirements for handling mobile security 6.2 Maintain “white list” or “black list” for mobile account access to the network Be able to: • Work with colleagues to determine the schedules for whitelist, blacklist, that perform entry of device serial number (IMEI) or database maintenance update • Use OSS tools to add newly reported lost phone to the local EIR • Perform synchronisation of local EIR with CEIR and produce report of discrepancies or abnormalities • Reconcile the differences between the two databases and make appropriate adjustments to local EIR after verification of reported lost phones, new subscribers, mapping of IMEI with SIM card ID, etc. Follow required procedures to amend CEIR • Bring suspected anomalies to the attention of appropriate security parties or supervisors • Document and record actions taken to local EIR and CEIR when discrepancies were found • Acquire work completion sign off from supervisors or job controllers 6.3 Exhibit professionalism • Follow the health and safety guidelines of the organisation while operating OSS systems • Follow the security policies of the organisation to prevent unauthorised access of the network and comply with the industry and regulatory standards.	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. follow work schedule to maintain the EIR “whitelist”, “blacklist” ii. analyse unsynchronised lists iii. follow the security policies to report anomalies and reconcile the differences after investigation iv. use the OSS functions effectively to synchronised EIR and CEIR databases v. effectively document the work and obtain signoff by supervisor or work controller
Remark	Local EIR database contains the operator’s registered users reported lost equipment. CEIR contains the international list of reported lost phones or equipment If an automated program is created then more in-depth technical knowledge is required such as the need to understand the API (Application Programming Interface) of CEIR and EIR management functions of OSS (Operation Support System)

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Implementing controls to prevent cable tampering	
2. Code	ITCSNO335A	
3. Range	Cable tempering is not just concern with physical tampering to gain access or creating disruption to networks. In today's environment, with VOIP, operators are also concern on protecting data/information that transmitted on the cable. This UoC describes the competencies for implementing appropriate controls to prevent cable tampering. The type of controls implemented depends on type of cable (copper or fibre) selected and level of protection required. It could be just a simple label seal at the cable closet or a sophisticated monitoring sensor device.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with data communication concepts and how data is transmitted on cables • Possess extensive knowledge of cable and cabling standards like EIA/TIA 568, 569, etc • Possess extensive experience with network cable security principles and types of risks exist • Comprehend network plans • Experienced with cabling tools and use of cable marking systems • Possess extensive knowledge of new cable technologies and security controls to mitigate risks, such as sensors, fibre vibration detectors, etc • Knowledgeable of the organisation security policies 6.2 Implementing controls to prevent cable tampering Be able to: • Determine from work orders or supervisors the cabling job requirements • Study site plans or carry out site visits to evaluate where cables would be suspected to tampering, including cable box, closet, the cable, etc • Evaluate various options and identify the most suitable control to use, such as label seals on cable box, cables with built in sensors that detect tampering, cables completely protected within conduits, deep conduits, etc • Install the controls as per required by the job order, vendor product instruction, or the organisation procedures • Fully document the implementation steps with network diagrams showing where controls are placed and how. For complex controls fuller details may be required such as: triggers start, end and the monitoring threshold, etc. Extra user procedures will be required for any internally developed monitoring equipment/software • Ensure various stakeholders receive copies of the document for approval and file in accordance with the organisation standards and procedures 6.3 Exhibit professionalism • Follow safety procedures at every step • Follow the security policies of the organisation to prevent unauthorised access of the network and comply with the industry and regulatory standards	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. read job orders or follow supervisor's instructions to understand the set up of cabling control requirements ii. install the anti-tampering controls in accordance with the vendor or the organisation standard policies and procedures iii. fully document the installation work and seek work completion signoff from stakeholders
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform estimation on the amount of effort for training staff to operate new equipment or networks	
2. Code	ITCSNO401A	
3. Range	This UOC concerns estimating the amount of effort for training staff to operate new equipment and networks. The concerned training programmes are programmes developed internally due to either no vendor product training is available or the training does not match the requirements of the organisation. Even though this UOC is target for internal use, it can also be used for external customer training service.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Perform estimation on the amount of effort for training staff to operate new equipment or networks 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Knowledgeable of the organisation manpower development strategies and policies • Possess extensive knowledge of competency based standards, training and assessments, in particular standards that define performance outcomes, applied knowledge and skills needed for work • Experienced with developing training programmes and estimating training efforts • Experienced with instructional design and formulating training materials and packages • Knowledgeable of network equipment and components and their operation requirements and characteristics • Familiar with the learning cultures of the organisation and preferences of target audience Be able to: • Work with colleagues to identify the training requirements, such as the operating network equipment operating network • Identify the target skill level of the training programme • Identify the suitable training delivery method and training mode required e.g. percentage of instructional lecture, practical, self study or combination • Work with vendor materials or vendors to formulate a training programme with breakdown of training modules that matches industry training standards, if possible • Estimate time required for each module, indicating the learning results of each module • Document the training plan and learning framework (for complex tasks/skills/knowledge) with indication of the training methodology, assessment and timeline • Work with colleagues to tune the training plan to achieve the required training skills • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance between the organisation and all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - work with colleagues to identify the training needs, training methods, competency levels, etc. - formulate the training programmes and plans that can effectively deliver the training that is required to operate the equipment or network - estimate the time and effort required for delivery of the training - document the training plans and the estimations in accordance with the organisation standards for approval	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform end user network design	
2. Code	ITCSNO402A	
3. Range	This UoC concerns network design at end user site i.e. within a building complex or campus site of the client. Network in this context could be data and/or voice (VOIP), wireline or wireless.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand and follow SLA (Service Level Agreement), customer contracts or work orders • Experience in gathering network requirements effectively from customer and/or work associates • Extensive experience in network capacity planning (current and growth forecast) • Extensive experience in deploying popular types of wired and wireless local area network technologies • Extensive experience in local network infrastructure planning, rooftop structure and cable mapping/drawing, facility requirement, such as air-conditioning, power supply, cabling, termination systems, etc. • Possess extensive knowledge in network risks and contingency planning • Possess extensive experience in selecting and using appropriate tools for network design drawings • Fully comprehend the organisation policies and guidelines regarding services provisioning • Possess knowledge of network deployment regulatory requirements • Understand health and safety procedures and government regulations 6.2 Perform end user network design Be able to: • Comprehend the requirements and determine whether the work can be fulfilled • Work with stakeholders to clarify/confirm network requirements details, routing policies, securities, network reliabilities, performance, etc • Identify site or technical limitations which may affect the implementation of the network. Specify site structure alteration, and/or enforcement may be required • Formulate an initial proposal of the logical and physical design of the network describing layouts and connectivity • Review and agree with stakeholder on the proposal • Formulate several network design options, with network infrastructure drawings, topology design, routing specification, switching equipment locations, protocols to be used, addressing allocations, network access policy, security and contingencies, etc • Calculate cost of the design options with implementation schedules, if necessary • Manage the documentation of the detail design and present to stakeholders • Work with stakeholders until a design is selected and approved	

	6.3 Exhibit professionalism • Produce network designs that conforms to the organisation standards and meet regulatory requirements as well as the customers' requirements • Represent the organisation in a professional manner • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with stakeholders to understand the network needs and the technical requirements ii. analyse the site infrastructure to determine and resolve any possible implementation difficulties iii. propose a high level design of the network and agree on the technical requirements iv. perform detail network designs conforming to professional standards with network drawings, implementation details, topology, cabling details, equipment used, network protocols to use, routing strategies, addressing details, security implementation details, etc v. present designs with recommendation to stakeholders and seek approval
Remark	Normally network design, as a service, requires several phases such as initial high level design, reviews and final detail design. This UoC treats this as a single task.

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Plan roll out of new network/equipment	
2. Code	ITCSNO403A	
3. Range	This UoC concerns deployment (roll out) of internal network or network for clients. Networks can be voice, data, wireless, mobile, WAN, MAN, LAN, multimedia, etc.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Plan roll out of new network/equipment 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Extensive experience with network deployment planning (reference for defining network deployment strategies) and deployment scheduling • Extensive knowledge in network architecture, network technologies and their operating characteristics, inclusive routing, transmission, etc • Experienced with project management, migration, network deployments, troubleshooting techniques • Knowledge of regulatory requirements related to the equipment that is being deployed • Understand health and safety procedures, government regulations, compliances, etc. Be able to: • Gather necessary information to understand the network deployment task, such as network design documents, manpower and resource requirement, availability, deadline, etc. • Consult stakeholders for input to schedules. State when and which network components are installed, configured, tested, tuned and verified • Define manpower roles and responsibilities, contact details • Identify risks and design monitoring and check points • Document the finalised rollout plan with schedules, manpower requirements, responsibilities, migration and rollback (recovery) plan • Present the rollout model to stakeholders and manage or advise the rolling out stage • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - work with stakeholders to identify the necessary resources (manpower, hardware, etc.) to be available for network or equipment rollout - formulate a rollout plan with schedules and clearly identify people's responsibilities during the rollout - identify area of risks and state clearly appropriate actions should rollout fails - perform necessary briefing to ensure all stakeholders understand the rollout plan and their responsibilities	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform training to operating staff
2. Code	ITCSNO404A
3. Range	This UoC concerns instructional delivery to operating staff that needs to operate networks or use network equipment. Staff may be NOC (Network Operation Centre) personnel, field engineers, technicians or other supporting personnel.
4. Level	4
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Knowledgeable of the use of equipment/system manuals and specifications associated with the training area • Knowledgeable of the specifications and relevant company policies and documentation • Extensive experience with instructional design/learning and delivery techniques • Knowledgeable of the network or network equipment operating procedures and the subject area of training • Knowledgeable of relevant legislation, codes, regulations and standards • Experience in conducting technical training 6.2 Perform training to operating staff Be able to: • Prepare for the training by understanding the objectives of the training and familiarising with the training topic areas • Design a “best approach” training plan with objectives and assessment methods • Design and prepare the training materials and training sites. May need to use vendor product manuals as part of the training • Deliver systematically the topic areas and operational procedures, taking into account: explanation; demonstration; review; trainee explanation; trainee demonstration; feedback; practice opportunities should be provided according to the specific learning situation and the training objectives • Acquire evidence of satisfactory understanding of the topics by the trainees with assessments and result is collected in accordance with the training session plan 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always take into consideration the needs of the trainees and strike a balance between the trainees’ ability and the course objectives
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine the objectives and the target outcomes of the training - produce a structured training plan that is suited to the operating staff’s level - develop the appropriate training materials with assessments which measure the effectiveness of the training - deliver the training effectively matching the level of the trainees
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify the required network equipment specification	
2. Code	ITCSNO405A	
3. Range	This UoC concerns identification of appropriate network equipment for a network. The equipment specification may be used for component purchasing when building or maintaining new or existing networks. Networks can be wireline, mobile, voice, data, etc. This task involves working with purchasing or other departments to determine whether the equipment is stocked internally or needed to be purchased	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with identifying and formulating network equipment requirement specifications • Possess extensive knowledge of various network architectures, network technologies and components • Possess extensive experience in vendor sourcing procedures such as writing RFP (Request for Proposal) and product evaluation • Possess extensive knowledge of the use of internal “parts supplier” systems which keep a list of parts/components with suppliers details • Understand health and safety procedures, government regulations, compliances, etc. 6.2 Identify the required network equipment specification Be able to: • Analyse the network requirement specification. Decompose to subcomponents, and parts if required, based on the network architecture, size, configuration, etc • Determine the functionality of the network equipment and assign the internal part/component number. Coordinate with purchasing or other departments to assign new part/component number, if required • Prepare RFP documents if the required equipment is not stocked by current suppliers or it's a new item • Prepare an itemised list, in accordance with the organisation's and purchasing department's standard. This may contain: internal part number, supplier details, supplier's part number, price (for ref.), etc • Manage the documentation and internal system updates. Also ensure the appropriate stakeholders (such as purchasing department, design team, etc.) are aware of the updates 6.3 Exhibit professionalism • Comply with the organisation's standard procedures and policies when new components are required to be purchased • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. determine the appropriate components or equipment to be used for the network construction or maintenance from network plans or specifications ii. work with colleagues to ensure the components are being stocked internally or required to purchase. If required purchasing, the correct RFP documents are prepared and forwarded to vendors	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify which vendors have products matching required network equipment	
2. Code	ITCSNO406A	
3. Range	This UoC concerns with identifying the vendors that can supply the required network equipment. Network equipment can be any component used in the core, access or CPE network.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with identifying and formulating network equipment requirement specifications such as function, performance, size, etc • Possess extensive experience with vendor sourcing procedures such as writing RFP (Request for Proposal) and product evaluation • Extensively experienced with managing vendor relationship • Knowledgeable with using the internal recording systems such as: “parts supplier” systems which keep a list of parts/components with suppliers’ details, etc • Understand health and safety procedures, government regulations, compliances, etc 6.2 Identify which vendors have products matching required network equipment Be able to: • Work with stakeholder of various department to prepare RFP documents for the required network equipment • Invite vendors to submit proposals within a deadline date • Formulate vendor selection score card based on price, experience, after sales support, upgrade, etc • After receiving proposals from vendors, score the vendors with the score card. Request product demonstration from vendors if necessary • Perform reference check of vendors particularly if they are not listed in the organisation’s vendor list • Work with the stakeholders on determining the most appropriate vendors, based on the score card result • Complete required administration procedures regarding the vendor selection such as adding vendor to “vendor list”, products they supply, etc 6.3 Exhibit professionalism • Follow the standards and policies of the organisation when selecting/evaluating vendors • Design the vendor selection score cards in objective and unbiased manner • Always take into consideration and strike a proper balance among all related parties	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - work with stakeholders to prepare RFP professionally, with description of required network equipment specifications, and guidelines for submission, such as return date, address, format, etc - select suitable vendor to submit proposal - formulate score card which can evaluate vendors objectively - perform the evaluation of vendors’ proposals - work with stakeholders to select or recommend suitable vendors and update internal systems with required details	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Compare vendor products and pricing	
2. Code	ITCSNO407A	
3. Range	This UoC concerns with selecting the appropriate network equipment suppliers/vendors by comparing products and pricing.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Compare vendor products and pricing 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Possess extensive experience with identifying and formulating network equipment requirement specifications such as function, performance, size, etc • Possess extensive experience with vendor product evaluation techniques and use of worksheets (matrix) • Knowledgeable of “comparison shopping” concept • Experienced with applying score card techniques for ranking of vendor products • Knowledgeable of internal procedures and systems for ranking and categorising vendor products • Understand government regulations, compliances, etc Be able to: • Perform product reference and review research • Use corporate standard evaluation worksheet with itemised product evaluation points, such as quality, product life expectancy, performance rating, cost per item, cost per batch, delivery time, etc. • Score the vendor demos and/or RFP (Request for Proposal) responses by following the worksheet to produce a short listing or single vendor selection • Document the comparison in a report with summaries and comparison details as well as recommendations • Distribute documents to appropriate stakeholders, such as purchasing department, etc. • Comply with the organisation standards and procedures when comparing products • Always take into consideration and strike a proper balance among all related parties
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - search product information or pricing to be used for comparison - follow the organisation standard procedures and objectively allocate weightings for each comparison item - document the comparison in accordance to the organisation required format - make recommendations with justifications	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform evaluation of vendors	
2. Code	ITCSNO408A	
3. Range	This UoC concerns with selecting the appropriate vendors for purchasing network equipment that conforms to a specification.	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Perform evaluation of vendors 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Possess extensive experience with identifying and formulating network equipment requirement specifications such as function, performance, size, etc. • Extensively experienced with vendor sourcing procedures such as writing RFP (Request for Proposal) and product evaluation • Experienced with managing vendor relationship • Experienced with using internal “parts supplier” systems which keep a list of parts/components with supplier details • Understand health and safety procedures, government regulations, compliances, etc. Be able to: • Prepare RFP documents if the required equipment is not stocked by current suppliers or it’s a new item • Define vendor selection criteria • Score the vendors to produce a short listing. • Request product demonstration for new or replacing equipment/parts and evaluate suitability of the equipment/parts • Perform reference check of vendors and/or the supplied equipment • Update or create supplier details in internal systems, to reflect the concerned supplier is related to a particular part/equipment number • Distribute documents to appropriate stakeholders, such as purchasing department, design team, etc. • Always take into consideration and strike a proper balance among all related parties
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. prepare RFP based on a network specification, using the organisation standard RFP procedures ii. coordinate with suitable vendors to invite RFP and follow standard procedures to record received proposals iii. evaluate vendor proposal effectively with an objective selection scheme iv. work with colleagues to select or recommend a suitable vendor and update internal systems with required details	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Identify suitable site
2. Code	ITCSNO409A
3. Range	This UoC concerns with identifying appropriate site for telecommunication network (fixed or mobile) construction. Site may be local switch station, mobile network (Tacs, 2G, 3G, etc.) station, cell site for antennas, etc.
4. Level	4
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with identifying and formulating network infrastructure plans, constructor drawings, rooftop structure mapping, etc • Knowledgeable with various network technologies • Knowledgeable with RF spectrum and transmission characteristics • Knowledgeable and experienced with structural and civil engineering, and land “Right of Way” • Knowledgeable with geographical maps and landscapes • Understand health and safety procedures, government regulations, compliances, etc. 6.2 Identify suitable site Be able to: • Analyse network plans and requirements. Together with demographic maps initial suitable location is marked • Identify suitable land /roof top for locating the telecom infrastructure based the network plan. Suitable site needs to consider geographical location, weather impacts, transmission impacts, environmental impacts, housing of equipment, power supply, etc • Prepare documented report on possible suitable sites, with recommendations, using the organisation standard format and submit to appropriate people to perform site survey 6.3 Exhibit professionalism • Always strike a proper balance among all stakeholders • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - study network infrastructure plans and work with appropriate departments/colleagues to determine the type of network equipment being installed - use appropriate means (area maps, building drawings, photographs, etc.) with the requirements and mark possible locations for installation of suitable sites - document the possible sites for site survey, with order of priority
Remark	

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform commissioning of new site	
2. Code	ITCSNO410A	
3. Range	This UOC concerns with the commission of new site/facility for telecommunication network (fixed or mobile). Site may be local switch station, mobile network (Tacs, 2G, 3G, etc.) station, cell site for antennas, etc.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Critically understand the site design plans, constructor drawings, etc. - Experienced in determining facility requirements, such as air-conditioning, power supply, cabling, termination systems, etc. - Understand implication and needs of site/building auditing, network provisioning and bring network nodes into service - Knowledgeable of operational characteristics and features of network equipment, such as switching, RF transmitter, modems, routers, and use of suitable tools to test, configure these equipment - Knowledgeable of health and safety procedures, government regulations, fire regulations, compliances, etc. - Experienced in project management of telecommunication site acceptance procedures, scheduling and planning, etc. - Knowledgeable in regulatory requirement for network site and equipment deployment such as transmitter positioning, frequencies etc. 6.2 Perform commissioning of new site Be able to: - Plan the site commissioning procedure such as how to audit various contractor deliverables, equipment performance and requirements, cut over schedules, etc. - Co-ordinate and schedule all parties involved for the commissioning, informing of schedules and actions required - Verify the site conforms to the drawing plan, facilities/equipment are at correct location and conforms to regulatory requirements - Determine what equipment are connected, whether they are meeting safety requirements, configured and performing to the technical manual specifications and regulatory requirements - Perform site acceptance for cables, antennas, power, earth, access and equipment built from contractors - Coordinate with colleagues/vendors to perform site and network testing - Coordinate the cutover of existing services to new site in accordance with project design and the organisation practices and regulatory requirements - Document all activities, equipment configurations, test results, and signoffs, conforming to organisation standards and policies 6.3 Exhibit professionalism - Design the commissioning task/process to follow safety procedures at every step and work production to meet required quality standard	
7. Assessment Criteria	The integrated outcome requirements of this UoCs are the abilities to: - plan the site commissioning tasks with schedules and checkpoints that can monitor each activity or task effectively - coordinate with various parties (internal or external) and organise the tasks for completion in accordance with the plan - validate, test and accept completed tasks/functions to ensure it operates as required by the specification/requirement - migrate or activate the services to new site in a manner that will not disrupt existing services	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform inspection/commissioning/acceptance of network equipment in accordance with required standards	
2. Code	ITCSNO411A	
3. Range	Network provisioning requires many network components or equipment. These components or network equipment are required to follow certain specification or standards. This UoC defines the competencies for performing inspection/commissioning/acceptance of network equipment in accordance with required standards which may be organisational, regulatory or international standards	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Perform inspection/commissioning/acceptance of network equipment in accordance with required standards 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Possess extensive knowledge of the features related to the equipment that are being provisioned and refer to operational manuals, if and when needed • Experienced with the organisation's quality requirements for network equipment • Possess extensive knowledge of quality control (QC) and quality assurance (QA) methodologies and techniques • Able to use and operate testing tools which may be hardware and/or software tools • Extensively experienced with evaluating and analysing quality test results and formulating recommendations • Comprehend health and safety rules and hazards relating to the equipment being evaluated/tested/inspected or the tools used during testing Be able to: • Identify the equipment to be tested/evaluated/validated and determine if an organisation guideline/standard/procedure exists. If not, then initiate a formulation procedure for creating a new standard/guideline/procedure for validating of the concerned network component or equipment • Locate and acquire the appropriate check list to perform the validation • Systematically follow the procedures or guidelines of the checklist to perform the required test/evaluation/inspection to determine whether the concerned network equipment conformed to the standard • Prepare setup of testing or evaluation environment, where necessary, and perform the required tests or inspections • Analyse the results after completing the tests/inspections and determine whether the network equipment conform to the required standards • Complete the necessary documentations such as reporting on the evaluation/testing/inspection procedures and results • File and submit the report with recommendations to internal departments and appropriate stakeholders • Ensure all documentations are created to the required quality and standard of the organisation • Include consideration in safety in the creation of testing environment and during testing • Always take into consideration and strike a proper balance among all related parties
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - identify and locate network equipment with validation check list - perform the validation effectively - document and make recommendations to stakeholders	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Formulate equipment testing procedures	
2. Code	ITCSNO412A	
3. Range	This UoC concerns developing testing procedures for network equipment of various sizes or complexities which include telephony equipment, data network wireless (Mobile or WIFI), transceivers, multiplexors, routers, home media, modem, access network equipment, switches (mechanical or digital), etc.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the features related to the equipment that are being tested and refer to operational manuals, if and when needed • Possess planning skills, analysing skills and testing techniques • Extensively experienced with operation of testing tools which may include software tools • Capable of exercising discretions or judgments on the following during the formulation process: importance, dependency, complexity, security and other factors which may affect the tests or test results • Extensively experienced with evaluating and analysing quality test results and formulating recommendations • Knowledgeable of health and safety rules and hazards related to the equipment being tested or the tools used during testing 6.2 Formulate equipment testing procedures Be able to: • Identify the equipment to be tested and acquire manufacturers' product manuals, specifications, and performance guides • Determine the areas to test, the objectives of the testing and the benchmarks to achieve i.e. expected result • Define what tools are required to perform the tests and what settings are needed for each test case or level of test • Define any special environment needed to monitor the performance and/or outcome of tests • Register test plans and initiate test log entries which describe the scope, approach, resource (may include test data) and schedule of the intended test activity. Specify testing tasks, who performs the task, if appropriate, and any risks requiring contingency • Specify validated or expected test results and acceptance processes (ref ITCSNO413A) • Document and file the testing procedures complying with testing standards of the company 6.3 Exhibit professionalism • Ensure all documentations are created to the required quality and standard of the organisation • Include consideration to safety in the creation of testing environment and during testing	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - formulate a suitable test plan/procedure for testing of network equipment which can demonstrate the objectives of the test are achieved - provide suitable samples and guidelines on test environment setup to assist testing - document the testing procedures and expected results in a manner that can be understood by non technical readers	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Formulate equipment acceptance test plan	
2. Code	ITCSNO413A	
3. Range	This UoC concerns developing acceptance test plan for network equipment of various sizes or complexities which include telephony equipment, data network wireless (Mobile or WIFI), transceivers, multiplexers, routers, home media, modem, access network equipment, switches (mechanical or digital), etc.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Extensively knowledgeable of the features and functions of the related tested equipment - Possess experience in planning skills, analysing skills, testing techniques and organisational skills - Experienced in using testing tools - Capable of exercising discretions or judgments on the following during the formulation process: importance, dependency, complexity, security and other factors which may affect the test or testing result - Possess extensive knowledge of the organisation's quality requirements - Possess good communication skills for liaising with stakeholders, manufacturers during the test plan formulation process - Knowledgeable of health and safety rules and hazards relating to the equipment being tested or tools used during testing 6.2 Formulate equipment acceptance test plan Be able to: - Work with "customers" to develop an acceptance proposal. "Customers" can be external or internal parties - Identify the equipment to be tested and acquire manufacturers' product manuals, specification, and performance guides - Determine the required scopes (test cases) of the acceptance and benchmarks to achieve i.e. the required result - Define the required proof of results and the format of presentation - Define testing scenarios, approaches, resources (may include test data) and schedules of the intended test activities, personnel required to perform the task, if appropriate, and any risks requiring contingency planning - Document the testing procedures complying with testing standards - Present the proposed Acceptance Plan to stakeholders with schedules and seek the acceptance of the plan 6.3 Exhibit professionalism - Formulate an equipment acceptance plan conforming to the standards of the organisation - Ensure all documentations conform to the required quality standard	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - work with various parties to formulate test scenarios to be used in the acceptance plan - based on different test scenarios, formulate baselines and acceptance criteria for each test - design the testing procedures for each scenario (ref: ITCSNO412A) - document the acceptance testing plan and procedures with expected results in a manner that can be understood by non technical readers	
Remark		

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform inter-working tests with other operators	
2. Code	ITCSNO414A	
3. Range	Once the intra-network is physically connected to other operators' network (inter-network), the next stage of the implementation process is to perform integration tests. Tests include physical transmission, OSS compatibility and functionality tests like authentication, roaming, billing, etc. This UOC concerns performing multi-operators network tests. Network in this context could be data and/or voice (VOIP), wireline or mobile network	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Extensively experienced with network testing methodologies and integration testing techniques - Possess extensive knowledge of various protocols standards and network technologies which could be wired-line or mobile network such as ATM, IP, GSM, LTE, NGN, MPLS, etc - Extensively experienced with preparing test plans, analysing test results, reading network infrastructure diagrams and configuration device settings - Extensively experienced with various testing tools and setting up of testing environment - Knowledgeable of inter-operator's network architectures or functionalities such as seamless mobile connection, users roaming, terminal connections, and services between administrative domains, etc. - Possess knowledge of health and safety rules and hazards relating to the equipment and/or tools being used during testing 6.2 Perform inter-working tests with other operators Be able to: - Locate and comprehend the test plans which specify the inter-network operability tests - Setup the appropriate tools and environments for measuring or recording of the tests - Perform the tests. More than one test cycle may be required and coordination with appropriate members of other operators may be required - Analyse the test results and ensure the tests were completed satisfactorily as per required by the test plan - Document the testing details and package the test results to formulate a test report to relevant stakeholders (supervisor, network designer, etc.) 6.3 Exhibit professionalism - Perform all tests as required by the test plan and suggest improvements to supervisors or test designers - Place the organisation's interest at foremost while working with external personnel - Always balance the interests of all stakeholders	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - follow test plans and complete all required tests - prepare test environments with measuring tools to record test results - work and communicate effectively with opposite members of other operators in the preparation and performing of tests - complete the required tests and document the results with any special findings such as incompatibilities, unexpected results, etc. - package the test report that conforms to the organisation's required standards and formats for submission to appropriate stakeholders	
Remark	The test plan should include interoperability tests validating to standard reference architecture. It should cover key aspects of the architecture, including authentication, accounting, roaming, billing and settlement. The objective is to discover as many as possible critical technical gaps between other operators' implementations and the standard requirements. In many cases, these gaps were resolved, thereby increasing the products' readiness for actual deployment.	

Functional Area: Network Infrastructure & Operation (Implementation)

1. Title	Perform network stress test	
2. Code	ITCSNO415A	
3. Range	An essential requirement of a network is its availability meeting the users' expectation. The service provided must ensure that their network can operate under normal conditions as well as beyond normal conditions. A network will be put through various planned stress tests to understand the behaviours and areas of unreliability that may exist. The underlying networks may be of different technologies such as ATM, IP, or TDM. On the other hand, the physical networks can be copper, radio/microwave, optical fibre or even satellite. This UoC concerns performing network stress tests to determine the reliability and stability of the network.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Knowledgeable of the differences of stress testing, load testing vs. performance test and the techniques to perform different types of tests • Possess extensive network testing planning skills, analysis skills, testing techniques, with detailed knowledge on networks • Experienced with various protocols standards, network technologies, such as ATM, IP, GSM, LTE, NGN, MPLS, etc • Interpret test plans, network infrastructure diagrams and device configuration settings • Extensively experienced in performing unit, system, integration and systems tests • Extensively experienced with using testing tools and setting up of test environment with or without writing scripts for test tools • Possess knowledge of health and safety rules and hazards related to the equipment and/or tools being used during testing 6.2 Perform network stress test Be able to: • Work with colleagues to determine the objectives of performing the stress test i.e. to understand where bottlenecks will exist, to understand routing behaviours when certain parts of network is down, etc • Plan when and how the test can be performed, what monitoring and recording methods to use, how to control the generation of mass amount of required traffics, what results to expect, etc • Prepare each test scenario by setting up the test environment, the simulation equipment, monitoring equipment, etc • Perform the tests. More than one cycle may be required. Before performing the tests, coordination with other departments may be necessary e.g. to request for their cooperation. Other status or information should also be provided such as stating the tests duration, and effects it may have on the network • Analyse the test results and ensure the tests were completed satisfactorily as required by the test plan • Document the testing details and package the test results to formulate a test report to relevant stakeholders (supervisor, network designer, etc.). The report should clearly indicate what parameters that will cause the network to behave abnormally and provide corrective recommendations, if possible	

	6.3 Exhibit professionalism • Perform all tests as required by the test plan and suggest improvements to supervisors or test designers • Always balance the interests of all stakeholders while working with external personnel
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with stakeholders to determine what the stress test is needed to show ii. design the stress plan and procedure that can perform the stress tests iii. prepare test environments that can generate traffics with the right parameters and with the correct measuring tools to record test results iv. coordinate with all relevant parties and provide sufficient information related to the tests v. execute the tests and document the testing details and results that conform to the organisation standards vi. package the testing report in preparation for submission to appropriate stakeholders
Remark	Often simulation tools are used to generate traffics for the tests. The right combination and variety of the simulation will affect the result.

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Carryout network entity problem analysis	
2. Code	ITCSNO416A	
3. Range	This UoC includes analysing problems when network is exhibiting abnormal behaviours. The concerning networks include telephony networks, data network, LAN, WAN, wireless or Mobile.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess planning skills, analysing skills, testing techniques, with detailed knowledge on networks (wired and/or wireless) • Extensive knowledge of network diagrams • Comprehend manufacturer's specification • Possess extensive knowledge of various protocols standards and network technologies which could be wired-line or mobile network such as ATM, IEEE 802.x, TCP/IP, GSM, LTE, NGN, MPLS, etc • Capable of following the operational instructions of testing and measuring equipment • Knowledgeable of health and safety procedures • Possess knowledge of radio frequency concept and its hazards • Knowledgeable of regulatory requirements 6.2 Carryout network entity problem analysis Be able to: • Perform preliminary analysis with visual checking for loose connections, damaged cable shielding or corrosive contacts, etc. • Plan a methodical approach to perform fault identification • Obtain appropriate tools and testing equipment to be used for fault identification. (Tools like: network performance tools for packet analysing, electrical measuring, RF measuring, etc.). Specialist advice may be obtained to assist the analysis • Determine that abnormality regularly occurs • Accurately record the measurements of the findings. If necessary, collect evidence, and compare with manufacturer's specification • Determine a possible solution or action required. Obtain manufacturer's documentation, if needed, to identify recommendations • Record accurately by filling in appropriate reports on findings, possible solutions and any actions taken or recommendations 6.3 Exhibit professionalism • All steps must follow regulatory safety procedures while performing network analysis • Ensure all documents are created to meet the organisation quality and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. use different approaches to perform fault finding of network entities. This may be visual or using specialised tools ii. plan a methodical approach to perform the problem determination of the entity iii. perform and determine where problems exist, if any, in the entity iv. provide an accurate recommendation on corrective actions and document it in the organisation's required reporting format	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform network equipment problem analysis	
2. Code	ITCSNO417A	
3. Range	This UoC includes analysing problems associated with network equipment. The concerning equipment include but not limited to telephony, data network equipment, antennae, radio systems, transceiving equipment, multiplexors, routers, home media, modems, etc.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess good planning skills and problem analysing skills • Comprehend the manufacturer documentation of the concerning equipment • Extensively experienced with the functions and operations of the concerned network equipment • Capable of following the operational instructions of testing and measuring equipment • Possess extensive knowledge of various protocols standards and network technologies which could be wired-line or mobile network such as ATM, IEEE 802.x, TCP/IP, GSM, LTE, NGN, MPLS, etc • Knowledgeable of health and safety procedures • Possess good knowledge of radio frequency theory and hazards associated with mobile equipment • Possess knowledge of regulatory requirements 6.2 Perform network equipment problem analysis Be able to: • Plan a methodical approach to perform fault isolation and identification • Perform a preliminary visual checking and ensure power supply is connected and turned on. The visual checks include: loose connections, damaged cable shielding or corrosive contacts, etc. • Obtain appropriate tools and testing equipment to be used for fault identification. (Tools like: voltmeter, cable measuring tools, electrical measuring tool, radio measuring, software measuring and analysis tools, etc.). Specialist advice may be obtained to assist the analysis • Setup the tools and test environment as per manufacturer's specifications or company standards • Check if electronic equipment are functionally tested in accordance with maintenance manual for fault determination • Determine and confirm that the fault regularly occurs • Formulate possible solutions or actions. Obtain manufacturer's recommendation, if needed • Record accurately and complete appropriate reports of findings, possible solutions, any actions taken or recommendations 6.3 Exhibit professionalism • While performing network equipment problem analysis, all steps must follow regulatory safety procedures particularly when handling and operating any electrical testing tools • Documents are created to meet the organisation quality and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - understand and familiarise with the operating characteristics or functions of the network equipment from manuals, colleagues or specialists - use a methodical approach to plan the problem determination of the network equipment - perform and determine where problems exist, if any, in the network equipment - provide an accurate recommendation or corrective actions for the network equipment - document the problem analysis methodology and the recommendation/action in the organisation's required reporting format	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Develop a plan to monitor network infrastructure performance
2. Code	111430L4
3. Range	This UoC involves developing appropriate plan and procedures to monitor network infrastructure performance.
4. Level	4
5. Credit	6 (for reference only)
6. Competency	Performance Requirements 6.1 Knowledge in monitoring network infrastructure performance, such as: ● various network technologies and protocols ● organisation's infrastructure architecture, network diagrams and traffic controls ● components affecting high network performance: links, switching equipment and software employed at the nodes and switches ● cloud technologies/services, such as: ■ IAAS – Infrastructure As A Service ■ SAAS – Storage As A Service and Software As A Service ■ PAAS – Platform As A Service ● public cloud service platforms (e.g. AWS, GAE, Azure, etc.) ● network problem solving and public cloud configuring management skills ● network and cloud performance monitoring tools ● vendor management skills 6.2 Developing monitoring plan and procedures ● knowledge in the industry benchmark and standards on network performance ● know the organisation's network performance requirements ● plan for periodic review of the performance monitoring procedures ● identify and quantify key performance factors ■ Network latency ■ Network congestion ■ Infrastructure parameters (QoS, filtering, routing and load balancing) ■ Hardware resources of equipment ● set performance targets for the network ● identify and acquire tools and equipment needed for network monitoring 6.3 analyse the network performance

	● Be able to: ■ follow the monitoring plan to analyse the network performance ■ identify issues and problems that cause the network unable to meet the required standards ■ make suggestions to rectify any problem identified ■ communicate with vendors if external services (such as cloud) are used to enhance network performance ■ ensure the network is performing up to standard 6.4 Exhibit professionalism ● Be able to: ■ apply industry best practices to monitor the network infrastructure performance ■ comply with the organisation's guidelines and procedures as well as any (local and international) laws and regulatory requirements, if applicable
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to : ● develop appropriate monitoring plan and procedures ● follow the plan to monitor the network infrastructure performance
8. Remark	This UoC replaced the following UoCs: 1. ITCNO418A "Analysing performance reports" 2. 108058L3 "Monitor performance of digital media infrastructure"

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform software development for internal use	
2. Code	ITCSNO419A	
3. Range	This UoC concerns development of software for “in house” use. The software may be tools used in Network Operation Centre (NOC) such as monitoring tools, alarm setting or statistic collection tools. It could also be an enhancement of vendor products or other functional requirements defined by other colleagues or departments.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience in software engineering processes such as gathering functional requirements and software designing, programming, testing and module or system integration • Possess extensive knowledge of the functions, API, firmware and operating characteristics of vendor’s hardware/software components • Possess extensive experience in the organisation software development standards, quality control policies • Possess extensive knowledge in network software tools, network technology and protocols. Apply these tools for application test and functional verification • Capable of using computerised systems software in telecommunication systems, embedded systems, firmware, etc. 6.2 Perform software development for internal use Be able to: • Comprehend and confirm with colleagues on the functional requirements from requirement specification or other documents like AD (Architecture Design), HLD (High Level Design) or DLD (Detailed Level Design) • Perform program module (unit) design after decomposing to functional modules • Develop the program modules using appropriate programming language with IDE (Integrated Development Environment), if any, and ensure programs are fully documented • Perform comprehensive program module tests to comply with the organisation’s quality requirements • Perform module integration tests with other software modules, systems or vendor network components • Document the functional module decomposition, program design, tests performed, testing results for quality assurance by appropriate people. Perform application usage training, if required 6.3 Exhibit professionalism • Follow software development methodologies • Follow industry and organisation software development standards, quality assurance policies and good practices	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. develop applications conforming to the Software Development Life Cycle (SDLC) techniques ii. use appropriate software development tools to develop applications conforming to the organisation and industry standards iii. integrate newly developed application seamlessly with current systems and ensure users are able to use the new application effectively	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform bandwidth adjustments for optimum network traffics	
2. Code	ITCSNO420A	
3. Range	Network infrastructure optimisation is an art of adjusting network bandwidth to achieve an acceptable network capacity. The optimisation process will consider possible latencies caused by various network components leading to inefficient use of network bandwidth which causes low throughput. By adjusting or reconfiguring various components or parameters of the network components, an increase of bandwidth should be gained. Components include switches, routers, fibre optic equipment, microwave radios transmitters, modems, softswitches, multiplexors, etc.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Comprehend network diagrams and access network plans • Possess extensive experience with the operating characteristics of the network components and be able to configure or adjust various settings with assistance of technical manuals, if necessary • Possess extensive knowledge of various network technologies (NGN, VOIP, TDM, WiMAX, LTE, SS7, HSDPA, IPTV, FTTx, etc.), network components (MPLS, routers, switches, ADSL devices, modems, cables, antennas, etc.), network protocols (TCP/IP, ATM, IEEE 802.x, Ethernet, Frame Relay, etc.), application level services (QoS, encryption, compression, etc.) • Possess extensive experience with network monitoring tools, analysis of statistics or performance reports • Knowledgeable of health and safety rules and hazards related to the equipment and/or tools while performing the optimisation process • Critically understand customers' expectation and company's business goals 6.2 Perform bandwidth adjustments for optimum network traffics Be able to: • Conduct network performance evaluation by collecting statistics or reports from network monitoring equipment • Analyse the statistics and reports, together with various other factors (e.g. vendor stated performance, user's comments) and formulate an impression of the network overall performance • Identify where network latency is occurring and formulate what optimisation action is required • Co-ordinate with various parties informing when, what optimisation will be performed and what coordination is required, if any • Perform the adjustments and configurations of components to reduce latency • Document the optimisation process in accordance with the organisation's standards and policies 6.3 Exhibit professionalism • Follow the health and safety guidelines when adjusting network equipment • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. use reports/statistics/tools for network performance analysis ii. identify network inefficiencies and formulate correctional plans iii. coordinate with stakeholders for the network bandwidth adjustment job	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform traffic load balancing	
2. Code	ITCSNO421A	
3. Range	A network needs to move its traffic efficiently through traffic load balancing. Depending on the type of network technology and protocol selected for the network, load balancing can be performed manually or automatically. IP networks consist of various devices like routers and routing protocols like IGP, EGP, BGP, and QoS to perform load balancing. But in circuit switching networks will require additional network load balancing devices to move the traffics efficiently. This UoC concerns the tasks of performing network traffic load balancing by adjusting network components to a formulated optimal target level.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area Exhibit the ability to:: • Critically understand network capacity management requirements and the required optimal operating characteristics of the network • Possess extensive experience with managing different types of network architectures i.e. connectionless or circuit switching network • Possess extensive knowledge of various network protocols like: IPv4, IPv6, IGP, EGP, BGP, • Possess extensive knowledge of routing and switching concepts and configure these types of equipment • Possess experience with load balancing software applications • Experienced with network traffic management tools, statistics analysis or performance reporting • Experienced with health and safety rules and hazards relating to the handling of equipment and tools while performing the load balancing process 6.2 Perform traffic load balancing Be able to: • Identify the current network traffic capacity and efficiency from analysing performance reports and analysing the traffic flow • Analyse the statistics and report together with various factors (e.g. vendor stated performances, user comments) and formulate an impression of the network overall performance • Identify where network traffic inefficiency occurs and formulate a load balancing plan which takes into consideration various risks and effects it will have. Also formulate “fall back” procedures • Liaise with various stakeholders to coordinate when and what load adjustment will be performed, any effects it may have and what, if any, coordination is required • Prepare for load balancing by defining a baseline for traffics or acquired from product manuals, setup measuring and monitoring facilities • Perform load balancing by adjustments/configuration/settings on the network components (switches, routers, RF transmitters, multiplexors, sensors, fibre transmitter, etc.) to achieve the target performance requirement • Document the load balancing process in accordance with the organisation’s standards and policy	

	6.3 Exhibit professionalism • Follow the organisation's business plans and policies when planning the network load balancing • Follow the health and safety guidelines • Apply network configuration to ensure it follows the manufacturer operating standards and regulatory requirements
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - use reports/statistics/tools to determine network capacity status, bottleneck and points where improvement can be made - plan and perform the load balancing of the network infrastructure capacity to fulfil the company and network components operating parameters
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform congestion control	
2. Code	ITCSNO422A	
3. Range	Network efficiency involves moving traffics effectively with high throughput. Bottlenecks will affect efficiency and user experience. This UoC concerns network congestion control. Congestion control requires predictive process to avoid loss of data or excessive call drops. Most of the congestion control is performed at the switches of core network which may be wireline or mobile network.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with network capacity management and operating threshold of the network • Knowledgeable of various operating network technologies such as ATM, IP, etc • Possess extensive knowledge of routing and switching concepts • Possess extensive experience with network traffic management software applications and troubleshooting of alarms and warnings • Critically knowledgeable of the organisation policies and procedures on congestion control • Capable of analysing the traffic conditions and make appropriate decisions and adjustments • Understand health and safety rules and hazards related to the handling equipment and tools while performing the load balancing process 6.2 Perform congestion control Be able to: • Determine the current and possible optimal operating threshold of the network from documented reports, manuals, logs and statistics • Define suitable monitoring points • Set appropriate monitors and alarm trigger points to activate when certain network activity falls below or above a threshold or use network management application to determine unusual network traffic behaviours • Analyse the alarm/warning when triggers are activated. Identify points and causes of congestion or abnormality • Formulate appropriate actions in accordance with guidelines of the organisation's policy such as performing Connection Admission Control (CAC), adjusting routing path, increasing buffer size, etc. • Escalate or seek for assistance when unable to resolve or contain congestion • Perform adjustments at the routing or switching devices to divert, increase bandwidth to relieve network traffic congestion • Document the congestion control actions in accordance with the organisation's standards and policies • Participate with reviews or debriefings, when and if required 6.3 Exhibit professionalism • Familiarise with the required actions of congestion control policies and regular drills • Follow safety procedures when performing adjustments on network equipment	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - use reports/statistics/tools for network traffic analysis - use problem analysis skills to determine where congestion may occur - formulate action plans to resolve network traffic congestion by considering various situations or aspects - perform suitable adjustments to relieve network congestion successfully	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform decommissioning of network equipment	
2. Code	ITCSNO423A	
3. Range	This UoC describes the competencies for decommissioning of old network equipment. Network equipment can be any components of the core, access or user's network such as switches, routers, radio transmitters, microwave towers, seabed cables, or any software systems, etc. Decommissioning the network equipment does not necessarily mean de-installing the equipment. Decommissioned equipment that are not de-installed and lie in public area may be required to follow regulatory procedures.	
4. Level	4	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Extensively knowledgeable with decommissioning planning - Knowledgeable of regulators' requirements associated with handling decommissioned equipment such as applications for decommissioning of microwave towers or transmitters - Extensively experienced with network decommissioning - Experienced with managing and maintaining inventory list of decommissioned equipment - Experienced with coordination of decommission projects - Experienced with uninstalling and handling of vendor specific equipment or systems - Understand health and safety procedures - Knowledgeable of regulatory requirements 6.2 Perform decommissioning of network equipment Be able to: - Receive and comprehend decommissioning work order - Analyse the magnitude of the decommissioning work - Formulate a decommissioning plan, including manpower required, schedule, tasks performed internally, tasks required outsourcing, etc. - Formulate an inventory list of equipment to be decommissioned or de-installed - Coordinate and work with appropriate parties to verify the concerned equipment are no longer in service and perform the decommission work, which may involve coordination with external contractors - Pack the decommissioned or de-installed equipment and handle as required by the organisation's procedures or regulatory requirements for storage or disposal - Perform job completion procedures such as verification for completion of all items in the decommissioning list, appropriate decommissioning reports are made, job orders are signed off, etc. 6.3 Exhibit professionalism - Follow the organisation standard policies and procedures when planning and performing the decommissioning procedures	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - interpret and clarify decommissioning orders - formulate an effective decommissioning plan that complies with the organisation and regulatory requirements - formulate a decommissioned inventory list - coordinate effectively with appropriate parties to perform the decommissioning and/or de-installing of network equipment - verify all required items have been decommissioned and appropriate reports completed and submitted for job completion signoff	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform network testing
2. Code	111107L4
3. Range	This UoC defines the competency required for performing network performance and/or capacity tests which include telephone network, Personal Area Network (PAN), Local Area Network (LAN), Wide Area Network (WAN) / Low Power Wide Area Network (LPWAN), Metropolitan Area Network (MAN), wireless (Mobile or WiFi) or wireline, etc.
4. Level	4
5. Credit	3 (For Reference Only)
6. Competency	Performance Requirements 6.1 Possess the knowledge in the subject area ● Be able to: ■ Possess extensive experience in test planning, and testing procedures and analysis of test results or statistics from testing equipment ■ Able to comprehend and follow test plans, network infrastructure diagrams and configuration setting specifications ■ Possess extensive experience with network performance analysis, defining metrics for testing of networks and network components. ■ Experienced with network optimisation techniques such as queuing theory, routing, switching and transmission optimisation. ■ Possess extensive experience with using testing tools and setting up testing environments ■ Knowledgeable of health and safety rules and hazards related to the equipment and/or tools being used during testing 6.2 Perform network testing ● Be able to: ■ Comprehend the network testing requirements from test plans and test procedures of test cases ■ Plan and setup test environments. Define test baselines and specify how to collect evidence of test cases ■ Perform the test cases as per the test plan and collect test results with evidence like: logs, monitoring reports, network equipment configurations ■ Analyse results and compare with baseline to determine: ◆ Any incorrect testing procedure – in such case correct or change testing methods or procedures ◆ Network performing normally

	◆ Network performing poorly ■ Document the testing procedures, setups, and results, conforming to the organisation standard and summaries the results, with any particular actions required and/or any particular areas to be noted ■ Present the testing results to stakeholders for action or decision making 6.3 Exhibit professionalism ● Be able to: ■ Follow safety procedures at every step during the setup and while performing testing ■ Ensure all documentations are carried out in accordance with the organisation's policies and standards
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: ● follow test plan, design the testing procedures, setup test environments and carryout network testing systematically in accordance with the test case requirements ● document the whole testing scenario, results and any observations, in accordance with the organisation documentation standards
8. Remark	This UoC replaced ITCSNO424A "Perform network testing"

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Compare results under controlled tests	
2. Code	ITCSNO425A	
3. Range	This UoC defines the competency required for comparing results after controlled network testing. These may be results of network performance tests, component tests or network functional tests. Controlled testing implies the test is performed under a “preset” environment with limits or known external factors.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with test planning, testing procedures and be able to analyse results from testing results or statistics • Possess extensive experience in network performance analysis, network metrics and network components operating characteristics • Possess extensive knowledge in network infrastructure and its performance characteristics • Extensive experience in network optimisation techniques such as queuing theory, routing, switching and transmission optimisation • Understand health and safety rules and hazards related to the equipment and/or tools being used during testing 6.2 Compare results under controlled tests Be able to: • Comprehend the network testing plans, testing procedures of defined test cases • Comprehend historical test results for same or similar tests • Acquire test evidences like: logs, monitoring reports, network equipment configurations • Analyse the results of various test cases, after eliminating external factors that may affect the result • Formulate tests comparison list consisting of various comparison factors which may be performance or quality related, etc • Formulate a summary, conclusion and recommendation for the results • Document the analysis methodology conforming to the organisation standard and produce a report on the comparison, with recommendation of actions or areas to be noted • Present the report to appropriate stakeholders 6.3 Exhibit professionalism • Follow safety procedures at every step during the testing environment setup and while performing testing • Ensure all documentations are done in accordance with the organisation’s policies and standards	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - understand the objectives of the testing and the testing logics from the test plan and other related documents. When in doubt, he/she should have the initiative to find other sources to understand the testing - collect test results for test cases using different sources - analyse testing results (from logs, reports, statistic, etc) so that test comparison can be performed - produce a report of result/recommendation/solution with clear justifications, in accordance with the organisation standards	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

Functional Area: Network Infrastructure & Operation (Operation, Support & Maintenance)									
1. Title	Compare results of simulated “rollout”								
2. Code	ITCSNO426A								
3. Range	Rolling out a network to production will require substantial amount of planning and project management activities. This UoC defines the competencies for “pre-network rollout”. At this stage, simulation tools or just plain “planning charts” (flow diagrams) may be used to simulate network rollout. It is needed to consider factors associated with rolling out a network and the results are analysed to identify any risks factors, critical points that may affect the real rollout, etc. The types of networks being considered are new deployments of mobile or wireline networks.								
4. Level	4								
5. Credit	3								
6. Competency	<table><tr><td></td><td><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Expert in network deployment planning (to define network deployment strategy) and deployment schedule • Possess extensive knowledge in network architecture, network technologies and their operating characteristics, including routing, transmission, security, performance, etc. • Possess extensive experience in the methodology of Network Rollout Management (NRM) such as initial phase, installation and customisation phase, user training and live phase • Possess extensive experience in network performance analysis • Understand health and safety procedures, government regulations, compliances, etc. </td></tr><tr><td>6.2 Compare results of simulated “rollout”</td><td> Be able to: • Determine the network rollout scope, such as network size, timeframe, target cost, target quality, etc • Design different rollout scenarios and plan the rollout steps • Feed in different parameters, such as schedules, manpower, faculties, into the different phases of network rollout model and acquire a “weighting” for each scenario. If no simulation tool is used, walk through the rollout steps with group of colleagues to simulate the roll out • Analyse each case simulation reports and identify the most suitable scenario for the network deployment • Document the selected rollout scenario. • Present the cases to network rollout team and assist in the rollout of the network </td></tr><tr><td>6.3 Exhibit professionalism</td><td> • Communicate and use suitable presentation skills to fit for the occasion and audience • Ensure all documentations are in accordance with the organisation’s standards and policies. </td></tr></table>		<u>Performance Requirement</u>	6.1 Possess the knowledge in the subject area	• Expert in network deployment planning (to define network deployment strategy) and deployment schedule • Possess extensive knowledge in network architecture, network technologies and their operating characteristics, including routing, transmission, security, performance, etc. • Possess extensive experience in the methodology of Network Rollout Management (NRM) such as initial phase, installation and customisation phase, user training and live phase • Possess extensive experience in network performance analysis • Understand health and safety procedures, government regulations, compliances, etc.	6.2 Compare results of simulated “rollout”	Be able to: • Determine the network rollout scope, such as network size, timeframe, target cost, target quality, etc • Design different rollout scenarios and plan the rollout steps • Feed in different parameters, such as schedules, manpower, faculties, into the different phases of network rollout model and acquire a “weighting” for each scenario. If no simulation tool is used, walk through the rollout steps with group of colleagues to simulate the roll out • Analyse each case simulation reports and identify the most suitable scenario for the network deployment • Document the selected rollout scenario. • Present the cases to network rollout team and assist in the rollout of the network	6.3 Exhibit professionalism	• Communicate and use suitable presentation skills to fit for the occasion and audience • Ensure all documentations are in accordance with the organisation’s standards and policies.
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6.3 Exhibit professionalism	• Communicate and use suitable presentation skills to fit for the occasion and audience • Ensure all documentations are in accordance with the organisation’s standards and policies.								
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with colleagues to understand network rollout plans and requirements ii. formulate rollout scenarios and consider various advantages of each case in line with the organisation business operations/plans iii. present selected cases, with justifications, to rollout team and assist in selecting a most suitable rollout scenario. It should be in appropriate language and level for the audience								
Remark									

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Liaise with customer service on network problem matters	
2. Code	ITCSNO427A	
3. Range	The NOC (Network Operation Centre), in addition to maintaining the operation of the network infrastructure, also provides support to the frontline colleagues of Customer Service (CS) and provides information about the network or technical support to end users. This UoC defines the competencies for liaising with customer services department.	
4. Level	4	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the NOC operational service level commitments to internal departments • Possess extensive experience in principles of ethical work practices, roles and responsibilities of technical support • Excellent communicator and proficient with use of right communication skills during remote problem evaluation, analysis and problem solving • Possess a broad knowledge of customer service concepts • Possess knowledge of health and safety procedures, government regulations, compliances, etc. 6.2 Liaise with customer service on network problem matters Be able to: • Coordinate activities with peers at CS. This may be providing network status information or assisting end users with problem resolution • Determine the CS needs, analyse problems and provide the appropriate consultation or expert advices by communicating the solution/information at correct level • If assistance in end user support is required, assess the need of end users by providing remote troubleshooting and formulate a solution/advice to assist the end users. If problem cannot be resolved then coordinate with appropriate departments to assist, such as site engineers, etc • Document the activity as call report in accordance with the organisation standards and policies. This report may be required to be updated across departments such as the CS's CRM system or customer call log systems, etc. 6.3 Exhibit professionalism • Follow the organisation's guideline on customer services handling policies • Always strike a proper balance among all stakeholders	
7. Assessment Criteria	The integrated outcome requirements of this UoCs are the abilities to: - coordinate and work with colleagues to assist in resolving network issues and/or coordination works - communicate at a level of the opposite party (technical or non technical people) to avoid misunderstanding - perform problem analysis and/or apply remote troubleshooting techniques to understand the issues and formulate solutions	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Provide hotline support on network problems	
2. Code	ITCSNO428A	
3. Range	This UoC defines the competencies for liaising with external customers in assistance with service support (problem identification or resolution). Hotline support is normally a duty of customer services, but in many telecom operators technical support staffs are assigned to Network Operation Centre.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of NOC operational service level commitments • Possess extensive experience in principles of ethical work practices, roles and responsibilities of technical support • Possess good communication skills • Possess extensive experience in troubleshooting and able to perform remote problem solving and providing systematic instructions to resolve problems • Knowledgeable of the organisation's "Customer Service" policies and escalation procedures • Experienced in the use of systems for recording and accessing information such as customer records systems, error reporting systems, error logging systems, etc. 6.2 Provide hotline support on network problems Be able to: • Perform preliminary profiling of the customer (customer can be internal or external) such as details related to the customer, the network products/services they are using, and pertaining network issues they are experiencing, etc • Determine and confirm the user support issues by using active listening and questioning techniques, where possible. Use a technical language level which can be understood by the customers • Determine where the network issues lie i.e. software, hardware, network connection, speed, etc, by using predefined troubleshooting questions • Formulate a solution for customer's network problem or stating the requirement of onsite visit • Inform the customer what solutions will be attempted and ask them to assist. Then guide the customer on a step by step basis to resolve the network issue or offer the customer next level of escalation such as coordinating site engineer to assist • Confirm resolution of network issues with the customer by asking the customer to perform appropriate tests • Document the activities as call log/report in accordance with the organisation standards and policies. Where necessary coordinate with other departments, such as requesting site engineers to visit customer sites, etc.	

	6.3 Exhibit professionalism • Exhibit the “Customer Service” mind set with desire to assist the other party • Be aware and follow the organisation’s standards and policies when dealing with customers
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - communicate with customer effectively (right language level) - perform remote troubleshooting and analysis to provide acceptable solutions to customers - coordinate with other departments effectively to resolve a problem or provide a solution to the customer
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Define network security plans
2. Code	ITCSNO429A
3. Range	As networks are getting more and more complex and network users are getting more and more sophisticated, they expect reliabilities and continuous connectivity from the operator's network. Security of the whole network infrastructure and all its components are essential factors to ensure an optimal operation of the network. This UoC describes the competencies for defining network security plan. Security considerations include: hackers, fraudulent users, or even careless staff, etc.
4. Level	4
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Knowledgeable of the organisation's policies regarding network security • Knowledgeable of the network infrastructure and the services that it supports • Experienced with security principles and best practices • Possess extensive experience with risk management principles and be able to identify different network security components • Experienced with project planning and management techniques • Possess knowledge of health and safety rules and hazards regarding network infrastructure 6.2 Define network security plans Be able to: • Perform security assessment of the organisation's "asset" to determine the level of risk and vulnerability • Perform identification of suitable network security components for securing the organisation's assets, such as: physical security, network security, access control, authentication, encryption, key management, or just plain security awareness, etc • Budget for the project should line up roughly with expectations to secure the exposures uncovered in the initial assessment • Formulate a deployment program of security technologies (firewall, Intrusion Detection Systems, etc) and security components. Manpower requirements should also be included • Formulate measuring and monitoring procedures, with benchmarks, on each network security control • Formulate security contingency plan by performing impact analysis to delineate tolerable downtime for each network and service. This task should be aligned with the organisation's disaster recovery and business continuity strategies • Document the security plan and present to appropriate stakeholders for seeking approval 6.3 Exhibit professionalism • Ensure all documents are produced conforming to organisation standards • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - define network security vulnerabilities and assess where these vulnerability exist in the organisation's network - formulate security plans to strengthen and counter the risk areas of the network - design tools that can measure the effectiveness of the security plans - identify cost of implementing the security plans - effectively document, present and make recommendation of suitable security plan to stakeholders and seek approval for implementation
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Implement network access control for internal and external customers to access the network	
2. Code	ITCSNO430A	
3. Range	Network Access Control is an essential part of security which is used to prevent potential snoopers and hackers off a network. In this UoC, it describes the competencies for controlling internal and external customers accessing the network. This means ensuring security with the correct access authority to match the appropriate service which the users are entitled to. The control which being implemented here is at the point where CPE (Customer Premises Equipment) connects to the Access Network. Note: these equipment may be PBX, broadband ADSL (wireless or wireline), etc.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the benefits and reasons for network security, in particular network access control • Experienced with security principles and best practices to protect the network infrastructures and network services • Experienced with risk management principles and be able to identify different network security components • Knowledgeable of CPE security functions that enable suitable access control be configured to gain access to the Access Network • Knowledgeable of regulatory requirements regarding network security • Knowledgeable of health and safety rules and hazards. 6.2 Implement network access control for internal and external customers to access the network Be able to: • Acquire access control requirements for a user or a service. For service it usually requires the implementation of a single network control policy. For individual users, different access control will be required depending on the type of services or plans they purchased or jobs to perform (for internal staff) • Determine the authorisation control point e.g. at the server, switch station, firewall, cell point, etc • Consider different types and benefits of different access control, such as “agent based” where the agent is installed at end user’s device, “inline NAC” which all traffics passing through like a firewall, etc • Work with stakeholders (other departments, network control centres, vendors, service roll out teams, customer service, etc.) to determine a best and optimal Access Control • Document the procedures for implementing the controls with details on configuring user’s details into the ACL (Access Control List), including appropriate access permission at appropriate switches, equipment, devices and servers, firewalls, etc. • Perform the implementation of access control and test the control with appropriate warnings/alerts when irregularities are detected • Package the results of the test and present to stakeholders for job signoff or approval 6.3 Exhibit professionalism • Follow the health and safety guidelines of the organisation • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. determine the level of access security requirements to be implemented ii. communicate effectively with stakeholders to formulate a suitable access control at appropriate point of access authorisation iii. document the access control implementation plan, in an easy to understand format, and perform the implementation iv. test to ensure the access control performed as expected v. demonstrate that the implementation was satisfactorily completed with test results, and with stakeholders' approval
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Implementing monitoring equipment to monitor infrastructure failure and security breaches
2. Code	111429L4
3. Range	For a network to operate reliably and efficiently, continuous monitoring is required to detect faults and security breaches so that appropriate actions can be taken. This UoC describes the competencies for implementing monitoring equipment to monitor infrastructure failure and security breaches.
4. Level	4
5. Credit	6 (for reference only)
6. Competency	Performance Requirements 6.1 Possess the knowledge in the subject area ● Expert in implementing various types of network monitoring management tools, Internet of things (IoT) device management software, alarm management tools, log management, system messages, software systems ● Knowledgeable of the operational requirements, duties, functions, and procedures of network related systems of the organisation ● Extensively experienced with network monitoring and implementation of monitoring equipment ● Possess in depth knowledge of network infrastructure, diagrams, maps and access network plans ● Possess extensive knowledge of the operating characteristics of the network components ● Understand the organisation's security policy 6.2 Implementing monitoring equipment to monitor infrastructure failure and security breaches ● Be able to: ■ Determine from work orders or supervisors the type of monitoring and objective of performing monitoring thresholds e.g. to meet SLA commitment to customers, to collect statistic for capacity planning, for support purpose, etc ■ Identify the appropriate monitoring equipment to use and consider alternatives ■ Determine and define operating baselines for the network infrastructure or components ■ Acquire trigger criteria from appropriate parties (product owners, network engineers, customers) and configure

	triggering network equipment with the required trigger settings. ■ Ensure that triggers record are documented and alerted the associated personnel ■ Set monitoring equipment to monitor the threshold points. The monitoring equipment should produce the required statistics and report for analysis and, if necessary, trigger alarms ■ Perform simulated tests of the monitoring equipment to verify the setting is correct ■ Fully document the implementation steps with network diagrams showing where triggers start, end, monitoring threshold, etc. Extra user procedures will be required for any internally developed monitoring equipment/software ■ Distribute copies of the document to appropriate parties (supervisor, network engineers, etc.) for vetting and filing in accordance with the organisation standards and procedures ■ Demonstrate the completion of the implementation with test results and acquire stakeholders or supervisor signoff ■ Ensure that all tools implemented are secured and complied with the organisation's cybersecurity policy 6.3 Exhibit professionalism ● Follow safety procedures while configuring and implementing network monitoring equipment ● Ensure documents conform to the organisation's standards and policies ● Always take into consideration and strike a proper balance among all related technological, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to : ● identify and fully understand the monitoring requirements from work orders and/or supervisors ● identify the monitoring factors such as trigger points, threshold, and output requirements (logs, alerts, alarms, etc.) ● correctly select the appropriate monitoring equipment to monitor the network functions and/or security of the network infrastructure ● Ensure all tools implemented are secured and complied with the organisation's cybersecurity policy ● successfully implement the monitoring by setting/adjusting/configuring monitoring devices to record statistics, trigger alarm/alert or send messages ● successfully demonstrate the completion of the implementation of the monitoring equipment with test results and documentation

8. Remark	This UoC replaced ITCSNO431A “Implementing monitoring equipment to monitor infrastructure failure and security breaches”

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Build or configure switching/routing devices to deliver data to correct endpoint or person	
2. Code	ITCSNO432A	
3. Range	In order to build a successful network a number of important ingredients are needed to be considered. They are: performance, reliability, and security. But this ingredient would be irrelevant if the data is not delivered to the correct destination. This UoC describes the competencies for building or configuring switching/routing devices to the correct endpoint. In the context of secure delivery VPN and IPSec would be considered. The network could be wired or wireless.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge in data communication concepts and how data is transmitted on cables or wireless devices • Possess experience with routing and switching protocols like RIP, OSPF, BGP, EGP, etc • Experienced with installing and configuring routing and switching devices with reprogram/change routing tables, set routing policies, set VPN tunnelling, etc. • Possess extensive knowledge in the security feature of routers and switches, such as VLAN (IEEE 802.1Q), IPSec, VPN, etc • Comprehend network plans • Possess extensive knowledge of current network protocols like IP, TCP, etc • In tune with current and coming wired/wireless network technologies or applications like VOIP, WiMax, 3G, 4G, LTE, broadband Ethernet, etc • Able to seek and comprehend vendor product technical manuals 6.2 Build or configure switching/routing devices to deliver data to correct endpoint or person Be able to: • Work with colleagues to identify the required method of connections between endpoints, such as normal point to point, VPN (secure or trusted) • Determine endpoint connection information such as destination network details, endpoint address or name, etc • Determine the security policies associated with the endpoints • Build and/or configure the devices with required tunnels by setting up routers to conform with the organisation's security policies for handling traffics between the endpoints • Use appropriate testing tools to test and validate the network setup to ensure data is transfer correctly and securely between endpoints • Document the setup details and package the test results for filing and signoff • Complete the necessary internal administration procedures to indicate completion of work 6.3 Exhibit professionalism • Follow safety procedures at every step of configuration of network devices when building the secure endpoint connections	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. read job orders or following supervisor's instructions to comprehend the endpoint connection set up requirements ii. build or configure the connections into switching/routing devices iii. ensure the connection of the endpoints are correctly configured by using appropriate tools to verify the connection iv. document the installation work that conforms to the organisation standards and policies, and seek work completion signoff from stakeholders
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Implementing controls to prevent operational security violation	
2. Code	ITCSNO433A	
3. Range	Network security is one of the main concerns of the operation team. This UoC describes the competencies for implementing controls to prevent operational security violations. In every network the operation team will use various means to protect the physical network and the information that is being transmitted. Protections include preventing DOS (Denial of Services), hacking, and other system or operational errors that affect the network normal operation.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the benefits and reasons for network security, in particular network operations controls • Experienced in applying security principles and best practices to protect the network infrastructures and network services • Knowledgeable of risk management principles and able to identify different network security risks • Knowledgeable of day to day routines of the network operations team and its security application • Experienced with various Information Security Standards like ISO27000, and ITIL on security controls and information security frameworks • Knowledgeable of health and safety rules and hazards. 6.2 Implementing controls to prevent operational security violation Be able to: • Work with colleagues such as the Security Officer to determine the network operations security needs and comprehend the security policies and the information security framework of the organisations • Observe and study the network infrastructure and the operation centre to determine where security controls are needed to be applied and the level of security risk or weakness that exists • Formulate appropriate controls and procedures to mitigate the security risks, such as: on certain event alarm is triggered, emails sent to certain person, accessed or logged, etc. • Work with stakeholders (head of operations or security officer) to agree on suitable controls to be implemented • Design and implement the operation controls. Also test the controls to ensure they function as required • Formulate suitable operational and training materials to instruct users on how the operational controls can be used • Formulate and implement monitoring procedures which determine the long term effectiveness of the operational controls • Document the implemented controls and monitoring procedures. The documents should also include when the controls should be next reviewed to determine its continual effectiveness • Package the relevant documents with other materials (test results, training manuals, etc.) to be signed off by the stakeholder 6.3 Exhibit professionalism • Follow the health and safety guidelines of the organisation • Ensure all documents, user manuals, training material are prepared at a level which the readers can comprehend	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work and communicate effectively with stakeholders and colleagues to determine the appropriate operational controls to implement ii. implement the controls effectively and test thoroughly to fulfil their designed functions iii. formulate, at the correct level, training and/or instructional manuals that instruct the use of the operational control most effectively iv. package the controls and documents to be signed off
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Define requirements to ensure data is transmitted confidentially and with integrity	
2. Code	ITCSNO434A	
3. Range	One of the network security considerations is to ensure data is transmitted without loss of security. This UoC describes the competencies for defining requirements to ensure data is transmitted securely. "Securely" implies confidentiality and integrity. Data transmission security can be implemented at all layers of the OSI (Open Systems Interconnect) reference model, but this UoC limits security at above layer 3 of the model.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the organisation security policy • Possess extensive experience with the network infrastructure, data transmission techniques and security implementation at different layers of the OSI reference model • Possess extensive knowledge of security principles, security trends, mitigation techniques, implementation of controls and best practices • Expert in various data security risks, such as packet spoofing, snooping, network intrusion, etc • Expert in network vulnerability analysis, such as penetration testing, Nmap, snort, etc • Possess extensive experience with various network and data protection technologies, such as IPsec, Firewall, IPS/IDS (Intrusion Protection Systems/ Intrusion Detection Systems), VPN, etc. • Knowledgeable of various data encryption techniques • Knowledgeable of health and safety rules and hazards. 6.2 Define requirements to ensure data is transmitted confidentially and with integrity Be able to: • Work with stakeholders (internal or external customers) to identify the level of data transmission security required. • Analyse the network infrastructure, the operation centre to identify the possible type of risks which the stakeholders are exposed to • Group and map the risks to the OSI reference model • Define the types of security protection to be applied for each layer while transmitting the data such as: set on IPsec at network layer, use of data encryption application at application layer, etc • Identify what equipment can be used to monitor and alert security breach relating to data integrity and confidentiality to meet the protection required by the stakeholders. Such as anti-spyware, intrusion detection/prevention devices, etc • Document the protection requirements with the type of protection to apply and distribute to the stakeholders • Present the proposal to stakeholders for acceptance and implementation 6.3 Exhibit professionalism • Ensure the defined protections are inline with the organisation's security policy • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate and work effectively with stakeholders to determine the different types and levels of transmission security requirements ii. differentiate and associate the security requirements with the OSI reference model so that appropriate security protection can be determined such as application security, network security, physical security, etc iii. formulate the type of applications, equipment, or tools used to enable transmission is performed securely and monitoring of the transmission security is not breached iv. effectively document and present the protection proposal to stakeholders and seek approval for implementation
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

Functional Area: Network Infrastructure & Operation (Planning & Design)										
1. Title	Identify/estimate cost of performing network upgrade/expansion									
2. Code	ITCSNO501A									
3. Range	This UOC applies to estimate cost of performing network upgrade. Networks can be voice, data, LAN, WAN, MAN, wired or wireless, mobile 2G/3G/4G, WiMAX, LTE or NGN, etc.									
4. Level	5									
5. Credit	3									
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7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. identify the necessary network components (including manpower) required for network upgrade from network design plans ii. use appropriate tools or the organisation standard calculation methodology to produce reports on cost such as CAPEX, OPEX for upgrading of a particular network iii. effectively present the reports to assist in decision making process									
Remark										

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Develop a business case	
2. Code	ITCSNO502A	
3. Range	This UOC applies to develop business cases for telecommunication related projects. Projects may be customer level, departmental or organisational.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • In tune with current and emerging technologies and its applications • Possess extensive knowledge of network architecture and network technologies • Critically understand the upgraded network features and/or new network requirement specification and design specification • Critically knowledgeable of the telecom business and stakeholders (internal or external clients) needs, requirements and objectives • Experienced with financial and accounting management techniques. • Experienced with formulating business cases and capable of applying cost and benefit analysis techniques • Experienced with risk management, planning and business needs in network deployment • Experience with project management methodologies and proficient in using standard tools 6.2 Develop a business case Be able to: • Lead a team to identify all the factors why there is a need for the project including requirements and its objectives, and how it is linked to business plans and missions of the organisation • Formulate a project plan including monitoring and assessment methods that can determine project success or failure • Identify the costs and benefits (tangible and intangible). The cost of project includes CAPEX and OPEX. Quantify benefits, in dollar value, where possible showing calculation of ROI (Return of Investment) • Identify the risks associated with the project, which should include what if project is not approved, effects of project delay, etc. • Manage the documentation process which should follow the organisation's standard format. Present the business case with recommendation to stakeholders 6.3 Exhibit professionalism • Always look after the organisation's interests • Follow the organisation's standard formats in creating a business case • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - work with colleagues and use various communication skills to understand and acquire business requirements - quantify and translate business requirements into monetary values so that they can be presented visually to stakeholders - create appropriate business case documents so that the case can be presented for approval, inclusive cost and benefits as well as risks - prepare and present the business case effectively to facilitate the decision making	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify/evaluate new network technologies	
2. Code	ITCSNO503A	
3. Range	Applying new technologies is a fundamental means in which network companies optimises its operations, cost, services, network growth, etc. This UOC concerns identifying or evaluating new technologies to accomplish the organisation business strategies or goals. New technologies imply newly released telecommunication technologies (wireless, mobile, high speed optical, modulation, etc.), products, systems (hard or soft, OSS, transmission, cable, switch, etc.), components, procedures (standards, design, installation, operational, maintenance) etc.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with network capacity planning (current and growth forecast) • In tune with the current market and emerging network technologies • Comprehend new product specifications, critically understand its applications and/or integration capabilities • Experienced with product testing and evaluation techniques • Possess extensive knowledge of network standards and product performance standards • Understand government regulations 6.2 Identify/ evaluate new network technologies Be able to: • Identify where there is a need of new technology and where new technologies can be applied such as network systems, component upgrade or replacements, or just vendor product launched • Determine the evaluation metrics. The evaluation metrics should be agreed by relevant parties • Collect information (technical specification, performance figures, operating characteristics, user manual, costs, user reviews, etc.) related to the particular new technology from vendors, developer, standards organisation, users, media, etc. • Create RFI (Request for Information) for evaluating specific new products / components / technologies that will be used for a certain project • Formulate the evaluation process. The evaluations can range from a simple study of the specification, requesting vendor demonstrations, to building prototypes model to validate the technology's claim • Document the evaluation process with evaluation metrics and the collected evidence to support the evaluation results • Make recommendation on the evaluated new technology to relevant parties with supporting arguments. Package the documents for internal filing and submission 6.3 Exhibit professionalism • Identification or evaluation of the new technology must comply with the organisation's policies and any regulations • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine the objectives for the evaluation of the new technology - communicate effectively with relevant parties to identify and formulate evaluation metrics, and agree on deliverable report formats, time and supported evidence - formulate a comprehensive evaluation plan - perform the evaluation process effectively by following an evaluation plan - document and package the evaluation with well supported recommendation of the new technology to the relevant parties	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify market needs/demands	
2. Code	ITCSNO504A	
3. Range	With the rapid pace of advance in technologies, network operators will need to understand the customers' needs to help define new market opportunities which drive innovation and revenue growth. This UOC concerns identifying the market needs so that network operators can project advances in technology and be alert of competitors to ensure that the right business strategies can be formulated. Network technologies include: 4G, VOIP, WiMAX, FTTH (Fibre To The Home), FTTP (Fibre To The Premises), etc.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Knowledgeable of the organisation business strategies (current and growth forecast) • In tune of current market and emerging network technologies • Extensively knowledgeable of the products and services being offered by own organisation • Experienced with using various marketing research tools • Experienced with marketing methodologies and marketing analysis techniques such as trend analysis, Pearl Curve (S-Curve) technique, etc. • Understand the importance of Customer Relationship Management • Experienced with working with colleagues to formulate market research strategies which can objectively determine the needs of certain new technology • Communicate and work effectively with colleagues, other departments, such as Marketing, Product and Services, etc. 6.2 Identify market needs/demands Be able to: • Work with various stakeholders of the organisation to determine the key network technologies that are essential to improve current products and/or develop new products • Source information (technical specification, performance figures, operating characteristics, user manuals, costs, user reviews, etc.) related to the concerned new technology from vendors, developers, standards organisations, users, media, etc. • Project probable advances and limitations of the new technology may have. Recommend solutions to overcome the limitations, if possible • Examine different ways in which the new technology can be combined into existing network products or offered as new individual products • Project the time line required to develop the new technology into viable products to market • Work with various departments, using various market research tools or techniques to understand the customer needs of certain emerging technology • Document the new technology market research process and results • Make recommendation based on the research with probable product application of the concerned technology and indicate potential impacts it may have if the technology is brought to market	

	6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance between the organisation and all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - identify suitable new network technologies that can be developed into products - assist in formulating a product offering strategy - work with colleagues and other departments to determine the viability and acceptance of the new technology product - document and package the results to appropriate department or stakeholder for decision making
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify/evaluate feasibility of applying new network technologies	
2. Code	ITCSNO505A	
3. Range	There are new technologies continuously being developed and come to market. A part of the network planning process is to evaluate whether these new technologies can be used to benefit the organisation and customers. This UOC concerns identifying or evaluating the feasibility (technical, financial and operational) of applying new technologies to be beneficial to the organisation. New network technologies implies newly released telecommunication technologies (wireless, mobile, LTE, WiMAX, high speed optical, modulation, etc.), products, systems (hard or soft: OSS, transmission, cable, switch, etc.), components, procedures (standards, design, installation, operational, maintenance) etc.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with network planning (current and growth forecast) • In tune with the current market and emerging network technologies • Comprehend new product specifications, be aware of its applications and integration capabilities • Possess extensive experience with product testing and evaluation techniques • Extensive knowledge of network standards and product performance standards • Understand health and safety procedures and government regulations • Experienced with performing financial and risk analysis • Possess good interpersonal skills to work with various parties to perform the feasibility study • Posses knowledge of regulatory telecommunication laws 6.2 Identify/ evaluate feasibility of applying new network technologies Be able to: • Work with related parties to determine the objectives, scope, requirements, deliverables, and time schedules of the feasibility evaluation • Use appropriate methodology to formulate an evaluation plan of activities to perform the feasibility evaluation • Seek and acquire the necessary information relating to the new technology which can enable the evaluation process to proceed • Perform the evaluation process. It is likely it will require coordination with various parties to perform evaluation procedures • Analyse the results, particularly focusing on the area of network operation factors, costs, benefits, interoperability, risks, etc. • Produce a feasibility study report (FSR) comprising the required deliverables, such as complexity of applying the new technology, risk factors, cost and benefits it generates, and business and operation values • Present the FSR with summary and recommendations to relevant parties 6.3 Exhibit professionalism • Always look after the interest of the company and customers • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate effectively with relevant parties to determine the scope of study, the objectives, and the deliverables of the feasibility evaluation ii. apply suitable feasibility study methodology to implement the evaluation process and perform analysis of the results iii. formulate an FSR that conforms to the organisation's standards and contains the required deliverables iv. present the FSR effectively to relevant parties with recommendations and any impacts it may have on the organisation or business when allying certain new network technology, to assist decision making
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify how to apply new network technologies for new products/services	
2. Code	ITCSNO506A	
3. Range	This UOC concerns identifying how to apply new technologies to benefit the organisation particularly in creating new products / services. New technologies imply newly released or destined to be released telecommunication technologies (wireless, mobile, LTE, WiMAX, 4G.)	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with network planning (current and growth forecast) • In tune with current market and emerging network technologies • Comprehend product specifications, and their applications and/or integration capabilities • Experienced with product testing and evaluation techniques • Extensively experienced with various network protocols, network standards and network technologies which could be wired-line or mobile network such as ATM, IP, GSM, LTE, NGN, MPLS, etc. • Effectively liaise with vendors to acquire technical product details • Understand health and safety procedures and government regulations • Experienced with financial and risk analysis when applying new technologies 6.2 Identify how to apply new network technologies for new products/services Be able to: • Work with product development and/or business development team or other departments to evaluate new technologies • Formulate a suitable methodology to be used in performing the evaluation • Seek and acquire the necessary information related to the new technology/product which enables the evaluation process to proceed • Initiate a feasibility study to determine the technical and financial viability of applying the new technology • Analyse the FSR (Feasibility Study Report), particularly focusing on the network operation factors, cost, benefits, interoperability, network stability, service risks, etc. • Produce a report with business plan and FSR • Present business proposal to the stakeholders, such as the organisation's business planning team and make appropriate recommendations 6.3 Exhibit professionalism • Documents are produced at the correct level for the readers and comply with the organisation's policies and standards • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate effectively with relevant parties to determine the scope of study, the objectives and the deliverables of the study ii. apply suitable methodology to implement the evaluation process iii. perform analysis of the results iv. formulate a FSR that delivers the required objectives of the study v. present effectively the FSR to relevant parties with recommendations and impacts to assist decision making
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Determine how to apply/integrate new technologies with existing networks	
2. Code	ITCSNO507A	
3. Range	This UOC concerns identifying how to apply or integrate new technologies into existing networks. New technologies imply newly released telecommunication technologies (wireless, mobile, LTE, WiMAX, high speed optical, modulation, etc.), products, systems (hard or soft, OSS, transmission, cable, switch, etc.), components, procedures (standards, design, installation, operational, maintenance) etc.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with network planning (current and growth forecast) • In tune with the current market and emerging network technologies • Comprehend product specifications, and capable of determining its applications and/or integration capabilities • Experienced with product testing and evaluation techniques • Experienced with various different protocols standards and network technologies which could be wired-line or mobile network such as ATM, IP, GSM, LTE, NGN, MPLS, etc. • Understand health and safety procedures and government regulations • Possess extensive knowledge of the organisation's current network infrastructure design and operational status 6.2 Determine how to apply/integrate new technologies with existing networks Be able to: • Work with appropriate parties to determine the objectives, scope, requirements, deliverables, and time schedules of the technology integration study • Apply suitable methodology in performing the study and plan the activities involved • Work with network operation team to determine what critical factors in existing network may affect normal operation when new technology is applied and create a list of "Critical Factors" • Seek and acquire the necessary information related to the new technology which enables the evaluation process to proceed • Systematically seek information or perform test of network component to determine solutions for each "Critical Factor" • Analyse study results, particularly focusing on the network operation factors, risks, interoperability, cost, benefits, etc. • Produce a study report comprising the required deliverables, such as complexity of applying the new technology, risk factors, cost and benefits it generates, and business and operational values. • Present the study report with summary and recommendations to relevant parties 6.3 Exhibit professionalism • Documents are produced at the correct level for the readers and comply with the organisation's policies and standards • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factor	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - communicate effectively with relevant parties to determine the scope of study, the objectives, the deliverables of the feasibility evaluation - apply suitable study methodology to implement the evaluation process - acquire relevant information to perform the study - formulate a study report to deliver the required objectives of the study - present effectively the report to relevant parties with recommendations to assist decision making	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Investigate the effectiveness of applying green technologies into existing network and NOC	
2. Code	ITCSNO508A	
3. Range	Operators are looking for better TCO (Total Cost of Ownership) in their network infrastructure. An area where costs of operation can be reduced would be having greener network operation centres (NOC) or switching stations where substantial amount of electricity is needed to keep network and equipment running. This UOC concerns investigating the effectiveness of applying green technologies in existing networks and NOC.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Investigate the effectiveness of applying green technologies into existing network and NOC 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Experienced with network capacity planning (current and growth forecast) • Possess knowledge of the organisation's green policies • In tune with current and emerging power management and energy saving technologies, especially green products and technologies • Possess extensive knowledge of green technology such as U-Factor in heat transfer through windows and Energy Star classification on appliances, etc. • Possess extensive experience with server consolidation and virtual machine (VM) concepts • Understand health and safety procedures and government regulations Be able to: • Formulate a green technology evaluation strategy based on organisation green policy, local government regulatory requirements and international standards • Develop formulas and measurement processes which can be used to evaluate energy efficiency of network products based on its usage, or how much recyclability of each component, or how much recycled materials used to build the component/device, etc • Formulate baseline metrics for network equipment evaluation. May use vendor's stated statistics or figures or from internal records • Perform the evaluation procedures and collect the needed data and statistics for analysis • Perform green factor analysis by comparing the acquired statistics with the baseline and manufacturers' figures • Document the investigation process with conclusion and recommendation for submitting to stakeholders • Follow green practices which comply with the organisation business policies and strategies as well as local regulatory requirements • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - formulate evaluation procedures which can measure and determine the "green factor" of a network component/technology - create baselines which can be effectively used for comparison and analysis - document and make appropriate recommendation	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Calculate the network capacity	
2. Code	ITCSNO509A	
3. Range	Coverage and capacity are two important factors when planning for a network to provide sufficient bandwidth to serve users without wasting the organisation resources. This UOC concerns calculating the network capacity for network planning. Network could be fixed or mobile.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the network requirements from either internal or external customers • Knowledgeable of the current network architecture and operating characteristics • Experienced with network capacity planning (current and growth forecast) • Be aware of current and emerging technologies and their applications • Extensive knowledge of network architecture, network technologies and their operating characteristics, inclusive routing, transmission, etc. • Experience in using network modelling and/or simulation tools. • Experience in analysing results and statistics from network elements or simulation tools • Knowledgeable of how network elements interact and perform under different environments and conditions • Knowledgeable of government regulations 6.2 Calculate the network capacity Be able to: • Work with the necessary departments to determine network requirement such as: type of services or traffics (voice, data, multimedia) to be offered, budgets for the installation of network, performance required, coverage, network plan, etc. • Use appropriate means or historical documents to estimate the expected number of users on the network. For mobile network this can be calculated from the number of cells to be erected • Use simulation tools or capacity planning tools to estimate the capacity requirements of the network to provide a satisfactory network services based on estimated number of users, bandwidth, peak hours, off peak hours, geographical segments and service mix, etc • Formulate the network “Available Node Capacity”, “Available Link Capacity” report based on collected information about network elements, SLA (Service level Agreement) requirements and number of users, etc. • Package the capacity estimation reports with the statistics result of simulation or other calculation items and submit to network planners or appropriate stakeholders 6.3 Exhibit professionalism • Follow safety procedures at every step while using simulation tools • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with colleagues effectively to determine the network requirements such as the network service type, SLA commitments ii. use simulation tools and/or historical data to calculate the network node and link capacity which can satisfy users' needs at different times of day while not wasting network resources iii. formulate and document the capacity estimation reports effectively with the necessary information that can assist network planning.
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Develop tools that facilitate network planning, capacity dimensioning and inventory control	
2. Code	ITCSNO510A	
3. Range	When implementing a network, irrespective of its size, many different tools are needed to assist in its planning, development and operation. There are “off the shelf” tools to assist common tasks but often these “CANNED” tools are provided in limited functions or flexibility that is required for certain network planning and capacity dimensioning job. Hence in-house tools may be needed to be developed to assist the tasks. This UOC concerns developing tools that facilitate network planning, capacity dimensioning and inventory control. These tools are software tool.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Extensive experience in network capacity planning and dimensioning (current and growth forecasting) • Experienced with the tools and functions that are needed to assist in capacity and dimensioning planning • In tune with current and emerging technologies and its applications • Possess extensive experience with network modelling techniques and simulation tools • Conversant with how network elements can be integrated and the performance factors are affected by network size, coverage and peak/off peak usage • Expert in software engineering techniques such as functional requirement gathering, functional design, and development, etc. • Understand health and safety procedures and government regulations 6.2 Develop tools that facilitate network planning, capacity dimensioning and inventory control Be able to: • Work with stakeholders to comprehend functional requirements of the tools to be developed. These functions may be additional to existing internal or vendor tools • Evaluate the capability of internal staff for the development of the required tool and its feasibility for in-house or outsourced development work • Recommend to stakeholders on estimate of the effort required for the work implementation and confirm the functional requirements with an initial functional design • Develop the applications, perform unit and system integration tests, compile user manuals • Package the newly developed tools for easy installation and work sign-off • Perform appropriate training on the use of tools, if required 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance between the organisation and all stakeholders	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - communicate effectively with stakeholders to identify the tools and functions required - analyse the feasibilities and best approach to develop the required tools - agree with stakeholder on a solution, with timeline for the development work - develop and test the tools to comply with the organisation quality standards - ensure the tools are packaged for easy installation and sufficient training or instructions are given on usage of the tools	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Acquire knowledge on propagation modelling and power budget calculation	
2. Code	ITCSNO511A	
3. Range	Stable power supply is necessary to ensure good quality signals transmitted over the mobile network. This UOC concerns acquiring sufficient information on signal propagation for power budget calculation. Signal propagation modelling will allow determination of required power consumption to be used at antennas by understanding/predicting of SNR (Signal-Noise-Ratio) and signal strength.	
4. Level	5	
5. Credit	5	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area • Expert in network capacity planning (current and growth forecast) • Possess extensive knowledge of current and emerging power management technologies • Conversant with antenna and RF (Radio Frequency) operating theories • Possess extensive knowledge of EMF (Electromotive Force) and PD (Potential Difference) principles and relationship of Power, Voltage and Decibel • Possess extensive knowledge of radio propagation effects on network design, such as diffraction effects, line-of sight, ionospheric paths, etc. • Possess extensive knowledge of the power budgeting methodology and calculation formula (such as power conversion of mW to dBm $P_{(dBm)} = 10 \cdot \log_{10}(P_{(mW)})$) and use of power calculation tools • Understand health and safety procedures and government regulations 6.2 Acquire knowledge on propagation modelling and power budget calculation Be able to: • Lead a team or work with colleagues in network design, resource planning or other departments to determine the need of power budgeting • Acquire the mobile network infrastructure map and other relevant documents which show the location, type and number of antennas used in the mobile network • Determine the antenna details such as model, manufacturer, operating information from vendor or manuals • Calculate the required operating power required of each antenna or transmission power based on knowledge of operating characteristics of each antenna, which also depends on geographical location, surrounding constructions and other supporting equipment, etc. Simulation or calculation tools may be used • Calculate the total power usage of the network • Record the calculating procedure and the calculated power budget of the network. Distribute the report to appropriate stakeholder or network designer/planner 6.3 Exhibit professionalism • All work must comply with RF standard requirements • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance between the organisation and all stakeholders	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine the network size and the type of transmitting equipment being used - source the correct operating information relating to the network equipment - identify the environmental and operating interference factors, RF transmission factors and use appropriate tools to determine the Power Budget of the network - document the calculating procedure and the power budgeting information which should conform to the organisation standards	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

Functional Area: Network Infrastructure & Operation (Planning & Design)		
1. Title	Design new network/equipment that can be integrated with the current network(s)	
2. Code	ITCSNO512A	
3. Range	This UOC applied to designing a new network or equipment that needs to be compatible of existing network or equipment. Networks include, voice, data, wireless, WAN, MAN, LAN and equipment may be any components of the network either hardware or software.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Conversant with the features or function capacity of the current network or equipment • Expert of network architectures, technologies, (data, voice, wireless, RF technologies), network components, software application, etc • Possess extensive experience in performing requirement analysis with effective communication skills for effective gathering of requirements and field information • Expert of software design techniques 6.2 Design new network/equipment that can be integrated with the current network(s) Be able to: • Work with colleagues, customers, vendors to understand various entities of the current network or equipment. This may include interfaces, performances, operating characteristics, etc • Acquire the requirements of the new network or equipment, such as performance, demographic coverage, resilience, etc • Analyse and evaluate various impacts such as physical attributes, environmental, current networks, laws, cost, and manpower; together with new requirements to formulate possible options • Formulate a design plan conforming to enterprise or customer requirements using appropriate design techniques • Include relevant new design in the design plan inclusive all technical characteristics, functions, performance, network diagrams, resource required to develop the network or equipment • Present the design plan to stakeholders with recommendations 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Design networks or equipment to comply with government regulations and follow the organisation standards and policies	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate with various stakeholders (colleagues, customers, etc.) to identify current status of network or equipment and new requirements of new network or equipment ii. analyse the impact of proposed equipment or network on existing network infrastructure before proceeding to the actual design	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Define network deployment strategies
2. Code	ITCSNO513A
3. Range	This UOC concerns defining deployment strategies for internal network or network for clients. Networks can be voice, data, wireless, mobile, WAN, MAN, LAN, etc.
4. Level	5
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Expert in network capacity planning and customer SLA determination • Extensive knowledge in network architectures, network technologies and their operating characteristics, inclusive routing, transmission, etc. • Extensive experience in project management and network deployments • Extensive knowledge in security and risk management in network architecture • Understand health and safety procedures, government regulations, compliances, etc. 6.2 Define network deployment strategies Be able to: • Assemble and lead the planning and deployment teams in designing an appropriate deployment strategy • Identify the network deployment requirements, such as network architecture, performance, resilience, size, schedule, configuration, etc. • Create several deployment scenarios • Perform lab testing or modelling of the network deployment scenarios (refer ITCSNO514A – Perform network modelling) • Choose a suitable rollout/deployment plan (parallel, pilot, phased, localised area or “big bang”) after considering the possible effects, cost, resource requirements and risks to business, internal departments and external customers • Document and finalise the rollout plan with schedules, manpower requirements, responsibilities, migration and rollback (recovery) plan • Distribute documents to appropriate stakeholders and presentation of the model to stakeholders may be required 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Deploy networks that satisfy clients (internal and/or external) and comply with organisation standards and regulatory requirements • Follow safety procedures at every step and work production to meet required quality standard
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - coordinate with planning and deployment teams to formulate an appropriate deployment strategy - apply scenario based modelling to determine the suitable deployment strategy - create plans and schedules for deployment and with consideration for rollback on deployment failure
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform network modelling	
2. Code	ITCSNO514A	
3. Range	This UOC concerns network modelling when designing internal networks or networks for clients. Networks can be voice, data, wireless, mobile, WAN, MAN, LAN, etc.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand requirements from either internal or external customers and the current network architecture and characteristics • Experienced with network capacity planning (current and growth forecast) • Conversant with current and emerging technologies and their applications • Extensively experienced with various network architecture, network technologies and its operating characteristics, inclusive routing, switching, transmission, etc. • Experienced with network simulation and modelling techniques and use of application tools. • Understand health and safety procedures and government regulations 6.2 Perform network modelling Be able to: • Define and design different network scenarios based on the customer requirement, such as different network architectures, performance, resilience, sizes, schedules, etc. • Identify network components required hardware, software, site, materials • Feed in the network requirements and components details into simulation application. • Build prototype for proof of concept (POC) to understand performance, availability, reliability and resilience, etc • Identify the necessary documents and the required format and relevant information to facilitate decision making or network implementation. This information includes: network design plans, drawings, routes, performance figures, etc. • Manage the documentation process and present the models to stakeholders with recommendation for deployment 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - liaise effectively with customers to acquire the network requirements accurately - plan and produce different network scenarios for modelling - design modelling or/and network testing tools that can be used to determine the feasibility of the planned network designs - prepare the appropriate documentation and recommendation in the format required by stakeholders (internal department or external customers)	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform design that can be interconnected with national and international gateways	
2. Code	ITCSNO515A	
3. Range	This UOC concerns designing network coverage to interconnect with national or international gateways such as IPX (IP Exchange). Network in this context could be data and/or voice (VOIP), wireline or mobile network	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Extensively knowledgeable of the organisation's business plan, interoperating challenges, services requirements and legal matters • Possess extensive knowledge of various standard network technologies for wired-line and mobile network such as ATM, GSM, LTE, NGN, etc. • Extensive knowledgeable and can exploit the advantages of open platform standards, virtualisation and green technology • Knowledgeable of the National or International gateway/exchange specifications • Possess extensive experience in IP and MPLS network infrastructure planning, deployment, and integration • Extensively knowledgeable in network design methodologies and objectives such as "dynamic network growth from market based driven", network virtualisation provisioning, inter domain/operator resource management, etc. • Possess extensive experience with various inter-operator's architecture functionalities such as seamless mobile users, roaming, terminals, and services between administrative domains, etc. • Experienced with operating network prototype or simulation tools 6.2 Perform design that can be interconnected with national and international gateways Be able to: • Gather information related to the organisation's network such as network technology, protocol, administrative systems, OSS, etc. • Work with gateway/exchange supplier to understand the specifications of the gateway/exchange • Formulate an initial design of the interconnection • Use NDP (Network Design Platform) tools to simulate the constructed network to determine feasibilities of different scenarios and implementation options to determine an optimal design that can be connected to the national or international gateways/exchanges • Ensure documentation of the network design with implementation details for connecting interface from intra-network to the national or international gateway/exchange is completed to required standard • Present and seek approval from stakeholders on the proposed design and proceed to deployment 6.3 Exhibit professionalism • Produce network designs meeting national or international gateway standards that can enable administrative functions to operate seamlessly • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with colleagues to understand the intra-network ii. work with national or international gateway/exchange operators to determine the specification of the network interface and administrative functions for interconnection iii. formulate a suitable design to interconnect intra-network with the national or international networks. The design should be well documented in a manner that can be easily understood by its readers iv. present effectively the design to stakeholders with suitable recommendation and seek approval for the design
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform design that can be integrated or connected with local operator's network	
2. Code	ITCSNO516A	
3. Range	One of the most challenging tasks of network designers is to design networks that can be seamlessly integrated with other operator's network equipment or functions such as: mobile terminals, access routers, access network nodes and service provisioning platforms, billings, etc. This UoC concerns designing network coverage that can be integrated or connected with local operator's network (inter-network). Network in this context could be data and/or voice (VOIP), wireline or mobile network	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Extensively knowledgeable of the organisation's business plan, interoperating challenges, services requirements and legal matters • Possess extensive knowledge of various standard network technologies for wired-line and mobile network such as ATM, GSM, LTE, NGN, etc. • Extensively knowledgeable of and can exploit the advantages of open platform standards and virtualisation • Possess extensive experience in IP and MPLS network infrastructure planning, deployment, integration, etc. • Possess extensive knowledge of network design methodologies and objectives such as "dynamic network growth from market based driven", network virtualisation provisioning, inter domain/operator resource management • Possess extensive experience with various inter-operator's architecture functionalities such as seamless mobile users, roaming, terminals, and services between administrative domains, etc. • Possess extensive experience in project management and network deployment 6.2 Perform design that can be integrated or connected with local operator's network Be able to: • Lead a team or work with colleagues to identify inter-operating functional parameters such as billings, roaming, network access, performance, etc. • Work with other operators to study technical and administrative setup of inter-connecting networks and identify differences in OSS interconnections, network interfaces, protocols, event notifications, etc. • Design inter-operating network interface and align functions of the interconnected networks • Use NDP (Network Design Platform) tools to simulate the interconnected network to understand connectivity or services issues • Ensure the documentation of the network interface enabling the intra-network to interconnect with other operators which specifies appropriate setting or configurations on OSS to allow automated charging and inter-services. The documents should include possible risks associated with the interconnection which may affect operation of the network or business services • Present with suitable recommendations and seek approval from stakeholders on the proposed design for deployment 6.3 Exhibit professionalism • Produce network designs that conform to the organisation standards and meet regulatory requirements • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with colleagues to determine the inter-network requirements ii. work with fellow operators to determine network interface and administrative needs iii. use simulation tools to understand interconnection or services issues to reduce any risks iv. formulate suitable designs to interconnect with other operators networks and functions that fit the business needs of the interconnected networks v. Present the design to stakeholders effectively with recommendation and seek approval
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform network infrastructure design	
2. Code	ITCSNO517A	
3. Range	Setting up a core network infrastructure requires a comprehensive number of tasks including network design, site acquisition, network installation, network to service deployment, etc. This UoC only concerns network coverage design of the core network. Network in this context could be data and/or voice (VOIP), wireline or mobile network.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the organisation's business plan, interoperating challenges, services requirements and legal matters • Experienced in network capacity planning (current and growth forecast) • Possess knowledge of various types of wired and mobile network technologies and vendor related products • Possess extensive experience in network infrastructure planning, constructor drawings, rooftop structure mapping, facility requirement, such as cabling, termination systems, etc. • Extensively knowledgeable of various network architectures, network technologies (ATM, GSM, LTE, HSDPA, WiMAX, etc.) and its operating characteristics inclusive routing, transmission limits (RF), cables impedance, etc. • Knowledgeable of network security risk and contingency planning • Possess extensive experience in using appropriate tools for network design drawings, prototyping, simulation, etc. • Understand health and safety procedures and government regulations 6.2 Perform network infrastructure design Be able to: • Work with colleagues to identify the type of networks or services to be constructed to conform to the organisation's business plan. Other factors include: type of services offered, traffic type, performance, coverage, budget, etc. • Collect geographical information (maps, building plans, site drawings, utilities maps, existing cabled networks, regulatory requirements, etc.) related to the planned network and determine any site or technical limitations which may affect the implementation of the network equipment • Identify locations most suitable for construction of transmission hub, antenna, switches, street cable, etc • Use various NDP (Network Design Platform) tools to simulate the constructed network to determine feasibilities of different scenarios and implementation options. Use the simulated results to formulate different design options • Select and document the network design options with network diagrams and network implementation details, such as network technology, protocol, cabling, traffic control/transmission equipment, transmission towers, switches, fall over and recovery plans, contingencies, etc. • Present and seek approval from stakeholders on the proposed design for deployment	

	6.3 Exhibit professionalism • Produce network designs that fulfil the needs of the customers • Represent the organisation in a professional manner when dealing with external parties • Communicate with users at a correct level that can avoid misunderstanding
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with stakeholders to understand the core network requirements ii. gather the necessary plans, documents, and related materials of the proposed designed network to understand any possible issues, legal requirements for the construction of the network iii. use appropriate tools to derive an optimum network design that meets the requirements iv. present various design options to stakeholders effectively v. make a recommended design with supported details and seek approval
Remark	

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Design procedures for operational staff to follow	
2. Code	ITCSNO518A	
3. Range	This UoC concerns designing instructional procedures for operating staff that needs to operate networks or use network equipment. Staff may be NOC personnel, field engineers, technicians or other supporting personnel.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with the use of equipment/system manuals and specifications • Extensively knowledgeable of specifications and relevant company policies and documentation • Extensively experienced with instructional design/learning techniques • Extensively knowledgeable of the operational tasks and resources of concerned procedures/tasks • Experienced with documentation techniques, company standards and use of standard templates or appropriate tools • Extensively experienced with project management and resource management • Understand relevant legislation, codes, regulations and standards 6.2 Design procedures for operational staff to follow Be able to: • Steer a team and be prepared for the procedure design by familiarising with the actual operation. Determine the required manpower, type of skills, operating environment, sequence of tasks, etc • Prioritise the tasks. Break large tasks to subtasks if necessary and identify tasks needed to be performed concurrently and those needed to be in order of sequence • Define each task's pre-requisites (personal, tools, materials, etc.), detail actions to be performed and state possible risks, recovery actions and how to verify the successful completion of tasks and who, if any, performs the signoff • Manage the documentation of the procedures in accordance with the company standard formats or guidelines 6.3 Exhibit professionalism • Produce network designs that conform to the organisation standards and meet regulatory requirements • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - grasp the NOC (Network Operation Centre) day to day operation procedures, task handling methodologies, policies, documentation standards - identify the task functionalities to which the procedure is targeting at - decompose large complex task to modules and smaller related tasks - write operational procedure of each module or "sub-tasks" conforming to the organisation standards	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform contract negotiation	
2. Code	ITCSNO519A	
3. Range	This UoC concerns with selecting the appropriate network equipment suppliers/vendors by contract negotiation. Negotiation of contract needs to consider many parameters, not just the lowest price, to ensure the right vendor is selected for a long term relationship so that no shortage of required component/part during the life span of the network.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Experienced with identifying and formulating network equipment (voice, data, mobile, wireless) requirement specifications such as function, performance, size, etc. • In tune with new technologies and trends, network architecture, market pricing • Knowledgeable of vendor products, steps involved in planning, conducting, and documenting contract negotiations • Knowledgeable of local laws, IP (Intellectual Property) rights, contract laws • Experienced with business analysis and interpersonal skills • Possess extensive experience with various negotiation techniques, people management and effective personal communication techniques • Understand health and safety procedures, government regulations, compliances, etc. 6.2 Perform contract negotiation Be able to: • Comprehend the business goals and the objectives of the contract in preparation for the right level of the negotiation process • Perform analysis of terms and conditions, recognise potential risks and unacceptable terms • Plan the strategic and tactical (counter tactics) approach to telephone or face-to-face negotiation situations • Organise and coordinate the negotiation (make arrangement, schedule, set agenda, etc.) • Participate in the negotiations and formulation of agreements • Manage documentation and oversee the agreement signing and binding of the contract. • File the final signed contract and send to appropriate departments for filing. 6.3 Exhibit professionalism • Know the limits of negotiation and well prepared for the negotiation task • Conduct the negotiation at a level matching the granularity of the contract • Always take into consideration and strike a proper balance among all related parties	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - determine the objective and importance of the contract so that a suitable negotiation strategy can be planned - negotiate the contract effectively to benefit the organisation by exercising flexibility and good judgments - complete the required documentation on the agreement, if successful and identify the possible areas of improvement for unsuccessful agreement	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Perform network optimisation	
2. Code	ITCSNO520A	
3. Range	This UoC concerns managing the network to operate at most efficient mode by reviewing and adjusting quality of voice, speed, routing, antenna alignment, security, etc. Networks can be voice, data, T1, T3/DS3, backbone, fibre connections, FTTB, FTTH, mobile network, etc.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience in network architecture, diagrams, network operating capacity, demographic layout of networks, performance characteristics of network components • Capable of determining when, where, how to setup tools to collect statistics for analysis • Possess experience with analysing current and historical network statistics reports from network monitoring tools, logs, or from other departments, etc. • Knowledgeable of the organisation's performance pledge and quality policy, customer SLA, etc • Experienced with the steps in performing optimisation: Assess, Structure, Accelerate, Operate and Scale • Possess extensive experience in network traffic management, queuing analysis, traffic modelling, traffic flow control, network medium access control (MAC) protocol, etc 6.2 Perform network optimisation Be able to: • Determine the objective of performing network optimisation: relief of rogue traffic, customer complaints, increased traffic loading as well as adjustment of network characteristic (routing, bandwidth and latency). • Analyse current network traffics from reports, monitoring statistics, logs. Review and plan the desired network performance with consideration for new projects and service growth • Structure the network traffic with tools, technologies and policies to meet the needs of projects, services, etc. • Perform adjustment to accelerate (or improve quality of) certain traffics within the network using newer optimisation technologies. Testing and simulation procedures may be applied to ensure desired quality or performance achieved with minimal network disruptions • Resume service with the optimised setting. Continue to monitor network traffic and adjust performance setting if required • Scale (extend) the optimisation to other networks or services to reap the benefits • Document and report to stakeholders (customers or internal departments) of actions, adjustments, improvements made to the network or components of the network 6.3 Exhibit professionalism • Follow health and safety procedures while using tools and electrical equipment to perform network optimisation • Ensure all reports are documented in the format conformed to the organisation standards and policies • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. study network infrastructure and communicate with users, colleagues to identify where and what type of network optimisation is required. ii. verify that network does required optimisation by using various tools and logs iii. plan and perform network optimisation by replacing equipment, adjusting network configurations until the target optimised result is achieved
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Define software application requirements for Network Operating Centre (NOC) use	
2. Code	ITCSNO521A	
3. Range	NOC is the heart of network operations, with 24x7 monitoring and fault detection of a network (voice, data, mobile). It is equipped with tools to help full management of day-to-day operation. Many of these tools are internally developed software to form a “unified management system” which can cater for network configuration, alarm collection, management, and performance measurement. This UoC concerns about defining OSS (Operation Support System) application for NOC use.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically knowledgeable of the objectives of defining new tools/applications to be used in NOC (i.e. to assist the staff efficiency, add new operational features for efficient NOC, additional functions to support the new or existing networks, etc.) • Extensively experienced with the NOC’s day-to-day duties and may include first tier support of the OSS applications • Extensively experienced with NOC operational management systems. Note: For ease of operation, most NOCs will prefer to use a single unified management system which monitors all network activities and configures network components, etc • Possess extensive knowledge of software development processes (i.e. translate the needs of NOC to software requirements and assimilate multivendor products to a unified management system) • Knowledgeable of the “Green” NOC concept • Experienced with software engineering and system analysis (i.e. from requirement gathering to development and operation) 6.2 Define software application requirements for Network Operating Centre use Be able to: • Gather all operational factors concerning the networks and NOC, such as connection point of access network to CPE (Customer Premises Equipment), what is monitored, what alarms, types of alarms, level of automation required, types of user interfaces, types of operational tools used to assist staff, etc • Gather functional requirements of new tools or applications from colleagues of NOC. If a completely new NOC is to be set up, use existing sites as a reference and add new functional applications to improve efficiency • Analyse and prioritise the requirements and translate human requirements to non-functional requirements (GUI, usability, performance, etc.) and functional requirements (traffic monitoring, alarm configuration, routing function, etc.). During the analysis stage, Green elements should be considered as a higher priority • Document the application requirements conforming to the organisation standards and policies and distribute to appropriate people for agreement, approval and development. This document will also need to define how the application be interfaced with existing NOC applications or monitoring equipment. It may need to recommend how this application be developed (i.e. purchase (“off-the-shelf”), in-house development, completely outsourced, or partially outsourced, etc.) 6.3 Exhibit professionalism • Ensure requirements are acquired by following software engineering practices • Ensure all reports and documents are created in the formats	

	conformed to the organisation standards and policies • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - identify what applications (enhanced or new) are needed in the NOC - use software engineering techniques to work with colleagues to gather and document the requirements accurately - specify how these applications be integrated with the existing NOC systems - study the requirements and recommend how these applications be implemented (internally developed, purchased, outsourced)
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Identify internal software development needs	
2. Code	ITCSNO522A	
3. Range	More and more software is being used in NOC to support networks and many of the network infrastructure components are software based. It is essential to have the right development so that new programs are developed or existing programs are maintained with speed and quality. This UoC concerns identifying the right environment for software development. The concerned software is those that are used internally, either as supporting tools or enhancements of vendors' telecom equipment like software switches.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with software engineering and software development life cycle, in particular knowing to have the right person performing the requirement gathering, producing the right design to produce high quality software (three elements of software development: people, process and design) • Possess extensive experience with NOC operation management systems i.e. knowing what operational functions are required to keep the NOC running smoothly and what software is required for monitoring, alarm detection, statistics gathering, network configuration, etc. • Extensively experienced with project management and resource planning, understanding project documents such as requirement specifications, design specifications, etc. • Knowledgeable with the organisation policies associated with software development and performance pledge 6.2 Identify internal software development needs Be able to: • Estimate the magnitude of the software development from functional specifications, design documents and overall project timeline • Analyse each function and estimate the resources required to develop and test the associated software. Resources mean people, hardware (computers and network components), software (OS, IDE, and compiler), API (Application Programming Interfaces) to vendor products, and network testing tools like simulators, etc. • Define the level of technical skills required from the development team, such as programming language skills, program and unit testing skills, document writer skills, etc • Document the resource needed in accordance with the organisation format and policies and present to stakeholders 6.3 Exhibit professionalism • Apply software development life cycle and other software engineering techniques throughout the project • Ensure all documents produced follow the organisation required formats and standards • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - work with colleagues or study from documentations to determine and understand the magnitude of the software project being developed - break large software developments into units of programs and categorise these programs into different types - determine the resources required for different categories of programs and calculate the total resource required for the software project - document the resources requirements, with justification in format which can be understood by non technical readers	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Formulate functional requirement and software design specification	
2. Code	ITCSNO523A	
3. Range	When developing applications it is essential to have the functional requirements clearly identified and agreed with stakeholders before the application design can begin. This UoC concerns with defining competencies for formulating functional requirements and design specification.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Knowledgeable of the objectives and the importance of formulating requirements and design specifications • Experienced in managing functional requirement gathering • Possess extensive experience with the methodologies to formulate high level design • Possess extensive experience in the software development life cycle (SDLC) processes (i.e. translate the needs of users to software requirements, then high level and low level design as well as program development, testing, etc.) • Possess extensive experience in software engineering and system analysis (i.e. from requirement gathering, to development and operation) 6.2 Formulate functional requirement and software design specification Be able to: • Work with users to formulate, analyse, synthesise, and develop the functional requirements • Prioritise the requirements to align with the organisation's software implementation plans and strategies • Document the functional requirements as formal SRS (Software Requirement Specification) • Review SRS and agree with users on requirement specification contents • Perform software design based on the SRS, using the organisation's adopted methodology • Document the design, indicating any assumptions, dependencies, limitations, and constraints regarding the software or hardware, operating system, end user characteristics, etc. • Analyse and validate the formulated design for meeting the requirements in the SRS. • Critically re-evaluate the design to determine its sufficiency in support for the business processes. Propose to enhance the requirement specification, if necessary • Review the design specification with stakeholders for agreement and perform handover to development phase 6.3 Exhibit professionalism • Adopt software development methodologies of the industry or the organisation • All documents are created in the format conformed to the organisation standards and policies.	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - work with users effectively to identify software functional requirements - document and validate the SRS to meet the user needs while align with the current project objectives - analyse and transform the requirements from SRS to a high-level design, produce a design specification following the industry or organisational methodology - document the design with assumptions, if any - review the design at the correct level of the stakeholders to obtain approval and signoff of the design work	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Determining resource requirement for NOC operation	
2. Code	ITCSNO524A	
3. Range	NOC is the heart of network operations, providing 24x7 monitoring and fault detection of the network (voice, data, mobile). To enable the NOC operates effectively and efficiently, there must be a well developed plan and sufficient resources. However, resources must be optimally used to maximise OPEX. This UoC describes the competencies for determining resources requirement for NOC (Network Operation Centre) operation. Resources may be personnel, financial, or software and hardware, etc.	
4. Level	5	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience in resource management for NOC • Knowledgeable of the NOC's day-to-day duties and familiar with first tier support requirements • Possess extensive knowledge of the organisation's SLA (Service Level Agreement) policies and commitments • Experienced with risk management methodologies and techniques • Experienced with project management scheduling and planning tools • Experienced with resource requirement gathering techniques • Able to communicate effectively with various stakeholder and colleagues 6.2 Determining resource requirement for NOC operation Be able to: • Work with colleagues to identify resources required for day to day operation of the NOC • Define a list of resource requirements based on the NOC's supporting roles/tasks • Analyse and prioritise the requirements with consideration on various weighting or risk factors • Use tools or a resource allocation methodology to calculate the resources required of each task and the overall resources required for the NOC. This should also include financial costs • Document and present the current allocated resources and resource requirement trends to appropriate parties for resource planning 6.3 Exhibit professionalism • Ensure all reports and documents are created in the format conformed to the organisation standards and policies • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - work with colleagues to identify the required resources that are needed in the NOC to operate effectively and efficiently - effectively list and categorise the tasks into types, criticality and risks - apply a formula to calculate the resource required for each task of the NOC - clearly document the allocation methodology and resources required for the NOC and submit to appropriate stakeholders for approval or planning	
Remark		

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

Functional Area: Network Infrastructure & Operation (Operation, Support & Maintenance)									
1. Title	Define operating quality planning policies								
2. Code	ITCSNO525A								
3. Range	Quality management affects the whole image of a company in the Communications and Information Services industry. Hence, the concept of quality must be designed into the day to day staff procedures. This UoC concerns translating quality policies into measurable objectives and requirements for network operations. This includes the areas of NOC (Network Operation Centres), site engineers, cable or RF engineers, etc.								
4. Level	5								
5. Credit	2								
6. Competency	<table><tr><td colspan="2"><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Expert in quality management standards like ISO 9001 as well as quality frameworks and practices • Possess extensive experience with network operation centre (NOC) procedures and the organisation's mission and vision • Familiar with the organisation business goals and quality requirements • Possess knowledge of basic networking and customer service concept • Critically understand the importance of team work to achieve the organisation's quality plan • Knowledgeable of local government's (OFTA) telecommunication laws and requirements • Knowledgeable of Green concepts </td></tr><tr><td>6.2 Define operating quality planning policies</td><td> Be able to: • Lead a team or participate as a quality development team member to understand the organisation's operational procedures and quality needs • Review, classify and prioritise operation procedures and build major task maps for quality policy planning • Formulate policies for major tasks, such as objectives, requirements, commitments, service levels, targets, standards, rules, etc. Where possible, include green elements in the policies • Document the policies in accordance with the organisation's standards and formats • Present the policies documents to all concerned people (staff and managers) • Carry out training and briefing sessions to fortify the policies </td></tr><tr><td>6.3 Exhibit professionalism</td><td> • Familiarise with the organisation documentation policies and ensure all documentation is created in the required standards • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors </td></tr></table>	<u>Performance Requirement</u>		6.1 Possess the knowledge in the subject area	• Expert in quality management standards like ISO 9001 as well as quality frameworks and practices • Possess extensive experience with network operation centre (NOC) procedures and the organisation's mission and vision • Familiar with the organisation business goals and quality requirements • Possess knowledge of basic networking and customer service concept • Critically understand the importance of team work to achieve the organisation's quality plan • Knowledgeable of local government's (OFTA) telecommunication laws and requirements • Knowledgeable of Green concepts	6.2 Define operating quality planning policies	Be able to: • Lead a team or participate as a quality development team member to understand the organisation's operational procedures and quality needs • Review, classify and prioritise operation procedures and build major task maps for quality policy planning • Formulate policies for major tasks, such as objectives, requirements, commitments, service levels, targets, standards, rules, etc. Where possible, include green elements in the policies • Document the policies in accordance with the organisation's standards and formats • Present the policies documents to all concerned people (staff and managers) • Carry out training and briefing sessions to fortify the policies	6.3 Exhibit professionalism	• Familiarise with the organisation documentation policies and ensure all documentation is created in the required standards • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
<u>Performance Requirement</u>									
6.1 Possess the knowledge in the subject area	• Expert in quality management standards like ISO 9001 as well as quality frameworks and practices • Possess extensive experience with network operation centre (NOC) procedures and the organisation's mission and vision • Familiar with the organisation business goals and quality requirements • Possess knowledge of basic networking and customer service concept • Critically understand the importance of team work to achieve the organisation's quality plan • Knowledgeable of local government's (OFTA) telecommunication laws and requirements • Knowledgeable of Green concepts								
6.2 Define operating quality planning policies	Be able to: • Lead a team or participate as a quality development team member to understand the organisation's operational procedures and quality needs • Review, classify and prioritise operation procedures and build major task maps for quality policy planning • Formulate policies for major tasks, such as objectives, requirements, commitments, service levels, targets, standards, rules, etc. Where possible, include green elements in the policies • Document the policies in accordance with the organisation's standards and formats • Present the policies documents to all concerned people (staff and managers) • Carry out training and briefing sessions to fortify the policies								
6.3 Exhibit professionalism	• Familiarise with the organisation documentation policies and ensure all documentation is created in the required standards • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors								
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with team members to deploy the organisation's quality policy ii. plan and prioritise quality policies to fit with the organisation's business plans iii. use of suitable methods such as training, to deploy and fortify the quality policies								
Remark									

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Define KPIs for measuring quality of network performance and capacity
2. Code	ITCSNO526A
3. Range	For continuous monitoring and improvement of an operating network, it is essential to have metrics and KPIs (Key Performance Indicators) which are used as baseline. This UoC concerns defining KPIs for measuring the performance and capacity quality of telecom operators' networks, which may be wireline or wireless (mobile) network. KPIs may include: cut-off calls, call success rate, post call delay, session establishment rate, session disconnect failure, average call duration, average hops, latency and jitters, packet loss, error counts, bit rate, bit error rate, idle network time, network traffic and congestion, network coverage (% of land coverage, % of population covered), average fault identification time, average time to fix faults, etc.
4. Level	5
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of quality management standards such as ISO 9001 and quality frameworks and practices • Knowledgeable of the organisations' performance pledge and quality policies, customer Service Level Agreement (SLA), etc. • Possess extensive experience with network architecture, diagrams, network operating capacity, demographic layout of networks, performance characteristics of network components • Knowledgeable of network traffic management, queuing analysis, traffic modelling, traffic flow control, network media access control (MAC) protocol, etc. • Possess experience with the KPI definition cycle: define, apply, act, and review 6.2 Define KPIs for measuring quality of network performance and capacity Be able to: • Investigate and comprehend current KPI metrics associated with current network capacity and performance, if any • Review current KPIs metrics with colleagues to determine whether the current KPIs require adjustment to achieve a better performance • Identify any new or obsolete KPIs needed to be added or removed • Formulate metrics for KPIs to reflect the new desirable performance • Define the measurement controls that can determine the effectiveness of each KPI and define the review schedules • Manage the documentation of KPIs in accordance with the organisation's standard KPI template • Disseminate and present the proposed KPIs to operation managers for implementation and capacity planning 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance between the organisation and all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - use historical and current network information to formulate baseline for KPI measurement - determine the effectiveness of existing KPIs - define what/which KPI is necessary and add/delete/adjust KPI for quality control or improvement - work with other stakeholders to formulate acceptable and useful KPIs
Remark	

Functional Area: Network Infrastructure & Operation (Operation / Support & Maintenance)

1. Title	Define and maintain service level to customers	
2. Code	ITCSNO527A	
3. Range	Service Level is a quality of services which an organisation commits to its customers. When dealing with individual customers there are SLA (Service Level Agreements) which may be tailored to meet customer requirements. The agreement or commitment may include: a specific level of service, support options, guaranteed level of performance, as related to network or connection, response time, penalty on failure of commitments, etc. The agreed level depends on the type of services required by customer, the type of services offered by the organisation, the budget, etc. This UoC describes the competencies for defining and maintaining Service Level for network support to external customers in addition to the organisation standard commitments/policies.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically knowledgeable of the organisation's policies regarding network support Service Level • Possess extensive knowledge of the technical support capabilities and resource level of the organisation/department • Possess extensive knowledge with the customer's requirements regarding the level of support • Experienced with teamwork, coordination skills and good interpersonal skills including drafting SLA proposals/agreements • Knowledgeable with health and safety procedures, government regulations, compliances, etc • Possess extensive knowledge of the customer service techniques 6.2 Define and maintain service level to customers Be able to: • Liaise with customers to determine the required network services and support needs of the customers • Draft a SLA proposal based on the customers' needs, their budget, and the organisation's support capabilities and resources, etc. The SLA may include: scope of work, performance, tracking and reporting, compensation, duties, responsibilities, legal compliance, warranties and remedies, intellectual property rights and confidential information, schedule, etc. • Present the SLA proposal to peers and the customers during the presentation negotiation, and perform refinements as needed • Coordinate the signing of the SLA between the organisation and customers • Inform relevant stakeholders to activate the SLA; provide regular "audits, tracking and reports" to customers as a means of maintaining the SLA 6.3 Exhibit professionalism • Ensure the SLA is drafted and presented as a formal legal contract conforming to legal and/or organisation's standard	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate effectively to understand the clients/users required services or support needs ii. draft an SLA to fulfil the required services/supports of the clients based on the capacities of the organisation's resources iii. present and negotiate a service level to produce a final version of the SLA for signoff iv. ensure appropriate parties have copies of the SLA for actions v. understand the service metrics being measured and penalties on failure of the SLA
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Implement logging of access and usage	
2. Code	ITCSNO528A	
3. Range	A telecom operator provides many services to its customer. It is essential that it can monitor when their customers are connected to the network. There are many reasons for this, including security control, bandwidth control, network loading control, etc. This UoC describes the competencies for implementing functions that can log a user access and usage. Log management is part of an OSS (Operational Support System) function which usually is the responsibility of the NOC (Network Operation Centre).	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess knowledge of the functions and responsibility of the NOC • Experienced with security policies, operation principles and best practices • Possess extensive knowledge of the network infrastructure and the services it provides • Possess extensive knowledge of OSS functions, particularly in the area of logging, monitoring and security • Possess extensive knowledge of OSS control with commands or other scripting or programming languages. • Possess extensive knowledge of the API (Application Programming Interface) of OSS or network components • Work with others to acquire requirements and convey technical knowledge regarding security and OSS logging features and functions • Knowledgeable of health and safety rules and hazards. 6.2 Implement logging of access and usage Be able to: • Work with stakeholders (internal or cross departments) to acquire access and usage logging requirements, such as where (OSS level, device level), level of information details to capture, format of output (alarm, report, screen message, etc), interface to other systems (billing), etc • Evaluate options that can be used to implement the logging requirements in conjunction with existing security features of the OSS or other network components e.g. manual based, automatic with standard functions, automatic with added self developed routines, or purchasing additional OSS modules, etc • Design procedures, tools, or manual routines to accomplish the required output for logging of access and usage requirement with existing security interfaces • Perform programming or purchasing of new OSS module enhancement • Perform testing of newly implemented access and usage logging functions • Document the requirements, designs, and interfaces, programs of new access and usage functions. Create user manual on operations of the new functions and perform training, if necessary 6.3 Exhibit professionalism • Follow the health and safety guidelines of the organisation while implementing logging functions • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors • Always strike a proper balance among all stakeholders	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. communicate effectively with stakeholders to understand the logging and security requirements, types of reports and interfaces to other systems, if needed ii. evaluate different options to satisfactorily implement the logging requirement iii. perform implementation of the logging functions with tests to demonstrate it is performing as expected iv. effectively transfer operational knowledge of the logging functions by means of training, and/or documentation
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Define network security policies
2. Code	ITCSNO529A
3. Range	Without a security policy, the availability of the network can be compromised by hackers, fraud users, and poor workmanship such as incorrect configuration of routers and switching equipment. It will create problems for network support teams and certainly business will be affected. The policy begins with assessing the risk to the network and building a team to respond. This UoC describes the competencies for defining network policies.
4. Level	5
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the organisation's policy formulation mechanism and business needs. • Knowledgeable of the organisation's security policies • Possess extensive knowledge of telecom regulatory requirements, particularly security related • Experienced with the network infrastructure and all the services that it supports • Possess extensive knowledge of security principles and best practices • Expert in analysing and identifying various security risks such as possible method of attacks on signalling layer, database of subscribers, network elements, gateways, frauds, and service interruptions, etc. • Knowledgeable of health and safety rules and hazards. 6.2 Define network security policies Be able to: • Perform security risk analysis of the network by identifying assets, threats and vulnerabilities of the network infrastructure and its components • Rank the different assets in order of importance for the business • Identify threats and risks to the organisation's assets, such as: unauthorised access/use of resources (authentication), Denial of Service (availability), leakage of information (confidentiality), corruption/unauthorised change of data (integrity), natural disasters. etc • Evaluate different alternatives to handle the risks • Group the risks into categories in terms of: must be minimised/eliminated, should be minimised/eliminated or acceptable • Plan the appropriate security mechanism (what to implement, how to monitor the effectiveness) conforming to the organisation's policies, for the 3 risk categories • Document the security policies with review schedules • Distribute policy to appropriate stakeholders for implementation and enforcement such as: security officers, NOC (Network Operation Centre), network engineers, service desk, etc 6.3 Exhibit professionalism • Ensure the policy is written in a manner that can be understood by non technical person and comply with the organisation standards • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. comprehend the organisation's security policies and apply these security needs to the formulation of network security policy ii. identify the risks and categorise the type of risks associated with the network iii. formulate suitable risk mitigation procedures to handle different categories of risk iv. effectively transform the mitigation procedures to network security policies v. disseminate the policies to stakeholders to comprehend and take appropriate action such as: approval, signoff, implementation and enforcement
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Define access control in network systems	
2. Code	ITCSNO531A	
3. Range	A network is a common means of connecting devices and sharing resources. A network system is a mesh of interconnected devices on a LAN, WAN or MAN. Controls are required to manage authorised access to the network system. This UoC describes the competencies for defining access control to network systems from a telecommunicate services provider perspective i.e. controls at “Access network” level.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the organisation access and security policies • Extensively experienced with the organisation’s security framework or international standards regarding security framework e.g. ISO 17799 • Experienced with the organisation network infrastructure (hardware and software components) • Possess extensive experience with security principles, mitigation techniques, implementation of controls and best practices • Expert in analysing and identifying various security risks, such as possible methods of attacks on signalling layer, database of subscribers, network elements, gateways, frauds, and service interruptions, etc. • Fully comprehend the network access requirements of products and services • Knowledgeable of health and safety rules and hazards. 6.2 Define access control in network systems Be able to: • Work with the network support team to identify security risks • Group and rank the risks into three areas. The three areas to be considered are: Physical, Technical and Administrative • Define security controls for the three areas: <i>Physical Controls:</i> Security measures used to deter unauthorized access to the physical network using physical means, such as security guard, closed circuit TV, locks, etc. <i>Technical controls:</i> managing access without using physical structures, such as Encryptions, SIM cards, Network Authentication, etc. <i>Administrative:</i> defines human factors security determining which users have access to which resources: level of access, personal registration and accounting, training and awareness, separation of duties, disaster preparedness, etc. • Define benchmarks for measuring the controls. • Define monitoring and measuring procedures/plans. This procedure should also indicate the duties and responsible person for each control (i.e. define ownership) • Document the controls with what precautionary actions to take and remedies for security breaches • Distribute the security control document to appropriate stakeholders. Arrange briefings and presentations to ensure full comprehension of the contents and responsibilities	

	6.3 Exhibit professionalism • Ensure the defined protections are inline with the organisation security policies • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - communicate effectively with colleagues to determine the network access security risks; and rank the levels of risk - identify and formulate correct controls to enable legitimate authorised access is made to the network and unauthorised access is prevented - design effective monitoring and measuring functions or procedures that can measure the effectiveness of the controls so that weaknesses are countered and amended with speed - use appropriate means, such as training and documents, to ensure stakeholders are aware of these controls and able to put these control into operational use
Remark	

Functional Area: Network Infrastructure & Operation (Security)

1. Title	Define continuity and recovery policies	
2. Code	ITCSNO532A	
3. Range	Network failure will inevitably exist irrespective how well the network is maintained. The objective of any network operations is to build a mechanism to enable a network to run continuously as long as possible and recovery from outage as quick as possible. This UoC determines the competencies for defining network continuity and recovery policies. Network includes LAN, WAN, data and PSTN, transmission and radio (both fixed and mobile) network, various transmission paths like cable, fibre, radio and microwave, etc.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the organisation's policies formulation mechanism • Possess extensive experience with formulating risks and outage plans • Knowledgeable of the Service level of the organisation's network products and services • Possess extensive knowledge of security principles, security trends, mitigation techniques, implementation of controls and best practices • Experienced with the outage level or alarms. This is organisation specific but usually there are 4 levels (See remark) • Possess extensive knowledge of network infrastructure and all the services that it supports • Knowledgeable of health and safety rules and hazards. 6.2 Define continuity and recovery policies Be able to: • Identify the possible types of network outage such as scheduled and unscheduled maintenance, network overloading, network attacks, etc. • Rank and categorise the outage types in terms of the extent, timing and likely impact of network outage • Define suitable response actions and formulate procedures for each outage type. These procedures will be assigned different escalation levels so recovery is performed based on severity of outage and user tolerance level • Define a responsible person for each severity level to ensure prompt and appropriate decision making • Document the policies in the form of outage categories with continuity and recovery actions/procedures. Ensure all stakeholders are familiar with the policies by distributing copies of the policies and holding training and presentations 6.3 Exhibit professionalism • Ensure the defined protections are inline with the organisation security policies • Always take into consideration and strike a proper balance among all related technological, environmental and legal factors	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. understand the important effects and requirements of defining network recovery and continuity policies ii. identify the possible locations and types of network outage and the related magnitude of effect iii. formulate procedures to avoid total outage of the network iv. ensure effective recovery procedures are taken for different types or categories of outage v. substantiate the feasibility and effectiveness of these procedures vi. document these policies and procedures effectively vii. ensure the stakeholders are aware and can fully comprehend the policies
Remark	Outage categories/alarm: Priority 1 impact- demands immediate attention Priority 2 degradation – decision on type of attention depends on impact Priority 3 hazardous – attention given as part of normal activity Priority 4 no action – alarm noted

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Perform financial modelling of deploying new telecommunication networks	
2. Code	ITCSNO601A	
3. Range	This UOC applies to financial modelling of deploying new networks. Networks can be voice, data, LAN, WAN, MAN, wired or wireless, mobile 2G/3G/4G, WiMAX, LTE or NGN, etc.	
4. Level	6	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience in risk management, planning and business needs in network deployment • Experienced with network capacity planning (current and growth forecast) • Possess extensive knowledge of current and emerging technologies and its applications • Possess extensive knowledge of network architecture and network technologies • Possess extensive knowledge of the necessary network components involved for the modelling and its cost • Possess extensive experience in management and financial accounting techniques • Knowledgeable in financial modelling techniques and use of application tools such as Excel, etc. 6.2 Perform financial modelling of deploying new telecommunication networks Be able to: • Define and design different network scenarios, such as different network architecture, performance, resilience, size, schedule, etc. • Identify hardware, software, manpower, site, materials costs • Deploy appropriate modelling tools to related reports such as portfolio returns, possible CAPEX (constructors, rollout resource, equipment) and OPEX (site rental, power usage, manpower, etc.) • Manage the documentation process to ensure most of the key scenarios are included to facilitate decision making • Present and recommend a suitable model to stakeholders for consideration 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Follow the organisation's business plans and assist the company to achieve best ROI • Always look after the interest of the organisation as well as customers	
7. Assessment Criteria	The integrated outcome requirements of this UoCs are the abilities to: - use financial modelling tool and techniques with various network implementation factors to design suitable network for deployment - identify factors or parameters that can affect network deployment ROI - present effectively various design models to assist decision making	
Remark		

Functional Area: Network Infrastructure & Operation (Planning & Design)

1. Title	Identify/estimate cost of rolling out a new network	
2. Code	ITCSNO602A	
3. Range	This UOC applies to identify/estimate cost of rolling out a new network. Networks can be voice, data, LAN, WAN, MAN, wired or wireless, mobile 2G/3G/4G, WiMAX, LTE or NGN, etc.	
4. Level	6	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive experience with risk management, planning and business needs in network deployment • Possess extensive experience with network capacity planning (current and growth forecast) • In tune with current and emerging technologies and their applications • Possess extensive knowledge of network architecture and network technologies • Knowledgeable of the necessary network components required for the modelling and their cost • Possess extensive experience with financial modelling and use of computer application tools such as Excel, etc. • Critically understand the upgraded network features and/or new network requirement specifications and design specifications • Experienced with project management methodologies and proficient in using standard tools 6.2 Identify/estimate cost of rolling out a new network Be able to: • Lead a team to identify/estimate cost of rolling out a network • Consider different network scenarios, such as different network architectures, performance, resilience, sizes, schedules, etc. • Evaluate and analyse all factors required elements involved in new network deployment, such as hardware, software, manpower, site, material costs, etc. • Evaluate the service level required of the network, such as performance, resilience, backup, size to calculate the manpower • Formulate or acquire the network rollout plan from colleagues and estimate cost in items related to the network rollout such as: preparations, marketing, training, etc. • Acquire element cost from appropriate departments, such as vendors, marketing, contractors, HR, etc. • Define and create a network rollout modelling tool, if no such tool is available • Feed appropriate parameters into modelling or calculation tools and produce CAPEX and OPEX reports • Manage the documentation process to package all necessary documents, including the estimated cost reports for dispatching to stakeholders • Present the report and cost to stakeholders such as senior management and make appropriate recommendation for to assist network rollout decision making	

	6.3 Exhibit professionalism • Comply with the organisation's business and network operation policies and strategies • Always position and look after the organisation's interests • Construct networks complying to government regulations • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. identify the necessary network components (including manpower) and related cost required for new network from network design and rollout plans ii. use appropriate tools or the organisation standard calculation methodology to produce reports on costing such as CAPEX, OPEX for new network deployment iii. effectively present the reports to assist in decision making process
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Install related hardware and software	
2. Code	ITCSPL201A	
3. Range	This UoC applies to detailed steps and procedures in the installation of hardware (HW) and software (SW) to materialise the provision of product / service in concern. Essentially this step focuses on the HW and SW of vendors and outside parties.	
4. Level	2	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Install related hardware and software 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the necessity in installing related hardware and software for the actual delivery of goods / services ● Understand the need to arrange a suitable working environment to ensure proper functioning of the new HW and SW installed ● Understand the guidelines for providing technical support after installation of new HW and SW ● Be aware of the necessity in proper integration of new HW and SW into the existing configuration and their compatibility in functioning ● Be aware of the potential danger to the operation of existing computer system when problems do occur at this stage Be able to: ● Co-ordinate with all related external and internal parties for all preparation work before the installation of new HW and SW ● Work according to contract agreements in order to control the quality of outside parties before the actual installation (in case of outsourcing) ● Conduct the actual new HW and SW installation, utilising the minimum resources and effort ● Take effective actions and measures to ensure that the compatibility of new HW and SW with the existing computer system, which may incur alternative configuring, upgrading, tuning, etc ● In case of necessity, install or invoke tracing mechanism to measure the operation of new HW and SW, and report any abnormal cases on a timely basis ● Stick to all established documentation procedure to actually record details about the addition of new HW and SW, handling personnel, related vendors / parties and any other essential points, etc ● Arrange backup and supporting services for the new HW and SW, and in case of necessity increase or upgrade resources of the support team ● Take note of the potential increase in costs of operation after introduction of the new HW and SW, and report any significant deviations to management ● Clarify the responsibilities and establish proper follow-up procedures in case of problems with the newly installed HW and SW, and ensure all involved external and internal parties are aware of and agree with the arrangement ● Always work with full capacity and ability to ensure successful and proper installation of HW and SW ● Always stick to all established procedures and guidelines
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully arrange for the installation of new HW and SW with minimum effort ii. further ensure the proper functioning of the newly installed items and that problems are detected and tackled as soon as possible	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Gather responses from customers	
2. Code	ITCSPL202A	
3. Range	This UoC applies to all tasks and steps targeted for the gathering of responses from customers after introduction of a new product / service to the market. This is a highly important activity as findings should be used to fine-tune the related product to ensure its continuous success in the market.	
4. Level	2	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Gather responses from customers 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand that customers as the most important focus group for the company and their preferences determine the final success / failure of the product in concern ● Understand the key necessity for gathering responses and feedbacks from customers, and the step should be done in an accurate and timely manner ● Understand the importance of promptly analysing user responses and determine their implications for subsequent actions ● Be aware of the wide range of methods and techniques in collecting user responses, and their adopting are affected by various factors and situations ● Be aware of the significant demand for human resources to successfully complete the gathering of user feedbacks and responses Be able to: ● Get acquainted in advance a clear and easy to follow list of activities for gathering useful responses and feedbacks from customers of our new products / services ● Request in advance the allocation of resources, especially human resources to carry out the list of responses gathering activities ● Estimate in advance the training and skill upgrades for handling customer responses (training details are to be elaborated in subsequent UoCs) ● Carry out customer responses gathering tasks, always with accuracy and timeliness in mind ● Deploy a wide range of methods / techniques to gather responses from customers, say from traditional interviews and questionnaires to proactive visits, customer clubs, etc ● Draw conclusions about the main concern of customers and how satisfactions towards our products can be raised ● Initially estimate the required additional analytic resources, after reviewing customer responses ● Always maintain a proper balance between the interests of the company and customers during the process ● Always work with full capacity and ability to ensure capturing of useful information from customers ● Always work according to established procedures and guidelines
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully conduct a set of activities to gather customer responses towards the product in concern ii. ensure timely and accurate analysis of gathered information and determine appropriate follow up actions	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Products / services installation and configuration	
2. Code	ITCSPL203A	
3. Range	This UoC applies to all tasks and actions related to the actual product / service installation and configuration. This is the fundamental yet very important step before actual delivery of the product / service to customers.	
4. Level	2	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that proper installation and configuration are the foundations for proper and perpetual operation of the product / service in concern ● Understand that any errors at this stage will result in harmful and prolonged effects to both the customers and the company ● Understand that product / service installation and configuration are not generic tasks and should be tailored according to different customers' request, environment, terms of service etc ● Understand the necessity for arranging skillful employees to perform the actual installation and configuration, which may imply necessary beforehand training ● Be aware of the time to time product / service malfunction or outage and the necessity for re-installation or re-configuration 6.2 Products / services installation and configuration Be able to: ● Carry out the installation of product / service for the customers and further perform the tuning / configuration tasks in case of necessity, or on demand ● Complete the installation steps on time and ensure the product / service can function properly according to the agreed level of services with customers ● Carefully cater for all possible malfunctioning or service outage during the installation stage, implement precaution measures such that the longest mean time between failure (MTBF) can be achieved ● In case if the installation / configuration task is outsourced, take effective monitoring and administrative measures to ensure that outsourcers will complete the job in exactly the same manner as own employees ● In case if the customers are to perform self installation or configuration, make sure there are clear and unambiguous instructions or guidelines for them ● Utilise proper channels to provide immediate assistance / clarification for personnel involved in the product installation / configuration, such as internal or customer hotlines ● Follow established logging systems to record the installation / configuration steps for later reviewing or repairing purpose, especially for the configuration portion which may involves the setting and switching of many different figures ● Follow established communication channel for personnel involved in this task, for reporting their progress, problems, etc	

	6.3 Exhibit professionalism ● Always ensure all personnel involved will contribute their greatest effort to complete the installation / configuration steps, and record the tasks performed accurately and honestly ● Always work with full capacity and ability to ensure successful completion of the actual product / service installation and configuration
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully complete the product / service installation and configuration on time - ensure the quality of the above task which are measurable by subsequent number of failure reporting or requests for help
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Carry out maintenance services for customers on-site or in-house	
2. Code	ITCSPL204A	
3. Range	This UoC applies to all arrangements, actions and procedures relating to actual carrying out of customer maintenance services. Such services may be carried out in-house or even on-site depending on task nature and customer preferences. This is a step in the implementation phase for “Customer Retaining”.	
4. Level	2	
5. Credit	3	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area ● Understand the importance in providing the expected level of maintenance services to gain the ultimate satisfaction of customers ● Understand the key successful factors for satisfactory product maintenance services, including good preparation, nice co-ordination, skillful craftsmanship etc. All these need to be planned in advance ● Understand the significant different in nature between in-house and on-site maintenance, and preparations are also different accordingly ● Understand that successful maintenance work highly depends on employees’ knowledge, decision, skills / craftsmanship etc, and training is the best way to guarantee these features ● Be aware of the extremely high correlation between the performance of maintenance services and customer satisfaction, which in term can has significant impact to the company 6.2 Carry out maintenance services for customers on-site or in-house Be able to: ● Setup in a clear and unambiguous manner the procedures for providing product / service maintenance services, to be followed by all front-end technicians / repairman and supporting personnel ● Clearly identify the types / categories of maintenance work to be conducted in customers’ site or in-house, with pre-established escalation path if queries or special requests arise ● Clearly explain to customers the procedures and details about in-house maintenance services, such as the lead time, charging scheme, warranty period, and even the traffic arrangement to those maintenance stations ● Clearly explain to customers the procedures and details about on-site maintenance services, such as the guaranteed response time, charging scheme, additional charges if not covered by maintenance contract, etc ● Setup an effective monitoring and reporting systems to record all events / outcomes regarding on-site or in-house maintenance services ● Arrange periodic and ad hoc reviews of the maintenance services being provided to check for below standard performance or deviation from normal events (such as late arrival of repairman) ● Propose sensible upgrade or changes in maintenance services to secure long term customer retaining and enhanced product images	

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in providing product / service maintenance services ● Always strike a proper balance of interests among customers, employees and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully arrange the provision of on-site or in-house maintenance services for customers - ensure the long term customer satisfaction regarding maintenance services up to a certain level - successfully retain most customers over a long period of time
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Collect products / services QoS related statistical data	
2. Code	ITCSPL205A	
3. Range	This UoC applies to all actions and procedures relating to the collection of quality of services statistics of the product / service in concern. This is the first step for the task group “Products / services performance review” and serves as important references for subsequent processes in the remaining product life cycle.	
4. Level	2	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Collect products services QoS related statistical data 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the necessity in providing quality services in order to ensure the success of the product / service in concern ● Understand the importance of gathering accurate and timely statistics about the quality of services, to serve as the basis for further investigation and actions ● Understand the necessity in assigning suitable personnel for QoS statistics collection and allocation of proper level of resources for the tasks ● Understand the immediate necessity to detect and tackle problems discovered after analysing those gathered information and statistics about quality of services ● Be aware of the different techniques and methodologies in QoS statistics handling, and their relevant advantages and disadvantages Be able to: ● Setup up in advance clear and unambiguous procedures and schedules for QoS statistics collection ● Carry out those QoS statistics collection tasks ● Monitor the tasks performed during QoS statistics processing on a continuous basis ● In case of outsourcing, ensure external personnel will perform in the same manner and produce comparable results as the company’s own employees ● Interpret with good accuracy the statistical findings and summarise key findings in report format for perusal by personnel involved in follow up or remedy activities ● Report QoS statistical findings and propose feasible solutions to management for their decisions ● Disseminate QoS statistical findings to staff members in concern, and give clear instructions and directions to their subsequent follow up actions ● Always ensure all related staff members contribute their greatest effort while gathering and processing those product / service QoS related statistics ● Always report and make proposals based on the actual findings from those QoS statistics, while maintaining a proper balance of interests between customers and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully complete the collection of QoS related statistics for the product / service in concern ii. ensure the statistical data are collected in an accurate and timely manner iii. draw accurate and valid conclusion from the gathered statistics and propose appropriate subsequent actions	
Remark		

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Prepare and execute the components installation and un-installation	
2. Code	ITCSPL206A	
3. Range	This UoC applies to all arrangements, procedures and tasks to actually conduct the product / service components installation and un-installation process. The step is performed at completion of all preparation and co-ordination work.	
4. Level	2	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Prepare and execute the components installation and un-installation 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand a maintenance assignment is not completed without the final implementation task such as the component installation and un-installation ● Understand the seemingly simple task of component installation or un-installation may be the only visible work that can be seen by most customers ● Understand that an error / defect free component installation or un-installation is vital to many aspects of the company such as image, cost saving, etc ● Understand the necessity of catering for customer's needs and new demand, especially after any component un-installation ● Be aware of the possible loss of a customer account, say after a particular component un-installation Be able to: ● Well prepare in advance a clear and easy to follow procedure for any product component installation / un-installation ● Well schedule in advance the manpower needs and roster arrangement for staff members deployed to perform product component installation / un-installation upon request by customers ● Carry out the tasks for product component installation / un-installation ● Make proactive proposals to customers for product / service upgrading or switching, especially after receiving un-installation requests ● Keep accurate records about any installation / un-installation requests from customers for subsequent investigation and follow up actions ● In case component installation / un-installation involves outsourcers, take all necessary actions to ensure the tasks performed by them are comparable with own employees ● Always ensure all related staff members contribute their greatest effort in carrying out even the routine tasks of product component installation / un-installation ● Always strike a proper balance of interests between customers, and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully prepare all requirements to get ready for product / service installation or un-installation ii. ensure the efficient and effective execution of product installation or un-installation in a timely manner	
Remark		

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Prepare and execute the contingency plan	
2. Code	ITCSPL207A	
3. Range	This UoC applies to all preparation, arrangement and actual execution of pre-established contingency plans during the product / service installation or un-installation process. This step may need to be performed in an ad hoc manner and with undefined timeframe.	
4. Level	2	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Prepare and execute the contingency plan 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the necessity of setting up a contingency plan in advance to cater for problems in any processing step, including the product component installation / un-installation phase ● Understand the importance in timely execution of a contingency plan in order to eliminate / reduce the harmful effects due to abnormal situations ● Understand the nature of a contingency plan is for immediate rectification, whereas long term problem solving needed to be planned and implemented separately ● Understand that successful contingency execution highly relies on employees' knowledge, judgment, skill / craftsmanship etc, and training is the best way to guarantee these features ● Be aware of the high correlation between contingency plan execution and customer satisfaction, which in term can has significant impact to the company Be able to: ● Setup in advance clear and unambiguous guidelines indicating circumstances and situations to trigger execution of contingency plans ● Prepare in advance a set of contingency plans to cater for problems occur in major processing steps, including the product / service maintenance phase ● Carry out the tasks within the contingency plan ● In case outsourcers are involved in contingency plan preparation and execution, take all possible steps to ensure outsourcers will act in the same manner as own company employees ● Follow established reporting channel whenever any contingency plan has been triggered and executed, not only for documentation but also serves as important references for subsequent review ● Evaluate effectiveness of contingency plans execution and make the necessary amendments ● Report those exception situations to management, for their subsequent consideration and instructions ● Always ensure all related staff members contribute their greatest effort in the triggering and execution of contingency plans ● Always consider the interests of customers while handling any contingency plans related issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully prepare a contingency plan or steps to deal with unexpected or exceptional situations during product installation or un-installation ii. successfully handle and settle the contingency case in a timely and appropriate manner	
Remark		

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Carry out products / services un-installation	
2. Code	ITCSPL208A	
3. Range	This UoC applies to procedures and tasks to actually conduct the un-installation of the product / service in concern. The step may demand for skillful craftsmanship in case of physical products or special technical knowledge in case of computer based services.	
4. Level	2	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out products / services un-installation 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Understand that the entire product / service retirement phase is not completed without the last piece of work, namely product / service un-installation - Understand the apparently simple task of product / service un-installation may be the only visible piece of work observable by most customers - Understand that an error or defect free product / service un-installation is vital to many aspects of the company such as image, costing, etc - Understand the necessity for deploying suitable manpower to perform the actual product / service un-installation - Be aware of the possible loss of customer accounts after a particular product / service un-installation if prior communication and arrangement is insufficient Be able to: - Plan and schedule in advance the detailed arrangement for product / service un-installation to ensure its smooth execution - Arrange appropriate staff member or member group (say engineering staff), or outsourcers to conduct the product / service installation - Well co-ordinate with customers to ensure un-installation is done at the date, time and venue (if applicable) according to their convenience - Maintain effective and efficient communication channels with customers involved in product un-installation, to cater for their changes in decision, un-installation arrangement, and even upgrade planning - Ensure possession of the necessary skills / craftsmanship, and customer relationship skill for performing the un-installation - Reduce the impact to customers to a minimum after the related product / service un-installation - Ensure that customers are properly followed up by related staff members if an upgrading or product replacement agreement is in force - Accurately maintain all records and event loggings during the product / service un-installation procedure - Always ensure all related staff members contribute their greatest effort and maintain the relationship with customers while conducting product / service un-installation - Always strike a proper balance of interests between customers and the company, even after actual product un-installation
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully perform the product / service un-installation upon requests by customers ii. ensure the un-installation is performed in an efficient and timely manner iii. ensure minimal impacts to both the customers and the company after product / service un-installation	
Remark		

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Update inventory records related to products / services un-installation	
2. Code	ITCSPL209A	
3. Range	This UoC applies to all detailed processing and documentation work to record and update changes to the product inventory after the related product / service un-installation. Proper inventory recording is an essential element for the final success of the entire product retirement process.	
4. Level	2	
5. Credit	1	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Update inventory records related to products / services un-installation 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the fundamental importance in keeping accurate business related details, including the inventory records for products / services even after their un-installation ● Understand that the product retirement stage does not immediately ends after un-installation, and there are still outstanding issues to follow up ● Understand the strong correlation between accurate & timely recording and the effectiveness & efficiency in subsequent tasks such as product switching or product phase-in ● Understand that accurate recording such as the inventory levels usually demand the help of computer software such as a strong database management system (DBMS) ● Be aware of the possible different accounting practices and regulations that may influence the format or time-frame for inventory records updating Be able to: ● Prepare in advance a concrete but easy to follow practice for recording business related entries, including inventory records relating to product un-installation ● Establish effective and efficient communication channels between staff members responsible for say product un-installation and inventory record updating ● Perform the updating of inventory records relating to product / service un-installation ● Keep close observation to detect exceptional or erroneous cases during the updating of product un-installation related inventory records ● Exercise good anticipation and estimation skill to uncover interesting trends embedded in the inventory records being updated, resembling a data mining task ● Keep periodic review about the inventory updating procedure and arrangement, and be alerted of possible areas for refinement ● Always ensure all related staff members contribute their greatest effort while recording and utilising the product un-installation related inventory records ● Always strike a proper balance of interests between customers and the company at all time ●
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. accurately record and update the inventory records after the related product / service un-installation ii. make easy the subsequent financial calculations or estimation based on the latest inventory figures iii. ensure the integrity and availability of inventory data to subsequent users	
Remark		

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Carry out products / services decommission	
2. Code	ITCSPL210A	
3. Range	This UoC applies to all procedures and working steps related to the actual performance of products / services decommissioning procedures. This step determines whether there is an orderly retreat of the particular product / service in concern with minimal impact to the organisation.	
4. Level	2	
5. Credit	1	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out products / services decommission 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the necessity in smooth carrying out of the decommissioning procedures as the last step in the entire product / service development life cycle ● Understand the necessity in establishing the same level quality requirements for the actual product / service decommissioning as any other steps in the product / service life cycle ● Understand the importance in maintaining customer satisfaction and relationship while carrying out product / service decommissioning ● Understand the huge potential loss that may incur for mistakes made during product / service decommissioning ● Be aware of the potential benefits derived from customer satisfaction / perception during old product / service decommissioning Be able to: ● Take initiative to recommend decommissioning of old and purchasing of new products / services to customers well in advance, especially for those un-successful products ● Ensure sufficient number of staff members with appropriate skill / quality to conduct the product / service decommission ● Effectively communicate with customers such that the actual decommissioning is performed at the most suitable (and feasible) time and venue for them ● Actually execute the product / service decommissioning, and ensure the tasks are completed on time with no wastage in resources consumption ● Maintain contacts with customers even after products / services decommissioning to explore the opportunities of selling new products ● In case of outsourcing the decommissioning procedures, take all necessary actions to ensure that outsourcers will carry out all tasks and handle customers as own staff members ● Always ensure all related internal and external personnel contribute their greatest effort in carrying out the product / service decommissioning ● Always strike a proper balance of interests between customers and the company as a whole, may also include outsourcers as well
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully carry out the product / service decommissioning with minimal resources consumption and mistakes ii. successfully maintain the satisfaction and loyalty of customers even after product decommissioning	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Collect customer requirements	
2. Code	ITCSPL301A	
3. Range	This UoC applies to the follow on operations of collecting, handling and analysing customer requirements after any events of customer contact. There can be a wide range of customer requirements to be handled, with different levels of details and nature.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Collect customer requirements 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Recognise the importance of obtaining customer requirements to the success or failure of the company's products / services ● Understand the importance of performing customer requirements collection in an efficient and accurate manner ● Understand the necessity for analysing the solicited customer requirements on a continuous basis ● Be aware of the different methods and procedures in collecting the required information from customers ● Be aware of the impact on input resources allocation in the process of collecting customer requirements Be able to: ● Apply different methods of collecting customer requirements and determine the best choice each time ● Collect customer requirements in the most appropriate format and ensure correctness of the contents ● Store and manage the collected customer information in the most appropriate manner to facilitate subsequent analysis, review and follow up, using computer based software such as data warehousing, CRM, when necessary ● Step through a structured process for the consolidation of information ● Report the findings about customer requirements to supervisors ● Always work with full capacity and ability while in the process of collecting and handling customer requirements ● Always maintain an optimal balance between the interests of the company and customers in all customer facing activities ● Always adopt fair treatment to customers in different segments ● Stick to all established procedures and guidelines at all time
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. collect essential requirements and suggestions from customers on time and in an accurate manner ii. effectively process those customer feedbacks towards existing products / services and transform them into actions for proposal to supervisors	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Incorporate new charging into existing billing system	
2. Code	ITCSPL302A	
3. Range	This UoC applies to the smooth inclusion of the new charging scheme to the existing billing structure of the company. The new charging mechanism must be able to function as planned while not producing any adverse effects to established charging arrangements. This is one of the final tasks in the overall return on investment management phase.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the critical fact that any charging scheme must be compatible with the company's existing billing system for effective and smooth operation ● Understand the important requirement of minimal disturbance to existing billing system at introduction of the charging operation for new products / services ● Understand the benefits of fully utilising facilities provided by existing billing system such as the printing of demand notes and invoices, customer usage history, choice of payment methods, etc ● Be aware of the jeopardy of overloading the existing billing system at introduction of new charging schemes and be able to react timely and appropriately ● Be aware of the financial impact at introduction of new charging schemes to ensure positive overall return 6.2 Incorporate new charging into existing billing system Be able to: ● Perform all necessary preparation work and introduce charging schemes for new products / services to the existing billing system smoothly with minimal disturbance ● Anticipate the potential increase in the scale of operation for the current billing system and perform required upgrading beforehand ● Perform all necessary testing thoroughly to ensure the current billing system can handle all types and levels of charging arising from the new products / services ● Observe operation of the billing system closely and be able to detect any special circumstances after incorporating the new charging schemes ● Perform any necessary remedy actions in case of problems and ensure the earliest restoration to normal operation for the billing system ● Undertake necessary actions to maintain continuous operation of the billing system, which is vital to the survival of the overall business	

	6.3 Exhibit professionalism ● Follow established policies in formulating and incorporating the new charging scheme ● Work with full capacity and ability to ensure perfection and elimination of errors during the entire working process ● Maintain a proper balance between the benefits of the company and customers at all time
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - seamlessly incorporate the new charging scheme into the existing billing and charging system - ensure minimal disturbance at introduction of the new charging scheme, including both short and long term effects
Remark	

Functional Area: Product & Service Life Cycle (Development)

1. Title	Examine pilot running / prototype development	
2. Code	ITCSPL303A	
3. Range	This UoC applies to the review operations and tasks involved in examining results of the product pilot running and prototype development. This is a key step in determining the treatment of the product / service in concern for subsequent phases of the product life cycle	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Examine pilot running / prototype development	<u>Performance Requirement</u> ● Understand the importance of this step in capturing accurate and useful resulting information about the pilot running / prototype development ● Understand the importance of monitoring the performance of outsourcers and ensure their full participation in this process, if applicable ● Understand the necessity of preparing a comprehensive task list or guidelines for all internal / external personnel involved in the examination process ● Understand the significant benefits of getting accurate results in this step to the remaining phases of the product development life cycle ● Be aware of the wide range of available tools, techniques and procedures in the process of examining the pilot running / prototype development Be able to: ● Prepare beforehand the appropriate guidelines and procedures for references by different levels of staff members participating in examining the pilot running / prototype development ● Gather and properly utilise all resources and manpower to carry out the detailed tasks of pilot running / prototype development examination ● Place special emphasis to key issues during the examination process such as product profitability, which depends on say customer demand and pricing levels, etc ● Verify against previous assumptions, check whether there are gaps in performance and cost, evaluate on whether the original design requirements are met, etc ● Establish a proper communication channel for participants in the examination process to report their findings and express their comments ● Exercise high quality analysis skill to consolidate and investigate the examination results and propose timely and effectively subsequent actions ● Fully consider other outside factors such as market competition, customer preferences, etc during the examination process to verify or reinforce the findings ● Effective communicate with own staff members and vendors / subcontractors for all established follow up activities after the examination process

	6.3 Exhibit professionalism ● Always ensure correctness, and fairness in the process of examining the pilot running / prototype development ● Always work with full capacity and ability to ensure the smooth and efficient completion of this task, and ensure maximum contribution from all personnel involved
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - complete the pilot running / prototype development process in a timely and efficient manner, and obtain accurate and useful information - propose positive guidelines and actions for subsequent steps of the product development life cycle
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Execute implementation plan for launching	
2. Code	ITCSPL304A	
3. Range	This UoC applies to all procedures and actions required to carry out the steps as listed in the product / service implementation plan. This and the previous step combined together is the first move for launching the new product.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess knowledge in the subject area 6.2 Execute implementation plan for launching 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand fully the details and actions as listed in the product / service implementation plan ● Understand the importance of sticking to the original plan to ensure success of the new product in concern ● Understand the importance of proper co-ordination of manpower and other resources in the process of implementation plan execution ● Be aware of the possible difficulties and hindrances during this execution phase and their impacts to the original plan ● Be aware of the wide range of methods and techniques to execute the required tasks and their relative effectiveness and costs performance Be able to: ● Execute all required steps and tasks as listed in the original product implementation plan ● Take note of all outcomes at the end of every single step to evaluate the degree of success / completion ● Establish key milestones for this execution phase to evaluate whether the original time-frame can be maintained continuously ● Tightly co-ordinate with all related staff members to ensure their contribution of best efforts, and their quality output ● In case of outsourcing, again tightly co-ordinate with related third-party personnel to ensure their contribution of best efforts and quality output ● Work out a monitoring scheme to evaluate the deviation from the original planning during and after this execution phase ● Report to senior management any necessity to alter the original planning in a timely manner ● Figure out alternative solution / substitution plan in case of unexpected failure of any tasks ● Always ensure all related staff members work with full capacities towards the goal of successful execution of the required tasks ● Always work with full capacity and ability to ensure successful completion of the product implementation plan execution phase
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully complete all required tasks as listed in the original product implementation plan ii. ensure all tasks are completed according to the original sequence, time frame and within budgeted resources	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

Functional Area: Product & Service Life Cycle (Service Commissioning)										
1. Title	Co-ordinate with partners for products and services commissioning tasks									
2. Code	ITCSPL305A									
3. Range	This UoC applies to detailed communication and co-ordination activities with vendors, with the purpose of co-operating with them to introduce the new product / service to the market.									
4. Level	3									
5. Credit	2									
6. Competency	<table><tr><td></td><td><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> ● Understand the importance of close and tight co-ordination with partners involved in the product / service commissioning tasks ● Understand the mandatory necessity to get familiar with the partners including their expertise, other strength, weakness, requirements, etc ● Understand that co-ordination and communication is bi-directional in nature and that clear and unambiguous specification of own company's requirements, procedures and operations are essential ● Be aware of the different background and conditions of individual vendors and that their co-ordination work need to be versatile and flexible ● Be aware of the possible internal operations after introduction of external vendor partners </td></tr><tr><td>6.2 Co-ordinate with partners for products and services commissioning tasks</td><td> Be able to: ● Co-ordinate with vendors to come into agreement with them for product / service commissioning tasks ● Gain in-depth understanding about individual partners and their relative contributions to the overall success of the product / service in concern ● Prepare documents regarding the co-operation and agreement with partners, with mutual consent from both parties ● Work through all detailed tasks to arrive at the final partnership agreements, which cater for all necessary considerations such as policies, laws, etc ● Communicate with own staff members at all levels and explain the future co-operation modes with the partners for them to follow ● Anticipate the potential problems or impacts to own organisation after introduction of the partners and design remedy actions as appropriate ● Record and calculate with high accuracy the benefits after introducing the vendors partners for management's review and consideration in future </td></tr><tr><td>6.3 Exhibit professionalism</td><td> ● Always ensure the proper balance of interest between different parties including own company, own staff members and the partners ● Always work with full capacity and ability to ensure the successful co-operation with partners for product / service commissioning </td></tr></table>			<u>Performance Requirement</u>	6.1 Possess the knowledge in the subject area	● Understand the importance of close and tight co-ordination with partners involved in the product / service commissioning tasks ● Understand the mandatory necessity to get familiar with the partners including their expertise, other strength, weakness, requirements, etc ● Understand that co-ordination and communication is bi-directional in nature and that clear and unambiguous specification of own company's requirements, procedures and operations are essential ● Be aware of the different background and conditions of individual vendors and that their co-ordination work need to be versatile and flexible ● Be aware of the possible internal operations after introduction of external vendor partners	6.2 Co-ordinate with partners for products and services commissioning tasks	Be able to: ● Co-ordinate with vendors to come into agreement with them for product / service commissioning tasks ● Gain in-depth understanding about individual partners and their relative contributions to the overall success of the product / service in concern ● Prepare documents regarding the co-operation and agreement with partners, with mutual consent from both parties ● Work through all detailed tasks to arrive at the final partnership agreements, which cater for all necessary considerations such as policies, laws, etc ● Communicate with own staff members at all levels and explain the future co-operation modes with the partners for them to follow ● Anticipate the potential problems or impacts to own organisation after introduction of the partners and design remedy actions as appropriate ● Record and calculate with high accuracy the benefits after introducing the vendors partners for management's review and consideration in future	6.3 Exhibit professionalism	● Always ensure the proper balance of interest between different parties including own company, own staff members and the partners ● Always work with full capacity and ability to ensure the successful co-operation with partners for product / service commissioning
	<u>Performance Requirement</u>									
6.1 Possess the knowledge in the subject area	● Understand the importance of close and tight co-ordination with partners involved in the product / service commissioning tasks ● Understand the mandatory necessity to get familiar with the partners including their expertise, other strength, weakness, requirements, etc ● Understand that co-ordination and communication is bi-directional in nature and that clear and unambiguous specification of own company's requirements, procedures and operations are essential ● Be aware of the different background and conditions of individual vendors and that their co-ordination work need to be versatile and flexible ● Be aware of the possible internal operations after introduction of external vendor partners									
6.2 Co-ordinate with partners for products and services commissioning tasks	Be able to: ● Co-ordinate with vendors to come into agreement with them for product / service commissioning tasks ● Gain in-depth understanding about individual partners and their relative contributions to the overall success of the product / service in concern ● Prepare documents regarding the co-operation and agreement with partners, with mutual consent from both parties ● Work through all detailed tasks to arrive at the final partnership agreements, which cater for all necessary considerations such as policies, laws, etc ● Communicate with own staff members at all levels and explain the future co-operation modes with the partners for them to follow ● Anticipate the potential problems or impacts to own organisation after introduction of the partners and design remedy actions as appropriate ● Record and calculate with high accuracy the benefits after introducing the vendors partners for management's review and consideration in future									
6.3 Exhibit professionalism	● Always ensure the proper balance of interest between different parties including own company, own staff members and the partners ● Always work with full capacity and ability to ensure the successful co-operation with partners for product / service commissioning									
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully identify and partners with vendors which bring positive returns to the company ii. ensure the long term benefits to both the company and partners by continuously maintaining and strengthening the partnership									
Remark										

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Validate products and services provision	
2. Code	ITCSPL306A	
3. Range	This UoC applies to all procedures and actions required to validate the provision of products / services by outside parties or vendors. This can be considered to be a follow on step for the previous step “Monitor and control products / services provision”.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Validate products and services provision 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of validating the products / services provision by vendors / external parties to ensure their promised quantity and quality levels ● Understand the necessity to stick to a well-defined procedures for product / service provision validation ● Understand the current step is execution related and conducted by a specific group say the “Operation Team”, which will likely to incur additional resources ● Understand the necessity for pre-planning and stick to remedy actions in case if any discrepancy / errors is detected in this step ● Be aware of the different methods and techniques in validating the products / services provision Be able to: ● Set up clear and unambiguous procedures and steps for conducting the products / services provision validation ● Set up a specific working team to conduct the validation tasks, which may be an additional assignment for say the existing operation team, or a gathering of staff members with relevant expertise ● Actually conduct or supervise the execution of the detailed tasks for this step ● Provide clear and unambiguous briefings to the marketing / sales team staff members ● Take timely and appropriate remedy actions or shift to an alternative working plan in case of problems during the validation process ● Work and co-ordinate closely with vendors / external parties for all issues to their products / services provision and associated validations ● Work and co-ordinate closely with the validation team to ensure the quality of their work, which indirectly ensure the quality of the products / services to be validated ● Always aim for the optimal balance of interests between vendors, staff members and the company ● Always work with full capacity and ability to ensure the successful conduction of the product / service validation work
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. ensure completion of the product / service validation process on time ii. ensure the quantity and quality levels of the vendors’ output through the validation process	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Collect and evaluate the responses of potential customers	
2. Code	ITCSPL307A	
3. Range	This UoC applies to all operations and procedures performed to collect, process, analyse and evaluate the responses of potential customers to the new product / service in concern. This is the first and fundamental step for the task group “Market and customer responses monitoring”.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Collect and evaluate the responses of potential customers 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of collecting and evaluating customer responses to the overall success of the new product / service ● Understand the significant contribution of new / potential customers to the overall profitability of the company as a whole ● Understand the great importance of collecting accurate and timely feedbacks from customers in order to derive useful information for subsequent analysis ● Understand the necessity to analyse information obtained from customers and evaluate the possible impact to the new product in concern ● Be aware of the wide variety of methods and techniques to collect and analyse customer feedbacks, and their suitability to own company and the particular product / service Be able to: ● Explore the possible sources to solicit feedbacks and comments from potential customers towards the new products / services ● Co-ordinate with departments (such as marketing) or staff members in charge of customer contacts to ensure the timely and accuracy in collecting customer responses ● Design alternative information collection schemes / procedures based on the differences in the nature of the products / services ● Design various means to collect information based on different customer groups, such as paying regular visits to co-corporate clients ● Arrange different channels to meet customers (especially potential new customers) such as road shows, promotion seminars, etc ● Strengthen internal units responsible for customer contacts to serve as tentacle for feedback collection, such as customer hotline, help desk, marketing, sales, etc ● Effectively carry out the data processing and analysis functions to convert customer responses to useful information for fine-tuning in the remaining phases of the product life cycle ● Explore follow-on activities to materialise the findings and decisions after customer responses analysis ● Always ensure all level of staff members will contribute their greatest effort for this task step, and at the same time ensure the benefits of all related parties ● Always work with full capacity and ability to ensure successful completion and utilisation of customer feedbacks
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. collect useful information from potential customers for the new products ii. design constructive follow up actions after customer information collection and analysis	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Supervise customers hotline services	
2. Code	ITCSPL308A	
3. Range	This UoC applies to all detailed tasks and requirements relating to the setup, operation and handling of the customer hotline services. Hotline can be considered a fundamental means to maintain customer relationship, but at the same time a significantly important determinant on the success / failure of the product or even the company.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the fundamental necessity in establishing and maintaining an effective and user-friendly customer hotline services ● Understand the existence of such a common service in all competing organizations and that a poorly performing hotline services can be fatal ● Understand hotline services is likely the first contact point, and it is very important in establishing a good first impression for customers (especially new customers) ● Be aware of the unique demand for human resources in order to establish and maintain a good customer hotline services, and that training in soft skill is mandatory ● Be aware of the different alternatives in establishing customer hotline services, including the outsourcing of part of the job steps 6.2 Supervise customers hotline services Be able to: ● Maintain good quality of the existing customer hotline service, and always put customer services as the first priority task in mind ● Request appropriate resources, especially human resources for this unique service, which some customers solely rely on for communicating with the company ● Demonstrate appropriate knowledge about the product / service in concern, and follow pre-arranged escalation path to handle more technical or in-depth customer questions ● In case of outsourcing part of the hotline services, take effective measures to ensure that outsourcers attain the performance of own staff members ● Work towards an optimal balance between customer satisfaction and resources input, such as whether to employ the auto-answering mechanism ● Conduct measures to ensure the customer hotline services operate as expected, such as dialogue recording ● Communicate periodically with related staff members to solicit useful information to fine tune the service ● Communicate periodically with customers to gather their suggestions for further improving the customer hotline services 6.3 Exhibit professionalism ● Always target for an appropriate balance among the interests of customers, own staff members and the company ● Always work with full capacity and ability to ensure the successful operation of the customer hotline service ● Always work according to established procedures and guidelines	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. maintain a satisfactory customer hotline services (with established measurements say the number of monthly complaints) ii. build in a monitoring mechanism for the hotline services and be able to take remedy actions promptly	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Convey feedbacks to marketing, internal product group, front-line team	
2. Code	ITCSPL309A	
3. Range	This UoC applies to all necessary actions and arrangement to enhance internal communication. The objective is that customer feedbacks and suggestions can be disseminated effectively to different related departments or individual staff members.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the fundamental necessity of effective internal communication in order to coordinate understanding and subsequent activities ● Understand the importance of sending accurate and timely information to staff members who need to work towards a common objective but are responsible for different areas ● Understand that customers are longing for timely answers and responses after reporting a problem / proposal, and a good internal communication system is essential in achieving satisfactory customer services ● Be aware of potential danger and losses with delays or even misunderstanding in the company's internal communication channels ● Be aware of the various means of information conveyance such as direct calls, emails, memos, meetings etc, or a combination of them 6.2 Convey feedbacks to marketing, internal product group, front-line team Be able to: ● Carry out or supervise the dissemination of customer feedbacks / proposals to various internal parties working for the new products, such as marketing, internal product group, front-line team, etc ● Prepare in a clear, unambiguous and easy to understand format the information to be disseminated to various internal parties / individuals ● Arrange proper channels / means to disseminate the above information, also ensure that the flow is bi-directional, and with no delay ● Be always alert of the fact that effective and efficient communication are just the means, the underlying objectives are to seek staff's understanding and consensus to follow up actions ● Communicate with marketing department and request them to fine-tune, update or re-evaluate the marketing activities for the new product / service in concern ● Communicate with internal product group and request their investigation and re-evaluation in various aspects of the product such as design, function, capacity, etc ● Communicate with front-line team to ensure their continuous quality customer support, and strengthen their knowledge towards the new product / service and towards customer feedbacks ● Identify the potential conflicts when different departments work together and have them resolved as early as possible	

	6.3 Exhibit professionalism ● Always ensure all departments / staff members contribute their greatest effort at all time ● Always work with full capacity and ability to ensure effective and efficient internal communication ● Always strike a proper balance among the interests of customers, staff members and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - properly and promptly convey user feedbacks about the new products / services to all related internal parties - ensure all related parties react and work together for enhancing the products / services accordingly
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Collect service usage statistical data	
2. Code	ITCSPL310A	
3. Range	This UoC applies to all operations and procedures in collecting customers' usage statistical data for the products, whereas the products involved actually can be physical goods or CIS related services.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area Exhibit the ability to: ● Understand the importance of collecting and analysing statistical data ● Understand the methodology and standard procedure in collecting product / service usage statistics ● Understand the operation of various tracking systems (if any) built to keep track of the utilisation of the particular product / service ● Be aware of the sensitivity of the collected statistics ● Be aware of the timeliness of the collected statistics 6.2 Collect service usage statistical data Be able to: ● Develop and implement procedures to record statistical data on product / service utilisation accurately ● Develop and implement procedures to identify different customer segments according to utilisation pattern and volume ● Develop and implement procedures to properly record and store statistics at different time intervals, and be able to present and interpret the trends ● Process the collected statistical data to facilitate forecasting in future revenue and products/services planning ● Design different templates / formats to present the statistical data, for utilisation by employees such as the sales team or project team members 6.3 Exhibit professionalism ● Following established procedures at every step of customer contact and information seeking ● Work with full capacity and ability to meet the quality standard of a product manager ● Maintain the idea of customer focus at all time	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully obtain the service usage statistical data for own products / services in an accurate and timely manner ii. ensure the statistical data obtained have positive contribution to the subsequent product / services reviews and refining activities	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Arrange periodic products / services training to staff members	
2. Code	ITCSPL311A	
3. Range	This UoC applies to all tasks and arrangement aimed to provide periodic training to members of staff relating to the new product / service in concern. Staff training is nowadays extremely important in upgrading their ability and knowledge. This UoC focuses on those general training for all personnel.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that human resources is becoming more and more important for all companies and CIS organisations are of no exception ● Understand that training is a highly effective means in upgrading the knowledge and skills of employees ● Understand that training is extremely versatile in nature and a well designed and scoped training programmes are essential to suit the requirements of any particular group of trainees (staff members) ● Understand that any new product / service has its unique features such as functionalities, mode of operation, pre-requisite knowledge, etc and that related product training is mandatory ● Understand that training needs to be on a continuous or periodic basis in order to introduce the most updated information to trainees (staff members) ● Be aware that training can be in a wide different format and modes and that designing an appropriate mix can enhance the effectiveness 6.2 Arrange periodic products / services training to staff members Be able to: ● Prepare in advance product training material with the appropriate coverage and depth for different groups of trainees (staff members) ● Work out a training schedule for different staff members groups, taking into consideration their working schedule and required level of knowledge for the product in concern ● Design the best mix for teaching product knowledge, such as classroom teaching, practical workshop, project based training, etc ● Make use of computer system and related software to conduct training on top or instead of traditional training methods ● Actually carry out or supervise the conduction of training programmes, which actually is labour intensive but unavoidable if the training objectives are to be realised ● Always aware that effective training goes hand in hand with well-designed assessments such as examination or practical workshop ● Record with good accuracy the progress and performance of individual trainees and if necessary, arrange class / examination re-sit for them ● Estimate with good accuracy and strike a balance between the additional costs for training provision, and the benefits for equipping staff members with the required knowledge	

	6.3 Exhibit professionalism ● Always ensure the balance of interests among staff members, the company and even the customers while designing and conducting staff product trainings ● Always work with full capacity and ability to ensure successful completion of the product training programmes
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - arrange appropriate product trainings for different staff member groups - realise the original training objectives in that staff members' product knowledge can be enhanced / upgraded afterwards
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Arrange technical and soft skill training for front-line staff	
2. Code	ITCSPL312A	
3. Range	This UoC applies to all tasks and arrangement aimed to provide technical and / or soft skill training to front-line staff members. This group of personnel usually are the first and most direct point of contact with customers, and so arranging specially designed training programmes for them is mandatory.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that human resources is becoming more and more important for all companies and CIS organisations are of no exception ● Understand that training is a highly effective means in upgrading the knowledge and skills of employees ● Understand that as front-line staff members contacting directly with customers, their technical knowledge for the product / service in concern is essential in impressing customers, which can subsequently results in their purchases ● Understand that as front-line staff members contacting directly with customers, their soft skill is extremely important in maintaining good relationships with customers, again can subsequently results in their purchases ● Be aware that technical training can be in a wide different formats and modes and that designing an appropriate mix can enhance the effectiveness ● Be aware that soft skill training can also be in a wide range of formats and modes, and that fine-tuning the front line staff's attitudes and Emotional Quotation (EQ) are also essential 6.2 Arrange technical and soft skill training for front-line staff Be able to: ● Prepare in advance training material for product technical training with the appropriate coverage and depth for targeted groups of trainees (staff members) ● Prepare in advance the contents and methods for soft skill training with the appropriate coverage and depth for targeted groups of trainees (staff members) ● Work out a training schedule for front-line staff member groups, taking into consideration their daily working schedule and even specific duties of individuals ● Design the best training mix for both technical and soft skill training, such as classroom teaching, practical workshop, simulation, role play, etc ● Make use of computer system and related software to conduct training on top or instead of traditional training methods ● Actually carry out or supervise the conduction of training programmes, which is labour intensive but unavoidable if the training objectives are to be realised ● Always aware that effective training goes hand in hand with well-designed assessments such as examination, oral presentation, role play, etc ● Record with good accuracy the progress and performance of individual trainees and if necessary, arrange class / examination re-sit for them ● Estimate with good accuracy and strike a balance	

	between the additional costs for training provision, and the benefits for equipping staff members with the required knowledge 6.3 Exhibit professionalism ● Always ensure the balance of interests among staff members, the company and even the customers while designing and conducting technical or soft skill trainings ● Always work with full capacity and ability to ensure successful completion of the technical and soft skills training programmes
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - arrange appropriate technical and soft skills training for front-line staff members - realise the original training objectives in that staff members' appropriate skills and techniques can be enhanced / upgraded afterwards
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Arrange conversion and rotation training for existing staff	
2. Code	ITCSPL313A	
3. Range	This UoC applies to all tasks and arrangement aimed to provide conversion training to existing staff members. This is to respond to today's rapid changes in the requirements for individual employees and job posts can become outdated or even obsolete very easily. Conversion or rotation training is essential to help existing staff members change to a new deployment.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Arrange conversion and rotation training for existing staff 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand that human resources is becoming more and more important for all companies and CIS organisations are of no exception ● Understand that training is a highly effective means in upgrading / shifting the knowledge and skills of employees ● Understand that training is extremely versatile in nature and a well designed and scoped training programme is essential for staff members who need to pick up knowledge / skills in another area ● Understand that any individual posting is different in terms of skills, responsible areas, mode of operation, pre-requisite knowledge, etc and that related training is mandatory for staff having to shift or rotate to the new posting ● Be aware that training can be in a wide range of formats and modes and that designing an appropriate mix can enhance the training effectiveness Be able to: ● Prepare in advance product training material with the appropriate coverage and depth for staff members required to shift or rotate to new postings ● Work out a training schedule for the targeted group of staff members, taking into consideration their time frame for post shifting ● Design the best mix for teaching the skills and knowledge for a specific posting, such as classroom teaching, practical workshop, project based training, etc ● Make use of computer system and related software to conduct training on top or instead of traditional training methods ● Actually carry out or supervise the conduction of training programmes, which is labour intensive but unavoidable if the training objectives are to be realised ● Always aware that effective training goes hand in hand with well-designed assessments such as examination or practical workshop ● Record with good accuracy the progress and performance of individual trainees and if necessary, arrange class / examination re-sit for them ● Estimate with good accuracy and strike a balance between the additional costs for training provision, and the benefits for equipping staff members with the required knowledge ● Always ensure the balance of interests among staff members and the company while designing training for staff members required to shift or rotate to new postings ● Always work with full capacity and ability to ensure successful completion of the conversion training for targeted group of staff members
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - arrange appropriate training programmes for staff member having to rotate or shift to new postings - realise the original training objectives in that staff members can successfully take up the new posts and duties	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Arrange training for new staff members	
2. Code	ITCSPL314A	
3. Range	This UoC applies to all tasks and arrangement aimed to provide the necessary training to new staff members. As individuals are assigned to different departments and take up different postings, such training programmes are usually general and fundamental in nature, but can include elements which are very product / service specific.	
4. Level	3	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that human resources is becoming more and more important for all companies and CIS organisations are of no exception ● Understand that training is a highly effective means in providing / upgrading the knowledge and skills of employees, including newly recruited ones ● Understand that training is extremely versatile in nature and a well designed and scoped training programme is essential to suit the requirements of any particular group of trainees, such as new employees ● Understand that any individual posting is different in terms of skills, responsible areas, mode of operation, pre-requisite knowledge, etc and therefore new staff training need to focus on those common knowledge and technique ● Be aware that training can be in a wide range of formats and modes and that designing an appropriate mix can enhance the training effectiveness 6.2 Arrange training for new staff members Be able to: ● Prepare in advance product training material with common coverage and depth for new staff members ● Work out a training schedule for those new staff members, taking into consideration their time frame requirements in picking up their new posts ● Design the best mix for teaching the skills and knowledge for a specific posting, such as classroom teaching, practical workshop, project based training, etc ● Make use of computer system and related software to conduct training on top or instead of traditional training methods ● Actually carry out or supervise the conduction of training programmes, which is labour intensive but unavoidable if the training objectives are to be realised ● Always aware that effective training goes hand in hand with well-designed assessments such as examination or practical workshop ● Record with good accuracy the progress and performance of individual trainees and if necessary, arrange class / examination re-sit for them ● Estimate with good accuracy and strike a balance between the additional costs for training provision, and the benefits for equipping staff members with the required knowledge 6.3 Exhibit professionalism ● Always ensure the balance of interests among staff members (including new and existing) and the company while designing and arranging new staff training ● Always work with full capacity and ability to ensure successful completion of the new staff training programmes	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - arrange appropriate training programmes for new staff member - realise the original training objectives in that new staff members can more effectively take up their new postings and acquire common knowledge / skills required for all staff members	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Monitor and collect the service levels for customers on a real-time basics and / or periodically	
2. Code	ITCSPL315A	
3. Range	This UoC applies to all procedures and tasks to monitor and collect the service level figures provided by the product / service in concern to customers. The measurements needed to be done on a real-time and recurrent basis for timely collection of information and immediate awareness of problems.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Monitor and collect the service levels for customers on a real-time basics and / or periodically	<u>Performance Requirement</u> ● Understand the strong necessity to collect and analyse own products' service levels to customers, for comparing against original targets and discovery of problems ● Understand the importance that performance monitoring and information collection must be done in a highly accurate and efficient manner ● Understand the availability of a wide range of measuring and monitoring tools and techniques, and all of them have their relative advantages and disadvantages, and different costs ● Understand the mandatory requirements for subsequent analysis and follow up actions after the required measurement figures have been solicited ● Be aware of the potential impacts to the products or even the company if the collected service level measurements deviate significantly from original expectations Be able to: ● Establish in advance an appropriate mix of monitoring and measuring tasks to obtain useful information about the related products' service levels to customers ● Carry out the monitoring and information collection tasks regarding the products' service levels to customers ● Take all appropriate arrangements such that all relevant figures can be measured and obtained on a real-time basis ● Ensure that all monitoring and measuring tasks are performed by skilful and well-trained employees, who fully understand their job nature and have acquired the necessary skill beforehand ● In case the measurement tasks are outsourced, take all necessary monitoring measures to ensure that outsourcers will perform up to the expectation as own employees ● In case customers are involved in the process such as phone in usage recording, take all necessary actions to smoothen and simplify the portions needed to be done by customers ● Take preventive measures to ensure that all monitoring and information collection can be done in a continuous manner and that backup platforms are available when required ● Perform data analysis in a timely manner for accurate understanding of the collected information / figures and report actual usage levels promptly

	6.3 Exhibit professionalism ● Always ensure all personnel involved in the monitoring and service level measurements will contribute their greatest effort at all time, and report the findings accurately and honestly ● Always work with full capacity and ability to ensure successful and timely completion of the service level measurement tasks, which at the same time are performed routinely and periodically
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully carry out and complete the customer service level measurement in a timely and accurate manner - ensure a smooth and periodical cycling of the above measurement such that related information can be obtained real-time and continuously
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Collect data and generate reports on customer revenue	
2. Code	ITCSPL316A	
3. Range	This UoC applies to all actions and tasks relating to the collection of data and subsequent production of reports about customer revenue from our product / service in concern. This is one of the steps in the major task “Billing and Revenue Management”.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that customer billing is extremely important to the product / service and even the company, without which all activities cannot be financed ● Understand the deemed necessity to set up an effective and efficient customer billing system, whereas data collection and report generation are key components ● Understand the existence of a wide range of methods and techniques for data collection and reporting, each with its own relative advantages and disadvantages ● Understand that the choice of the above data collection and reporting methods depends on a certain number of criteria ● Be aware of the possible mistakes and / or frauds during this job task, which can have extensive and long term harmful effects to the product / service and company 6.2 Collect data and generate reports on customer revenue Be able to: ● Design in advance the exact details on how to capture data regarding customer revenue, with elaborations on say what, how and depth of details ● Carry out the actual collection of data via pre-established channels, at pre-defined intervals accordingly ● Set up a recording / logging system to document all detailed transactions about customer revenue, for subsequent checking and to facilitate any follow up activities ● Prepare reports explaining in details those findings from customer revenue data ● Carefully design the layout, format, glossary and style for the reports such that the information therein are presented in a clear, unambiguous and easy to understand style ● Carefully monitor the distribution of the reports such that they can reach the target receiver correctly and without delay ● Propose constructive follow up actions or activities on new endeavours based on the report findings ● Ensure that data collection and report generation can be done smoothly and automatically even in case of changing in-charge personnel	

	6.3 Exhibit professionalism ● Always ensure all related staff members to contribute their greatest effort while performing the tasks of data collection and report production ● Always work with full capacity and ability to ensure successful completion of data collection and report production, in a timely and honest manner
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully complete the required tasks for customer revenue data collection and report generation - ensure the tasks are completed in a timely and accurate manner, and meeting all pre-defined criteria
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Monitor and measure the maintenance service levels	
2. Code	ITCSPL317A	
3. Range	This UoC applies to all actions and tasks related to the monitoring and measurement of the maintenance service levels provided to customers. This step is critical in ensuring that proper services are offered to different customer segments, and enhance the periodic reviewing and upgrading of maintenance services.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Monitor and measure the maintenance service levels	<u>Performance Requirement</u> ● Understand that the level of maintenance service to customers need to be tailored according to the demand and preferences of different customer segments ● Understand the necessity of setting up a proper monitoring mechanism to ensure that all customer maintenance services are provided according to contract commitments ● Understand the importance of sticking to established company policies and guidelines throughout the entire process of maintenance services provision ● Understand that any monitoring mechanism needed to be equipped with an effective measuring system to ease operations such as data collection, storage and comparison in monetary values ● Be aware of the wide range of options and methodologies to conduct the monitoring and measurement processes, and their suitability to different customer segments Be able to: ● Establish effective communication channels with customers to accurately capture their expectation towards maintenance service, taking into consideration the related expenditures ● Clearly establish a proper range of product maintenance options for customers, which can respond effectively to the preferences and expectation of different customer segments, say corporate or individual accounts ● Establish effective monitoring mechanism to accurately record details and events of the maintenance services provided to customers ● In case of outsourcing, also establish similar monitoring mechanism to record outsourcers' maintenance activities, as though they are own employees ● Record facts being monitored using quantifiable units of measurement, such that data storage and performance grading can be made easy ● Establish effective communication channels with personnel involved in product maintenance such that findings and problems discovered during the monitoring process can reach them in a timely manner ● Take all reasonable precautions and reviews to cater for mistakes or unexpected deviations during the monitoring and reviewing steps

	6.3 Exhibit professionalism ● Always ensure all staff members contribute their greatest effort in the process of offering product / service maintenance services to customers ● Always work with full capacity and ability to ensure successful completion of the monitoring mechanism and their subsequent operations
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish a range of different levels of maintenance services for customers - effectively monitor and measure the different levels of maintenance services - detect and resolve all problems observed in a timely and effective manner according to the company's services pledge, if any
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Maintain proper inventory control
2. Code	ITCSPL318A
3. Range	This UoC applies to all considerations, actions and procedures in maintaining a proper inventory control mechanism for the product / service in concern. This step especially focuses on the consideration between inventory level and the product maintenance services to be provided to customers, as established in the previous task.
4. Level	3
5. Credit	2
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the importance of inventory control for all companies in the retail and trading business, with no exception for CIS companies ● Understand the inventory control is a fundamental but extremely important operation and there exists a wide range of related methodologies and knowledge to be considered ● Understand the conflicting nature between say the optimal product inventory level and its related customer maintenance services ● Understand the deemed necessity in effective and efficient communication between employees involved in production, operation and maintenance to guarantee the successful implementation of this job step ● Be aware of the potential financial impact and damages to competitive situation of the company if mistakes or deviations occur in determining the proper level of inventory for the product / service in concern 6.2 Maintain proper inventory control Be able to: ● Exercise good anticipation skill to determine the proper product inventory level, to cater for the maintenance requirements of different customer segments ● Strike a proper balance between arranging a sufficient, non-stopping inventory supply for maintenance services, and at the same time reducing the overall costs for inventory stocking ● Co-ordinate with different staff member groups such as production team, operation team, customer services and maintenance services to ensure the overall smooth operation for this job step ● Establish effective monitoring mechanism to cater for any problems or exceptional events from product development to maintenance servicing ● Exercise good anticipation to evaluate the future market situation of the inventory stock in concern, and consider the impacts due to say technology outdate, loss in competitive power, etc ● Take all reasonable precautions and reviews to cater for mistakes and problems during execution of this job step, and prepare remedy actions in advance 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in this task for maintaining proper inventory level to support the established customer maintenance services ● Always maintain a proper balance between the interests of customers and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish a mechanism for proper inventory control to support customer maintenance services - ensure the inventory control mechanism works effectively, efficiency and bringing long term benefits to the company
Remark	

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Carry out products / services switching / phase-in	
2. Code	ITCSPL319A	
3. Range	This UoC applies to all arrangements, procedures and tasks relating to the carrying out of successor products switching or phase-in after decommissioning and de-installation of the previous products / services. This is a key step in customer retaining at expiry of a particular product / service.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the ultimate importance of product switching or phase-in as the means to retain customers and maintain competitiveness, even after expiry and un-installation of the previous product / service ● Understand the strong correlation between smooth product switching / phase-in and customer satisfaction / loyalty ● Understand the similar nature between product switching / phase-in and new product /service installation, and requiring efforts and resources at a similar level ● Understand that necessity for deploying suitable and qualified personnel to actually carry out the product / service switching / phase-in tasks ● Be aware of the different methods and technique to perform product / service switching / phase-in, each with its own advantages and unique resources requirement 6.2 Carry out products / services switching / phase-in Be able to: ● Well plan in advance the most suitable product / service switching / phase-in scheme for customers indicating the desire to retire some existing products / services ● Explore chances to proactively recommend customers to replace / upgrade their existing products / services, which should result in mutual benefits to the company and customers ● Identify the most suitable staff member or member groups, or even outsourcers to conduct the actual products / services switching / phase-in, with special focuses on their technical and soft skills ● Actually carry out those product switching / phase-in job tasks and working steps ● Take note of and handle those outstanding relationship between the old and newly switched in products, with customer satisfactions treated as the top priority consideration ● Perform all necessary follow up actions and procedures similar to new product / service installation ● Effectively communicate with all level of staff members involved in working with or supporting the newly switched in / phased-in products / services 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in carrying out the product / service switching / phase-in tasks ● Always strike a proper balance of interests between customers and the company at all time	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully arrange a successor product / service for customers after expiry of the previous one ii. efficiently and effectively switch or phase-in the new successor products / services for the customers iii. successfully retain customer loyalty and maintain customer relationship after introducing the successor products
Remark	

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Monitor and document the products / services switching / phase-in process	
2. Code	ITCSPL320A	
3. Range	This UoC applies to all arrangements and procedures relating to the monitoring and accurate recording of the successor products / services after their introduction and implementation. This is a key step in ensuring whether the successor product / service is appropriate for the customers.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the necessity in closely monitoring and logging all activities related to products / services switching / phase in ● Understand the importance in monitoring and documenting any business processes including the products / services switching / phase-in, as a means to evaluate its success and working within the right track ● Understand that the monitoring and logging activities must be performed in a timely and economic manner, and with minimal distortion to activities being observed ● Understand that the monitoring and logging activities must be performed in a highly accurate manner, and results can serve as good references for any subsequent tasks ● Be aware of the different available means and methods to perform monitoring and documentation, each with its own advantages and shortcomings 6.2 Monitor and document the products / services switching / phase-in process Be able to: ● Well define in advance the level and scope of monitoring activities for the products / services switching / phase-in process, and inform all related staff members accordingly ● Plan in advance staff deployment for the monitoring and documentation tasks, taking into consideration their suitability in terms of skills and abilities ● Actually carry out or supervise the execution of monitoring and logging activities for product / service switching / phase-in ● Make the necessary arrangement if documentation involves the use of computer software such as database management systems (DBMS) ● Keep good observation on findings from the monitoring activities to cater for exceptional events requiring follow up actions ● Effectively communicate with senior management in case their attention and decision is required for this job step ● Effectively communicate with all related staff members in case any follow up / ad hoc activities needed to be performed by them 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in working with monitoring and documenting products switching / phase-in ● Always strike a proper balance of interests between customers and the company as a whole	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully monitor the status of the successor products / services after their switching or phase-in to replace the previous ones ii. accurately record and document the statistics related to the new successor products / services iii. draw valid conclusion regarding the statistics before recorded and monitored
Remark	

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Monitor and document the decommissioning process	
2. Code	ITCSPL321A	
3. Range	This UoC applies to all arrangements and procedures related to the monitoring and documentation of the product / service decommissioning. This is a key step in ensuring whether all related tasks are performed as expected and within established limits.	
4. Level	3	
5. Credit	1	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Monitor and document the decommissioning process	<u>Performance Requirement</u> ● Understand the necessity in effectively monitoring the product / service decommissioning such that any mistakes / deviations can be detected as early as possible ● Understand the importance in properly and accurately document all information related to product / service decommissioning, such that any subsequent enquiries / complaints can be handled with factual records ● Understand that the monitoring and documentation activities must be performed in a timely and economic manner, and with minimal distortion to activities being carried out ● Understand that the monitoring and documentation activities must be performed in an accurate manner, and results can be made use of during any subsequent review tasks ● Be aware of the different available means and methods to perform monitoring and documentation, each with its own advantages and shortcomings Be able to: ● Well-define in advance the level and scope of monitoring activities for the products / services decommissioning, and inform all involved internal and external personnel accordingly ● Plan in advance staff deployment for the monitoring and documentation tasks, taking into consideration their suitability in terms of skills and abilities ● Execute the monitoring activities for product / service decommissioning ● Carry out the recording and documentation activities for product / service decommissioning ● Keep good observation on findings from the monitoring activities to cater for exceptional events requiring follow up or even immediate attention ● Make the necessary arrangement if documentation involves the use of computer software such as database management systems (DBMS) ● Effectively communicate with senior management in case their attention or decision is required for this particular job step ● Effectively communicate with all related internal and external personnel in case any follow up / ad hoc activities needed to be performed by them

	6.3 Exhibit professionalism ● Always ensure all related personnel contribute their greatest effort while monitoring and recording information about products / services decommissioning ● Always strike a proper balance of interests between customers and the company as a whole, may also include outsourcers
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully monitor the procedures and status performed during product / service decommissioning - accurately record and document the information related to product / service decommissioning
Remark	

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Supporting vendors co-ordination in product withdrawal	
2. Code	ITCSPL322A	
3. Range	This UoC applies to all arrangements and procedures related to the co-ordination, liaison, settlement and financial clearing with vendors / outsourcers for those retired products / services. This step is essential in protecting the interests of the company as well as maintaining good working relationship with those vendors.	
4. Level	3	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Supporting vendors co-ordination in product withdrawal 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance in the proper co-ordination with vendors / outsourcers supporting own company's products / services which now become retired ● Understand the necessity of effective communication and liaison with retired product vendors in eliminating misunderstanding and establishing new working relationship ● Understand the necessity in clearing financial issues with retired products vendors / outsourcers and accurately updating own accounting records and calculating profit / loss of the product / service in concern ● Be aware of the difficulty and complexity coordinating and liaising with vendors having long-term working relationship and multi-dimensional crossovers Be able to: ● Consistently keep accurate and detailed records of all vendors / outsourcers to serve as reference material in case of necessity, such as when a product / service becomes retired ● Well-define in advance with all vendors / outsourcers the terms and conditions for co-operation, and enforce these arrangements with proper contracts with the vendors ● Continuously monitor the vendors / outsourcers to ensure they perform and carry out their tasks according to contract and within defined limits ● At product retirement, clearly liaise with related vendors / outsourcers and request them to complete all outstanding items before the actual retirement. ● At product retirement, clearly identify and calculate all financial items with related vendors / outsourcers to ensure the proper accounting entries and records for both parties. ● Always attempt to keep a good relationship and cooperation opportunities with good vendors / outsourcers even after the related product / service retirement ● Always ensure all retired products related vendors / outsourcers will continue to contribute their greatest effort honestly ● Always strike a proper balance of interests between the vendors / outsourcers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully coordinate with vendors involved in products / services to be retired to ensure the smooth completion ii. maintain long term and harmonious working relationship with vendors even after product retirement	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Protect products / services intellectual property	
2. Code	ITCSPL323A	
3. Range	This UoC applies to all considerations and arrangements related to the enforcement and protection of intellectual property (IP) of the company's products and services. This step is related to but even beyond the context of security protection.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Protect products / services intellectual property 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of intellectual property protection for all products / services with creative contents, and CIS products / services are of no exception ● Understand that products / services intellectual property protection may cover a wide range of items including patent, trademark, design and copyright ● Understand that all intellectual property protection measures must take into consideration related existing legislations ● Understand that the effectiveness of intellectual protection measures must be accompanied with suitable education and promotion activities ● Be aware of the possible impact and consequences in case any product / service intellectual property is being infringed Be able to: ● Well-define in advance the level and scope of intellectual property protection to be applied to the company's different products / services ● Enforce the established intellectual property protection such as the application of patent or copyright, etc ● Establish a monitoring scheme such that any infringement of the company products / services' intellectual property can be detected as early as possible ● Establish effective communication channels with government departments such as the Intellectual Property Department to facilitate handling of IP related matters ● Establish working relationship with related organisations such as the Intellectual Property Agent to facilitate handling of IP related matters (outsourcing) ● Establish procedures to handle cases when product / services' intellectual property is being infringed, and ensure the procedures are understood and being followed by related staff members ● Always ensure all related staff members contribute their greatest effort in protecting intellectual property of the company's products / services ● Always strike a proper balance of interests between customers, and the company as the intellectual property owner as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully establish and make effective a set of intellectual property protection for the company's products / services ii. ensure that these IP rights are being protected and any infringement can be detected and handled in time	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Arrange training for upgrading knowledge on security issues	
2. Code	ITCSPL324A	
3. Range	This UoC applies to all tasks and arrangement for the provision of training to staff members / related personnel involved in the handling of security issues for the products / services in concern. The step is essential in ensuring that there are sufficient and qualified personnel to perform security related tasks.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand training is mandatory in equipping or upgrading staff members / related personnel with the necessary security knowledge to handle tasks or problems in this area ● Understand there are no shortcuts in acquiring knowledge and skills including those relating to security, and such training should be conducted as early as possible ● Understand the complicated situations that different staff members may react differently to the requirement for training (including security related), which can significantly affect the expected outcome ● Understand security requirements and techniques can change frequently and cause difficulty in arranging timely and effective training ● Be aware of the wide range of sources for security training provision including vendors, external training bodies and internal training departments, each with its relative advantages and disadvantages 6.2 Arrange training for upgrading knowledge on security issues Be able to: ● Identify those security related areas in the company's products / services that demand training for staff members to pick up or upgrade the necessary knowledge ● Develop a comprehensive and curriculum like specifications about the security related trainings, which should be easy for understanding and followed by all related personnel ● Explore and co-ordinate with appropriate training sources such as vendors, external training schools, agencies, etc to participate in the security training programmes ● Carry out development of the security training materials, training specifications and other training documents ● Arrange suitable external and internal trainers to conduct the training on security issues, may also involve train-the-trainers activities ● Match with accuracy the different security training programmes and staff members to ensure the latter attend classes that are most useful to them ● Develop post training evaluation systems to evaluate its effectiveness ● Maintain an effective monitoring system to keep track of staff performance in handling security related tasks after receiving such training	

	6.3 Exhibit professionalism ● Always work with full capacity and ability to ensure successful execution of the security training activities ● Always maintain a proper balance between the interest of the company and staff members enrolled in the security related trainings
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - provide suitable security related trainings to personnel most in need of them - effectively improve staff performance after the security training classes
Remark	

Functional Area: Product & Service Life Cycle (Security)

1. Title	Carry out fault detection	
2. Code	ITCSPL325A	
3. Range	This UoC applies to all considerations and processing related to the detection and handling of faulty situations during security audit procedure designing. This step usually goes parallel with the security control reviewing.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out fault detection 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Understand the importance in the detection of any faulty or erroneous situations on time, including the company's existing security related issues - Understand the necessity in clearly defining the meaning of faulty situations or cases if the process of fault detection is to be effective and efficient - Understand that any faulty cases detected must be reported, analysed and catered for immediately, but there are resources implications - Understand that allocation of sufficient and quality personnel, together with well-planned administrative procedures are key factors for effective fault detection - Be aware of the different available approaches and techniques for fault detection, each with its own benefits and shortcomings Be able to: - Exercise good planning skill to embed in advance elements of fault detection while designing the procedure for the company's security audit - Prepare in advance the necessary resources for fault detection such as administrative arrangement, related hardware and software, and even suitable manpower resources to ensure that the task can commence and work when needed - Conduct and monitor the actual carrying out of those security related fault detections activities - Ensure all faulty or erroneous situations / cases can be detected with details sent to responsible personnel immediately - Ensure that those built-in automatic mechanism (if any) will be triggered and can react immediately when faults are detected - Ensure that responsible personnel will be alerted of the faulty situations immediately and there are pre-established guidelines for them to follow, react and report - Effectively communicate and recommend follow up actions for customers / users if they are affected by the faults being detected - Always ensure all related staff members contribute their greatest effort in carrying out and reacting to those fault detection activities - Always strike a proper balance of interests between customers and the company , and also efficiency and security protection
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully design and implement a chain of activities for the company's security fault detection ii. enable the security fault detection mechanism to effectively operate iii. ensure all faulty situations can be detected and handled appropriately	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Carry out functional testing	
2. Code	ITCSPL326A	
3. Range	This UoC applies to all procedures and activities related to the carrying out of the company's security functional testing. This is a key component of the overall security testing, and actually all subsequent tasks can be considered as subsets or lower level activities of security functional testing.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out functional testing 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Understand that security functional testing targets for what should be done and test for conformance to security function specifications and underlying security model - Understand the importance in allocating the appropriate level of resources for carrying out the security functional testing - Understand that the security functional test needed to be done by qualified personnel with relevant experience and expertise - Understand the necessity of a security vulnerability testing – identification of flaws in design or implementation that can subvert intended security behaviour - Be aware of the different available approaches and methodologies to carry out security functional testing, each with its own advantages and shortcomings Be able to: - Well-define in advance the scope and coverage of the security functional testing, and probably consolidate all details into a testing plan - Fully consider critical factors while preparing the security functional testing plan, including say complexity (representing security functional specification and determining coverage), and costs (non-reusability of previously developed tests) - Carry out those security functional testing activities, taking into consideration suitability in skills and abilities of responsible employees - Carry out the execution of tasks listed in the company's security functional testing plan - Document results and findings about the security functional testing, making use of software such as database management systems (DBMSs) whenever applicable - Exercise good observation and analysis skills to work with findings from the security functional testing, and propose appropriate follow up actions if necessary - Effectively communicate with all related staff members in case any follow up / ad hoc activities needed to be performed by them - Always ensure all related staff members contribute their greatest effort and honesty in activities related to security functional testing - Always strike a proper balance of interests between customers, employees and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully establish a proper security functional testing plan for the company ii. ensure the functional testing will be conducted on time by qualified personnel iii. correctly interpret findings from the testing and propose appropriate follow up actions	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Carry out product and service access security testing	
2. Code	ITCSPL327A	
3. Range	This UoC applies to all procedures and activities related to the carrying out of the company's access security checking. Actually this step is a component of the overall security testing, and sometimes categorised as part of the security functional testing.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out product and service access security testing 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand that access security checking is a fundamental activity, but at the same time also an indispensable item in the overall security testing of the company ● Understand that for the sake of comprehensiveness access security needed to be conducted whenever a user calls a method that accesses a protected resource or information ● Understand that access security checking will be experienced by customers of the company's products / services and thus demands for proper handling ● Understand that an effective access security checking mechanism demands for consistent treatment to successful and non-successful access or login attempts ● Be aware of the wide range of techniques and methodologies for access security checking, each with its own advantages and shortcomings ● Well-define in advance the scope and areas for the access security checking within the company's overall security testing plan ● Carefully consider critical factors while determining details of the access security control, including say the means (using password - requirements imposed upon password), and related administrative arrangements (number of attempts allowed for password entry, password expiry, password history, etc) ● Arrange implementation of the established access security checking methods, with the adoption of software programs or modification of existing software systems ● Closely monitor the effective carrying out of the access security checking to ensure no of security leakage will happen ● In case loopholes are discovered or malfunctioning in access security occurs, take all necessary actions to ensure that the case can be detected and handled immediately ● Communicate with customers effectively and skillfully such that they know the company's policies regarding access security checking, and will follow the guidelines and advices for them ● Effectively communicate with all related staff members in case any follow up / ad hoc activities regarding access security needed to be performed by them ● Always ensure all related staff members contribute their greatest effort honestly in conducting activities related to access security checking ● Always strike a proper balance of interests between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully design a proper access security checking scheme for the company ii. ensure all access security checking tasks will be executed effectively and correctly without being bypassed iii. determine and conduct remedy actions in case problems or errors related to access security do occur	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Handling abnormal instances	
2. Code	ITCSPL328A	
3. Range	This UoC applies to all considerations and procedures related to the handling of abnormal security instances caused by customers / users activities related to security. Actually this step is a component of the overall security testing, and sometimes categorised as part of the security functional testing.	
4. Level	3	
5. Credit	3	
6. Competency	6.1 Possess knowledge in the subject area 6.2 Handling abnormal instances 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the unavoidability of abnormal instances caused by customers / users of the company's products / services, and those related to security issues are of no exception ● Understand the potential impacts or damages to the products / services in concern caused by customers' abnormal instances / activities, and the adverse effects may even extends to the company as a whole ● Understand that some abnormal instances can be anticipated such as duplicated log-in whereas some are difficult to foresee, but both need to be handled timely ● Understand that successful handling of abnormal instances caused by customer activities need their co-operation, and can transform into potential business opportunities ● Be aware of the a wide choices of approaches and methods for abnormal instances handling, with its own benefits and shortcomings Be able to: ● Well-define in advance the set of normal activities and instances that are allowed for customers / users of the company's products and services, thus any deviation can be regarded as abnormal and highlighted for immediate handling ● Set up a historical database for such abnormal instances, and document the remedy actions performed ● Explore the opportunities to make use of computer software for the above documentation activities, such as DBMSs or simply office tools like Excel, Access, etc ● Propose methods and actions to handle those abnormal instances detected ● Propose means and actions to prevent the same abnormal security instances to happen again, if possible ● Effectively communicate with all related staff members in case any follow up / ad hoc activities needed to be performed by them regarding those abnormal security instances ● Always ensure all related staff members contribute their greatest effort honestly in identifying and tackling abnormal security instances caused by customers / users ● Always strike a proper balance of interests between customers, employees and even the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully design and fix standard policies / methods to handle abnormal security instances caused by customers / users - ensure all such abnormal instances can be handled and resolved in time with minimal adverse effects	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Conduct focus group analysis	
2. Code	ITCSPL401A	
3. Range	This UoC applies to those operations about customer needs investigation during the early stage of the product and service life cycle, but this time with special attention to focused customer groups. The process enables the company to provide best services to different customer groups with limited resources.	
4. Level	4	
5. Credit	3	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Fully understand the necessity of concentrating effort to explore and analyse the needs of selected customer groups one at a time - Accurately grasp the potential benefits derived from getting the essential requirements of focused customer groups - Fully comprehend the keen competition situation which necessitate the capturing of essential customer requirements in advance of competitors - Be aware of the company's existing and future products / services for referring to customers - Be aware of latest trends in new products / services that may arouse the interest of potential customers 6.2 Conduct focus group analysis Be able to: - Congregate and allocate resources for conducting focus groups analysis - Develop investigative strategies to identify existing customer groups / segments that have potential to yield the highest revenue in the near future - Employ effective questioning and analysis techniques to capture key and useful information from customers - Effectively communicate with customers to introduce the company's new products / services - Skilfully transform the requirements of customers into corresponding actions and tasks to be completed by various teams - Communicate with management to solicit additional resources to fulfil the needs of customers, with anticipation of future increase in income - Acquire the knowledge required to effectively perform focus group analysis 6.3 Exhibit professionalism - Work with full capacity and ability during the entire process of focused customer groups' needs investigation - always place customer needs as first priority, and the tasks of needs investigation aim for better customer services in the future - Always adopt fair treatment to customers in different segments	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. accurately classify customers into the selected focus groups for investigation ii. effectively solicit useful information from different focus groups, and propose follow up actions / activities after the results studying and investigation	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Communicate with customers	
2. Code	ITCSPL402A	
3. Range	This UoC applies to all operations involved in the routine but important tasks of keeping in touch with customers. Staff members involved can range from top management to front-end employees. There also exists a wide range of modes and depth of customer contact.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Recognise the importance of communication with customers in soliciting their requirements ● Recognise the importance of communication with customers in order to introduce them the company's products / services ● Fully understand the importance of regular communication with customer in maintaining their loyalty towards the company's products / services ● Identify different means of contacting customers including meetings, visits, interviews, electronic media and other social activities ● Forecast potential benefits derived from the frequent exchange of ideas with customers 6.2 Communicate with customers Be able to: ● Allocate resources to conduct regular and ad hoc contacts and meetings with customers ● Master various means to contact customers, always with the idea of maximum flexibility for the customers ● Explore the requirements and needs of customers during all chances of meeting with them ● Transform customer requirements into actions or tasks ● Determine the necessity of requesting additional resources from management to fulfil the solicited customer requirements ● Accurately record the essential contents during contacts and meetings with customers for review, analysis and follow up purposes, using computer based software such as data warehousing, CRM, etc when necessary 6.3 Exhibit professionalism ● Always work with full capacity and ability while getting in touch with customers ● Always place customers benefits in first priority, and with commitment to provide the best customer services ● Always adopt fair treatment to customers in different segments	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. get in touch with customers when needed ii. effectively communicate with customers and solicit their feedbacks towards the products and the company as a whole	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Carry out the business plan to launch the new products / services based on corporate strategy	
2. Code	ITCSPL403A	
3. Range	This UoC applies to all activities / operations involved in introducing the new products / services to the market. All guidelines and essential indicators are already established as corporate strategies and detailed in the business plan at earlier stages of the business development life cycle.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out the business plan to launch the new products / services based on corporate strategy 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the competitive advantages of launching a new product / service in a timely manner ● Aware with alertness the importance of sticking to the criteria established in related corporate strategies when introducing a new product / service to the market ● Grasp the necessity in properly deploying the company's financial and manpower resources in the product launching process ● Be aware of the market responses at all time during the product launching process, and be able to adjust the launching plan if required ● Be aware of any deviations from the original business plan and provide advices for all level of staff members involved in product launching activities Be able to: ● Comprehend all details in the original business plan and compile clear steps / procedures to launch the new product / service accordingly ● Allocate available resources including funding and manpower to carry out the tasks listed in the confirmed business plan for the new product / service ● Monitor the activities / tasks performed by all levels of staff members during the process and observe closely for deviations from the original business plan and corporate strategy ● In case of outsourcing, also monitor the activities / tasks performed by outsourcers and observe closely whether there are deviations from the original business plan and corporate strategy ● Identify successful factors during the new product / service launching process such as KPI, SLA, response time (if applicable), etc ● Stick to established policies and follow agreed procedures in all operations related to launching of the new product ● Work with full capacity and ability at all time ● Always maintain a proper balance between the interests of the company and customers
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully introduce the new product to the market with minimum deviation from the original business plan ii. satisfy all key performance indicators established earlier	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Formulate the charging scheme	
2. Code	ITCSPL404A	
3. Range	This UoC applies the establishment, evaluation, implementation and review of the pricing and other related details of the new products / services in concern. This is one of the final tasks in the overall return on investment management phase.	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Formulate the charging scheme 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the significance in setting a specially tailored charging scheme for a new product / service ● Grasp the possible wide deviations in revenue arising from different charging models ● Fully comprehend the basic factors in setting up a particular charging scheme, such as usage volume, usage type, customer loyalty discount, inter or intra network operations, etc ● Be aware of the different factors of consideration in setting up a charging scheme such as revenue, market share, customer retention, expected product lifespan, etc ● Be aware of the necessity to maintain consistency and compatibility with other charging schemes of existing products / services Be able to: ● Figure out a clear, easy to understand and apparently attractive charging scheme for customers of the new product / service in concern ● Incorporate considerations from the standpoint of customers while setting up a charging scheme, so as to grasp customers' cost effective perspective ● Demonstrate accurate anticipation capability in evaluating customers' responses and elasticity towards different charging schemes, and calculate the corresponding revenue ● Always alert of competitors' charging schemes for similar products / services and be able to adjust own scheme in a timely and appropriate manner ● Incorporate elements such as special discount, additional services, etc into the charging scheme with the target to bring longer term benefits such as customer retention, customer loyalty, etc ● Follow established company policies and special considerations (if any) in establishing the pricing and charging details ● Work with full capacity and ability to arrive at accurate and efficient setting of the scheme for product charging ● Maintain the idea of customer focus and care for customer responses during the entire working process
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. establish a charging scheme with optimal balance between company revenue and customer satisfaction ii. maintain or enlarge the company's market competitive position after introduction of the new charging scheme	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Conduct pilot running / prototyping	
2. Code	ITCSPL405A	
3. Range	This UoC applies to the operations involved in conducting the pilot running of the product / service in concern, which are to be carried out at completion of the design and development planning phase and starting of the design and development execution phase.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Conduct pilot running / prototyping 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of establishing a product prototype at this stage, which serves as a proof of concept in the previous design phase ● Accurately grasp the two possible types of concept proofing, namely with or without knowledge of customer needs ● Fully aware of the importance of establishing a product prototype for vendor selection and tender awarding in case of product acquisition (instead of own production) ● Understand the significance of a product pilot running as guidelines and references to the subsequent full scale production ● Be aware of the variety of tools and techniques in conducting a pilot running / prototyping Be able to: ● Demonstrate the skill set to design a minimal but effective environment for pilot running / prototyping ● Determine the scale of operation for this step taken into consideration the overall deployment scale of the project ● Fully consider and incorporate customers' needs in the process of product pilot running / prototype if available ● Exercise sensitive and reasonable estimation and prediction about the needs of customers in the processing of pilot running / prototyping ● Demonstrate the ability to analyse the results from pilot running and flexibly modify the original design in subsequent steps of full scale production ● In case of product acquisition from third-party vendors, demonstrate the ability to monitor their performance during the prototyping phase ● Fully consider all influencing factors such as market competition, initial customer feedbacks, employee comments, etc while analysing the pilot running ● Effectively communicate with related staff members for follow-up actions at completion of the prototyping ● Always ensure correctness and accuracy in the process of pilot running / prototyping ● Work with full capacity and ability to ensure the smooth and efficient completion of the pilot running phase ● Ensure proper balance between the interest of the company and customers at all time
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. complete the product pilot running / prototyping on time with minimal errors and resources wastage ii. establish a reliable references and guidelines for all level of staff members involved in the subsequent full scale production / operation	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Screen incoming services / materials from vendors	
2. Code	ITCSPL406A	
3. Range	This UoC applies to the management and handling of third-party vendors get involved wholly or partially in the new product / service. The main focus is at examining and evaluating their proposed material / services at the initial stage of product development.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Screen incoming services / materials from vendors 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of deploying the expertise of third-party vendors to the overall successful of a new product / service ● Accurately grasp the direct relationship between the close monitoring and tight control of outsourcers and their resulting performance ● Aware of the impact of using inappropriate material / service to the success or failure of the new product in concern ● Understand the ultimate necessity of smooth integration among material / services from different outsources, and also with the part provided by own company ● Be aware of the different approaches and techniques in screening outsourcers' services and materials Be able to: ● Closely monitor the actual performance of vendors' services / material and match against their original claims ● Describe clearly and unambiguously the actual scores and level of attainment of vendor material to facilitate the subsequent negotiation and review with them ● Identify clearly the new and advanced features of the material / service proposed by different vendors / outsourcers ● Identify with good accuracy the best vendor whose material / service mix is able to contribute to the greatest success of own new product / service ● Fully consider budget allowances and other constraints in the process of vendor material screening ● Fully consider other influencing factors such as market competition, estimated customer preferences, etc while preparing the product specifications ● Effectively communicate and review with own staff members in the process to ensure the inclusion of useful employee comments in the process ● Always ensure correctness, accuracy and fairness in the process of vendor material / service screening ● Always work with full capacity and ability to protect the interest of the company, while not missing the opportunity of incorporating useful resources from vendors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully screen proposed material / service from vendors for use by own company ii. maintain good relationship with vendors in the long run to ensure their continuous support and contribution	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Monitor the progress of products / services development	
2. Code	ITCSPL407A	
3. Range	This UoC applies to the operations and tasks involved in the continuous monitoring of the progress of products / services development. The main focus is to ensure development stays in the right track and operates within pre-set limits such as budget, time frame etc.	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Monitor the progress of products / services development 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand that all kinds of development works need close monitoring to ensure smooth operation ● Grasp the importance of under-control development towards the final success / failure of the product in concern ● Be aware of a wide range of methodologies and techniques, tools etc for project monitoring and deviation detection ● Aware with alertness the necessity for periodic reporting of the product development process ● Comprehend the necessity for staff involvement in reviewing and gathering comments towards the development work Be able to: ● Effectively carry out the operations and tasks for monitoring the progress development of the product / service in concern ● Conduct periodic reviews by means of project management tools such as GANTT charts ● Conduct periodic review meetings with related staff members, vendors and outside parties to solicit the most up-to-date and accurate status information about the project ● Conduct periodic executive meetings to report project status to senior management and seek their new guidelines, if any ● Ensure close and tight vendor monitoring and management to ensure their continuous and quality contributions to the project ● Respond promptly to deviations during the process and devise alternatives or remedy actions to ensure development remains in the right track ● Effectively communicate with all levels of staff members, outside parties etc in case if new tasks / operations need to be performed ● Always ensure correctness and accuracy in the process of monitoring the progress of the project development ● Always work with full capacity and ability to meet the quality standard of a product / project manager ● Always maintain the proper balance between the interests of the company, customers and outsourcers, etc
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. maintain the development work of the project in the right track with minimal deviations ii. react in a timely manner any required changes due to new management directives, changes in market situation, technology, etc	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Verify the products / services to meet the specifications and / or design development plan	
2. Code	ITCSPL408A	
3. Range	This UoC applies to the detailed tasks, procedures and operations carried out to verify the product / service against those specifications and requirements set in previous step of the Design and Development phases. This is an important step to ensure quality of the product / service meet the original target.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand this is a mandatory and very important step in the overall product / service design and development cycle - Grasp the importance of close coordinating with staff members and vendors (in case of outsourcing) get involved in the product / service verification - Fully comprehend the full set of product specifications and requirements fixed in the previous development plan, and its subsequent updates or amendments, if any - Understand the situation that any deviation from the original development plan must be spotted, reported and rectified in a timely manner to minimise the overall damages - Be aware of the wide varieties of tools, techniques and methodologies to carry out the verification operation, their relative advantages and disadvantages, and their applicability in the particular product / service in concern 6.2 Verify the products / services to meet the specifications and / or design development plan Be able to: - Consolidate and properly utilise all resources and manpower to carry out the actual tasks of product verification according to the established time-frame, frequency, and depth of investigation etc - Clearly grasp the major requirements as set in the original specification or design development plan, and judge with good accuracy the degree of compliance in the product / service concerned - In case of outsourcing, compare with good care the product performance against the original contractual agreement with contractors such as Service Level Agreement (SLA), Total Solution arrangement, etc. - Demonstrate the abilities and management skills of a project manager in the entire process, especially the handling of the tasks to be completed by different vendors - In case of outsourcing involving multiple vendors, able to define interfacing points and set up mechanism to ensure they can work together efficiently and effectively - Be knowledgeable with a wide range of methodologies and techniques for the tasks involved in this product verification process such as “Work Flow Design”, “Operation / Business Support System”, and the “People, Machine, Object and Method” (人, 機, 物, 法) approach, etc - Effectively communicate with all levels of internal and external personnel for all required follow up activities derived in this processing phase 6.3 Exhibit professionalism - Always ensure correctness, effectiveness and fairness in the process of product verification - Always work with full capacity and ability to ensure the smooth and efficient completion of this task, and ensure maximum contribution from all personnel involved	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. complete the product verification process in a timely manner and produce an accurate reporting about the degree / level of coherence with the original design / specifications ii. provide useful feedbacks after the verification process to rectify any shortcomings or make refinements to the products / services
Remark	

Functional Area: Product & Service Life Cycle (Development)

1. Title	Validate the products / services to meet the user requirements	
2. Code	ITCSPL409A	
3. Range	This UoC applies to the detailed tasks, procedures and operations carried out to validate the products / services against those user requirements set at the beginning of the Design and Development phase. This is another important step (on top of the previous ITCSPL 408A) to ensure quality of the products / services meet the original target, but with special focus to the users.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand this is a mandatory and very important step in the overall product / service design and development cycle - Accurately grasp the importance of close coordination with own staff members, subcontractors and outsourcers involved in the product / service verification and users contact - Aware of the vital importance of seeking the key requirements of the product / service users, including existing and potential customers - Understand the importance of matching product features / performance with the user requirements, which can likely be further broken down into different sectors with conflicting needs - Be aware of the wide choices of tools, techniques and methodologies in the process of product verification - Be aware of other key influencing elements during the working process in this phase such as customer billing 6.2 Validate the products / services to meet the user requirements Be able to: - Solicit and properly utilise all resources and manpower to carry out the actual tasks of product verification, with special focus on matching the needs and requirements of the product users (customers) - Accurately grasp the key requirements of users of the product in concern, and judge with good accuracy the level and extent on how they can be satisfied by the product / service in concern - In case if user requirements can be accurately solicited only after product launching, exercise good prediction about the likely outcome beforehand to facilitate the product verification tasks - In case if user requirements can be accurately solicited only after product launching, perform accommodating tasks beforehand such as arranging small group of customers for product pre-testing, form customer focus groups for comment gathering, etc - Fully consider other key influencing factors such as customer billing structure, market competition, etc, and analyse with good accuracy the impacts to the overall results - Fully consider other influencing factors such as market competition, estimated customer preferences, etc while preparing the product specifications - Able to understand own customers at all times and be aware of the existing service gaps, in both the product in concern and all other existing company products	

	● Propose a wide range of positive enhancements such as cost reduction, refinement in the work flow, enhancement in production technology, explore potential substitution to existing products, etc 6.3 Exhibit professionalism ● Always ensure correctness, effectiveness and fairness in the processes of seeking customer requirements and performing product verification ● Always work with full capacity and ability to ensure the smooth and efficient completion of this task, and ensure maximum contribution from all personnel involved
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - complete the product validation process in a timely manner and produce an accurate reporting about their degree / level of satisfying customer needs and requirements - propose useful enhancements after the validation process to maintain and raise customer satisfaction, or on the other hand reduces customer complaints and shifting to competitors' products
Remark	

Functional Area: Product & Service Life Cycle (Development)

1. Title	Conduct products / services testing	
2. Code	ITCSPL410A	
3. Range	This UoC applies to the review operations and tasks involved in conducting products / services testing. This is a key step in the design and development review, and the findings are used to verify whether the product / service performs as expected, and determine its acceptability.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Conduct products / services testing 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand this is a mandatory and vital step at closing of the product design and development review phase - Possess comprehensive insight of the significance of the testing results and other findings to the subsequent steps of the product development life cycle - Fully aware of the necessity of involving all related parties including staff members, vendors, contractors, users and even management in the testing process to ensure the most accurate and useful outcomes - Possess insight about the importance of reporting the accurate testing findings to senior management for their subsequent decisions - Be aware of the wide choices of tools, techniques and methodologies to conduct testing for the product / service in concern, and their relative advantages and disadvantages Be able to: - Consolidate and properly utilise all resources and manpower to carry out the product / service testing - Exercise high quality co-ordination and communication skill to ensure the participation of all related personnel for the testing, and offering of their greatest contribution - Always ensure handling of the test seriously, say treating it as a formal user acceptance test (UAT), and care of all subsequent procedures - Solicit the testing results in a highly accurate and effective manner, and store them in an appropriate format and style most suitable for further dissemination - Exercise good analysis skill to examine the testing results, grasp the main points, check possible defects and add sensible interpretation to arrive at a testing report for management review - Fully consider other influencing factors such as market competition, customer preferences, etc while conducting the product / service testing - Effectively disseminate the testing results with all related personnel and seek their further feedbacks / comments - Always ensure correctness, fairness and objectivity in the process of product / service testing - Always work with full capacity and ability to ensure the smooth and efficient completion of this task, and ensure maximum contribution from all participating personnel
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. complete and produce a timely and accurate product / service testing with	

	fruitful results ii. provide constructive proposals after analysing the testing reports, and contribute positively to subsequent tasks in the product development life cycle
Remark	

Functional Area: Product & Service Life Cycle (Development)

1. Title	Identify deviations	
2. Code	ITCSPL411A	
3. Range	This UoC applies to the tasks and operations performed to identify deviations in the process of product / service development. This is a key step in performing the overall change control - the subsequent refinement and remedy phase at closing of product development and completion of the related testing and review.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Identify deviations	<u>Performance Requirement</u> - Fully understand this is an extremely important step in the product / service development phase to ensure that the final product will be in the form or will perform as originally planned - Fully aware that the outcomes in this process will serve as essential guidelines to update the product design and development plan in the next step - Understand the necessity of accurate and comprehensive matching of the expected and actual product features for this step, as any errors will lead the subsequent works to the wrong direction - Be aware of the wide range of methods, tools and procedures to perform deviation identification, and all such means have their relative advantages and disadvantages, and demand for different levels of resources input - Be aware of the utmost necessity in disseminating the findings to related staff involved in subsequent works with the product / service in concern Be able to: - Formulate the procedures and methods to perform the deviation identification tasks, and effectively release them to involved personnel - Routinise all related tasks to a standard procedure such as product maintenance, and identify the appropriate personnel or even departments to take charge - Conduct the actual deviation identification steps in a timely, accurate, fair and careful manner, and assure the maximum contribution from all related internal and external personnel - Ensure recording with great care and most efficient methods the findings and results for this task, perhaps with the assistance of computer application software - Effectively disseminate the essential findings, observations, possible future impacts, and all related figures, etc to all related parties, also in turn collect and analyse their feedbacks - Identify areas of possible improvements or changes based on the findings from deviations identification and feedbacks - Establish the proposal for updating or changing the original product design and development plan and submit to senior management for consideration

	6.3 Exhibit professionalism ● Always ensure correctness, fairness and accuracy in the process of deviation identification ● Always ensure giving the best proposal for changes based on the results of deviation identification, with consideration for maximum benefits of the company at all time
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - produce a clear and accurate report to highlight areas of deviations from the original design for the product / service in concern - make use of the deviation report in guiding the further activities and decisions of the new product / service, which will enter the service commissioning phase
Remark	

Functional Area: Product & Service Life Cycle (Development)

1. Title	Update design and development plan	
2. Code	ITCSPL412A	
3. Range	This UoC applies to the tasks, procedures and actual changes to the product design and development plan, as the last step in the entire product development phase. The revised planning will serve as the new targets for subsequent processes in the product life cycle.	
4. Level	4	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the mandatory necessity to make suitable changes to the original product design and development plan, after reviewing the deviations and other vital factors accumulated during the initial stages of product development - Fully aware about the importance of allocating sufficient and appropriate level of resources to perform this update and change task, with consideration from perspective of the entire company - Grasp the importance of identifying areas needing changes / updates and arrange them according to the priorities for treatment - Understand the significant impacts of the changes made at this stage to the final success / failure of the product in concern, while not overlooking the impacts to other company products as well - Be aware of the possible methods, techniques and procedures to implement the required updates, and their relative advantages and disadvantages - Understand the utmost necessity of recording all the changes made and disseminate to all related internal and external personnel 6.2 Update design and development plan Be able to: - Consolidate and properly utilise all resources and manpower required for implementing the required changes and updates at this stage - Demonstrate the capabilities of a high quality project manager in managing this update phase, and ensure maximum contribution from all related personnel - Implement updates to the original product design and development plan up to the required level and coverage, which may even touch upon the original product definition, test reports and prototyping, etc - Effectively complete the update tasks within the required time-frame such that the subsequent processes in the overall product development cycle are not affected or that all the impacts are minimised - Summarise and disseminate the changes / updates that have been done to all internal staff members and external parties such as vendors, outsourcers (if any), and even customers (if considered beneficial) - Ensure recording of all the changes / updates made and store in an efficient manner (likely with the help of computer application software) for later access, references or further updates	

	6.3 Exhibit professionalism ● Always ensure efficiency, correctness and accuracy in the process of doing the changes as planned ● Always maintain the ideas of balancing the benefits of all related parties such as the company, staff members and customers in the process
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - produce an updated product design and development plan within the required time-frame and up to high quality level - establish the feasibility of the proposed changes and that the product / service in concern will actually be changed accordingly before entering into the next phase of the overall product life cycle
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Prepare the “Go to Market” Tasks	
2. Code	ITCSPL413A	
3. Range	This UoC applies to consolidate and highlight all issues and tasks required to market the new product / service in concern. This step is the major and usually first component of the product / service launch plan.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Prepare for the “Go to Market” Tasks 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand this is a mandatory step in determining the success or failure of the new product / service - Fully comprehend the overall marketing strategy of the company - Understand the influences towards the overall marketing strategy after introducing the new product / service - Be aware of the impact towards marketing expenditure and overall budget for the new product / service - Be aware of the impact towards the allocation of resources including manpower input Be able to: - Comprehend and utilise the existing division of labour pattern of the company - Effectively compile a list of key marketing activities in related to the “Go to Market” tasks - Ensure provision of clear and unambiguous briefings to the product team staff members - Ensure provision of clear and unambiguous briefings to the marketing / sales team staff members - Ensure provision of clear and unambiguous briefings to front line staff members, which at this stage is the most important group - Monitor and estimate the correlation between the strength of marketing input and the marketing performance of the new product / service - Effectively grasp first minute feedbacks after launching those go to market activities - Evaluate, review and adjust marketing activities according to the feedbacks in a responsive and timely manner - Always ensure all level of staff members fully understand the importance and impact of those go to market tasks - Always work with full capacity and ability to ensure successful execution of the go to market tasks - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. produce a list of feasible and effective activities for marketing the new product / service in concern ii. arrange carrying out the marketing activities in an orderly manner and within the most suitable timeframe	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Fine-tune the products and services	
2. Code	ITCSPL414A	
3. Range	This UoC applies to all considerations, decisions, activities and actions related to fine-tuning the new product / service, which also serves as an interim review during the entire product development life cycle. Likely revision areas include adjusting the capacity, fitting with marketing features, etc.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Fine-tune the products and services 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the existence of unavoidable mistakes / mis-understanding about any new product / service, or even the market during the initial stages - Fully understand the importance of timely adjustments / amendments to the original planning towards the final success of the product in concern - Thoroughly understand the significance that any changes / revisions will incur additional resources and sticking to the original budget constraint is also a mandatory requirement - Be aware that the demand for changing may be originated from outside factors such as competitors' new products and / or their new marketing moves - Be aware of the wide range of methods and techniques to fine-tune the product in concern, and their relative performance and costing Be able to: - Clearly identify the areas that need fine-tuning or even changes, such as adjusting the capacity, fitting with the latest marketing situations, etc - Clearly state the possible actions to implement the changes identified in the previous point, and as far as possible estimate their relative performance from a cost benefit point of view - Ensure provision of timely and accurate summary about the changes to senior management and seek their approval to proceed - Well co-ordinate with all related internal and external personnel and seek their consensus and understanding to carry out the proposed changes - Establish in details the actual fine-tuning areas such as: fine-tuning the prototype, fine-tuning the configuration, etc - Establish in details about the refinement areas such as: changing the product offer, changing the product design, etc - Determine the most appropriate degree of changes by correlating to other factors such as the sales pitch - Always maintain the optimal balance between the interests of the company, customers and other stakeholders - Always work with full capacity and ability to ensure successful completion of the product fine-tuning
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully identify the areas for fine-tuning and the detailed actions for subsequent implementation - co-ordinate all related parties from senior management to front-end staff to carry out the actual product changes	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Monitor and control products and services provision	
2. Code	ITCSPL415A	
3. Range	This UoC applies to all considerations and actions required to monitor the status of product / service provision by outside parties or vendors. Also included are activities to control and remedy the situation if any deviation from normal is detected.	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess knowledge in the subject area 6.2 Monitor and control products and services provision 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the importance for guaranteeing the continuous provision of products / services by vendors or subcontractors - Aware with alertness the danger that failure of outside parties can result in the final failure of the company's new product / service in concern - Understand the mandatory necessity in adopting effective monitoring tools to keep track of the performance of vendors / outside parties - Be aware of the significant differences between different vendors and that a wide range of methods / procedures may be necessary to watch and measure their outcomes - Be aware of the impacts caused by market competition and economic fluctuation to the operations of individual vendors / outside parties Be able to: - Effectively co-ordinate with vendors / outside parties to stress the essential demand for continuous provision of their products / services - Ensure entering into prior agreements with vendors / outside parties the alternative arrangements and penalties in case of their failure in product / service delivery - Establish effective monitoring systems to keep track of vendors / outside parties' performance especially their ability for goods delivery - Ensure all established monitoring mechanisms are being utilised continuously and performance figures are being compiled periodically - Ensure any deviations in vendors' performance can be spotted on-time and the potential impact are evaluated with high accuracy - Plan for emergencies and ensure that problems with any vendor / outside party will never becomes the single point of failure - Co-ordinate and arrange periodic meetings or other communication channels with vendors for exchanging the ideas and status of both parties - Establish a quality control mechanism to measure and evaluate vendors' goods and their compatibility with other components that make up the company's final products / services - Always target for the proper balance of the interests of the company and all vendors / outside parties contributing to the final products / services - Always work with full capacity and ability to ensure continuous supply of vendors' quality goods and services
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully arrange non-stop delivery of products / services desire from the vendors ii. maintain the smooth situation in the long run and take remedial / corrective actions timely and effectively in case of deviations	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Validate products and services meeting requirements	
2. Code	ITCSPL416A	
3. Range	This UoC applies to the detailed checking and validation work to ensure that the performance / outcome of the new product or service do meet the original requirements as planned in previous steps of the product life cycle. Requirements can include those newly created after reviewing customer feedbacks and preferences.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Validate products and services meeting requirements	<u>Performance Requirement</u> - Fully understand that customers have a wide range of expectation and desire towards CIS products / services, and it is extremely important to ensure that our output can fulfil their requirements as far as possible - Be aware of the situation that customer requirements are never static and can fluctuate with time, environment, and market conditions - Be aware of the necessity of high accuracy in validating whether our products / services meet the original requirements and their degrees / levels of coherence - Get hold of the wide range of methods / techniques in carrying out the validation tasks and it can be quite challenging in identifying the optimal choice - Be aware of the necessity in providing human and other inputs for the validation tasks - Be aware of the demand for additional follow up actions when there are exceptional findings or observations at completion of the requirements validation Be able to: - Conduct or supervise the requirements validation tasks for the new product / service in concern - Establish a set of clear and unambiguous checklists for the requirement validation tasks, and ensure all involved parties will strictly stick to them - Fully consider key measurement indicators such as subscription volume, final usage level, and product usability, etc - Effectively strive for the timely and accurate comparison of product performance against the set of established requirements and identify any significant deviations - Establish sufficient and effective communication channels with parties involved in requirement validation to guarantee consistency and information gathering - Exercise good anticipation skill and prepare in advance remedy or alternative actions when deviations from requirements are detected - Establish the guidelines and procedures to modify the products / services after reviewing findings from this validation exercise - If the product needs to be modified, exercise good anticipation skill to estimate the new amount of resources and efforts, and the best ways to acquire them

	6.3 Exhibit professionalism ● Always ensure all related personnel will contribute their greatest effort for this task step, and at the same time maintain an optimal balance between their interests ● Always work with full capacity and ability to ensure the timely and accurate delivery of results for requirements validation
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - complete the requirement validation exercise for the new product / service on time - make accurate conclusion based on the findings, and recommend necessary follow up actions if necessary
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Arrange products and services modification to entertain new requirements	
2. Code	ITCSPL417A	
3. Range	This UoC applies to all actions and tasks to be performed when there is a decision to modify the original products / services to cater for additional requirements, which in turn can be raised by different parties (customers, external personnel, or own staff members, etc).	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Arrange products and services modification to entertain new requirements 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand that modifying the new products / services is mandatory, though burdening, in order to sustain the confidence and loyalty of customers - Accurately grasp the variety of sources for raising new requirements for the product / service in concern, and all of them should be addressed as far as possible - Understand the necessity of allocating new resources for product modifications, at the same time the importance of not under estimating the resulting financial impact - Be aware of the further impact that requirement modifications may affect the final delivery schedule of the product in concern, which can be very critical in today's highly competitive environment - Be aware of the additional benefits to the company when new requirements are fulfilled Be able to: - Estimate with good accuracy the amount of additional work incurred for the product / service modifications - Well prepare in advance a product enhancement plan highlighting the steps, tasks and personnel involved in the modification work - Ensure notification of the idea of loop back cycle in the preparation of the enhancement plan - Allocate with thoughtfulness the additional resources and personnel for the modification work, again the latter can be external or internal personnel - Actually conduct or supervise the carrying out of related work to have the new product / service modified according to new requirements - Record with good accuracy the changes or updates to the original product / service and disseminate to all related parties to ensure their understanding for the remaining tasks in the product life cycle - Take very careful consideration that product modification can become iterative if new requirements are generated continuously - Anticipate with good accuracy the prolonged time frame due to the modification work, and attempt to minimise such impact to product delivery, profitability, competitiveness, etc - Always ensure all staff members contributing their greatest effort in this task step for product modifications, at the same time maintain an optimal balance between the interests of the company, staff members and customers as a whole - Always work with full capacity and ability to ensure successful completion of product modifications
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully arrange and realise the product / service modification works ii. ensure timely and quality completion of product modifications, while sustaining customer's confidence and loyalty	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Review operation / support services periodically	
2. Code	ITCSPL418A	
3. Range	This UoC applies to all steps and tasks to review the operational and support services for the product in concern. As there should be a set of standard operation support procedures to be followed and completed, the review may result in subsequent updates to the original procedures.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Review operation / support services periodically	<u>Performance Requirement</u> - Fully understand the absolute necessity in periodically reviewing the operation and support services of the product in concern, which can affect its final success or failure - Grasp the importance in pre-establishing a set of review criteria in order to accurately measure and access performance of the operation and support services being performed - Aware with alertness that reviewing is not for its own sake but serves as basis for fine tuning the earlier established working procedures, or even identify errors found in the implementation process - Be aware that monitoring and reviewing are resources consuming activities and must therefore be performed with cost effectiveness in mind - Be aware of the subsequent and follow up actions incurred and their impact to the overall budget allocated for the product / service in concern Be able to: - Establish a well-defined set of monitoring and reviewing criteria for the new product's on-going operation and support services - Establish in advance an operation and support services review procedures which are expected to be performed recurrently, with contents highlighting the detailed steps and tasks - Ensure that review findings will be collected in a timely manner and sticking to the defined format and unit / level of measurement - Whenever applicable, quantify the review findings with concrete measurements that can be checked against pre-defined limits of acceptance - Design appropriate follow up actions to handle cases when review findings indicate deviation from normal / standard performance - Prepare or supervise preparation of periodic reports about different aspects of the review findings and deliver to management and / or other related personnel on time - Explore the necessity to loop back to earlier stages in the entire product development cycle when operation reviewing indicates a fundamental / root problem with the product in concern - Anticipate with good accuracy the additional resources requirements when review findings indicate the necessity of remedy actions

	6.3 Exhibit professionalism ● Always target for objectivity and accuracy during the review process, with other considerations taken care of afterwards ● Always work with full capacity and ability to ensure successful completion of the periodic review of the product's operation / support services
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - ensure smoothly carrying out of periodic product operation and support services reviewing - decide upon the necessity and level of remedy actions based on findings from the review
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Analyse the requests for investigation from customers	
2. Code	ITCSPL419A	
3. Range	This UoC applies to those focused and specific tasks relating to analysing the request for investigation from customers. It can be originated from calls received via customer hotlines or any other means of customer contacts, but the common area is that follow up actions needed to be performed and customers should be informed of the results subsequently.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Analyse the requests for investigation from customers 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the situation that customers will and do have the right to request for investigation about the product / service, especially when problem occurs - Fully aware the deemed necessity for studying those customer requests for investigation, and determine the root causes for the related problem as early as possible - Understand the importance in exercising good analysis skill to decode the symptoms as reported by customers, while spotting accurately the actual causes - Be aware of the wide range of techniques and methods in handling the investigation requests, and their relative advantages and disadvantages - Be aware of potential losses and crisis if investigation requests are being ignored, delayed or even misunderstood Be able to: - Make good arrangement to collect promptly those user requests for product / service investigations (detailed steps are elaborated in some previous UoCs) - Supervise the analysis tasks and effectively classify and prioritise the numerous investigation requests for the product in concern - Determine and explore with good accuracy the causes for the problems / symptoms reported by customers - Estimate the possible risks and losses once a product related problem is identified and confirmed - Determine and isolate the few best feasible solutions to the problems associated with the new product / service, and their impact to overall profitability - Report and seek management's consensus to the problems discovered and solutions proposed, and promptly implement the suggestions after seeking approval - Effectively disseminate the findings and follow up actions to all level of staff members involved in the particular product / service, or also front-line staff in charge of customer contacts - Explore supporting activities that can help or fine-tune the analysis phase on a long term basis, such as staff training, more friendly customer relationship, etc - Always ensure all staff members to contribute their greatest effort in handling customer requests for product investigation - Always work with full capacity and ability to ensure accurate investigation and prompt follow up actions
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. complete the investigation tasks in the shortest possible time frame with fruitful results ii. propose constructive solutions if problems are discovered during investigation	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Review the service usage level of customers periodically	
2. Code	ITCSPL420A	
3. Range	This UoC applies to all actions and tasks related to the periodic review of customers' usage level for the new product / service in concern. Such information reflects to what extent the product are accepted, and the trend can also be obtained by routine observation.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Review the service usage level of customers periodically 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the necessity in obtaining usage / consuming level of the new product / service in order to determine the scale of operation in the remaining product life cycle - Accurately grasp the importance of accurate usage level measurement and explore the underlying reasons as far as possible - Understand the necessity for routine conduction of such information gathering and reviewing tasks in order to avoid factors due to seasonal or ad hoc factors - Be aware of the situation that periodic usage level reviewing also indicates the effectiveness of the promotion / marketing operations performed so far - Be aware of wide spectrum of possible factors affecting product usage level and that a wider range of follow up actions can be considered Be able to: - Actually conduct or supervise the carrying out of periodic gathering and review of customers' usage level for the product / service in concern - Design a well-defined time frame for information gathering and reviewing (such as weekly, monthly or quarterly, etc), and allocate appropriate resources for the tasks - Effectively comprehend and process the gathered information from different angles and dimensions, and if necessary with the aid of software such as DBMS, Data Warehousing, etc - Accurately analyse the gathered information and draw valid conclusions / explanations for them - Propose the most cost effective follow up actions based on the review findings, with the purpose to increase / improve future product usages - In case of necessity, able to purpose changes looping back to previous steps in the product development life cycle - Effectively disseminate the review findings to all level of related staff members, to keep them aware of the latest market situation and take appropriate actions within their own domain - Predict with good accuracy the future usage levels after implementing the purpose remedy actions, such that their effectiveness can be assessed in the next round - Always ensure all staff members to contribute their greatest effort in this task step for product usage level review - Always work with full capacity and ability to ensure successful completion of product usage level review
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully complete the customer product usage level review on a periodic basis ii. draw valid conclusions and propose effective remedy actions after the review	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Liaise with customer vendors for new products / services identification	
2. Code	ITCSPL421A	
3. Range	This UoC applies to all considerations, actions and procedures related to the communication with customers and vendors, with focus on issues about products / services upgrading or retiring. This step is performed after introducing the new product for some time, and reaching the critical point to decide on its future treatments.	
4. Level	4	
5. Credit	3	
6. Competency		<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that all new products or services will, after introduction to the market for some time, face the critical choice on whether to grow with further investment or proceed to retirement - Aware with alertness the decision to upgrade or retire a product or service relies on a number of factors and the view points of customers are highly influencing - Understand the decision to upgrade or retire a product or service relies heavily on the supply side and the advices and ideas of vendors are also very important - Grasp the importance in establishing effectively and efficiently communication channels with both vendors and customers - Be aware of the possible conflicting ideas and attitudes of vendors and customers towards the same product while soliciting their feedbacks - Be aware of the situation that any decision on product upgrade or retirement should take into consideration their financial impacts and the overall company strategies 6.2 Liaise with customer vendors for new products / services identification Be able to: - Establish effective long term communication channels with both vendors and customers - Communicate and liaise with customers to solicit their ideas towards the future prospect of the products / services - Effectively extract and filter valid points during the customers / vendors communication such as reasons for upgrading, new technology development, new features demanded for, etc - For upgrading, estimate with good accuracy the additional revenue associated with the refined / enhanced product - For retirement, anticipate with good accuracy the reduction in revenue and associated costs - Make the critical decision on the future step of the product / service (upgrade / retire), and work out the subsequent tasks to be followed - Report promptly the decision and justification to management for their final approval of the decision / follow up actions - Effectively disseminate the decision to different level of related staff members, and also ensure the understanding of their respective actions to be taken

	Exhibit professionalism ● Always ensure the proper balance of interests among customers, vendors, company and also staff members ● Always work with full capacity and ability to ensure successful liaison with customers and vendors regarding the future prospect of the products / services
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - carry out effective liaisons with customers and vendors and solicit their critical ideas towards the product - make the crucial decision on whether to upgrade or retire the product in concern, with sound justifications and quantifiable measures
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Estimate the financial impact for products / services upgrade / retirement	
2. Code	ITCSPL422A	
3. Range	This UoC applies to all considerations and tasks related to the estimation and calculation in financial figures the additional cost and revenue related to a product / service once the decision on further upgrading or retiring has been confirmed.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that as a profit making organisation all cost and revenue items must be identified and estimated / calculated with good accuracy, with no exception to product upgrade / retirement - Grasp the situation that demand for product upgrading or retiring can be originated from many sources and all of them have to be addressed and considered separately and carefully - Understand the necessity of allocating additional resources in case of product upgrading, and correspondingly there are financial impacts to the company - Understand the necessity of completing all necessary follow up tasks in case of product retiring, and equally there can be impacts to the company financially - Be aware of and take into consideration the potential benefits to the company at successful completion of the product upgrade / retirement process 6.2 Estimate the financial impact for products / services upgrade / retirement Be able to: - Estimate with good accuracy the amount of additional work incurred for the product upgrading / retirement - In case of product upgrading, identify with good accuracy the exact areas / functions / features that demand for further improvements - Identify the best methods to cater for the upgrading demands and calculated with clearness and accuracy the advantages of these methods over other alternatives - Effectively convert in dollar values the additional resources for implementing the upgrading tasks, and their impacts to the financial situation of the company - Treat the above tasks seriously and in a similar manner to the formulation of the original product and service strategy - In case of product / service retirement, consider carefully all reasons and indications for such termination, and most importantly the required tasks to smoothen the termination process - Calculate / estimate with good accuracy the required sources to carry out product / service retirement, which can be significant such as proposing alternative products / solutions for affected customers - Estimate the financial impact to the company originated from those expenditures for product / service retirement, taken into consideration that there should be no potential revenue as in the case of product / service upgrading	

	6.3 Exhibit professionalism ● Always ensure the balance of interests to different parties including customers, employees and the company if a product is to be upgraded / retired ● Always work with full capacity and ability to ensure successful completion of the financial impact estimation due to upgrading / retiring
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - accurately calculate in monetary terms all expenditure items related to the proposed product upgrading / retiring - accurately estimate the impacts to the company, especially in financial consideration - propose the optimal implementation plans for management's consideration
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Setup and act on alarms triggered	
2. Code	ITCSPL423A	
3. Range	This UoC applies to all considerations, decisions and actions related to the setting up of alarms or thresholds in the customer service level monitoring system of the previous step. Also included are details of those follow up actions in case such alarms are triggered or thresholds are being crossed.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Setup and act on alarms triggered 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand that setting up of alarms or thresholds are critical to the effectiveness of any monitoring system - Fully aware that setting up of alarms / thresholds can be quite complicated and need to take into consideration a wide range of factors - Understand the importance of a prompt reporting arrangement if the aforementioned alarms are being triggered - Fully comprehend the deemed necessity of planning for follow up actions in response to triggered alarms, with consideration regarding the level of severity - Be aware of the serious possible results if any triggered alarms or breakthrough thresholds are being ignored or delayed in responding Be able to: - Establish critical thresholds and limits which serve as alarming checkpoints within the customer service level monitoring system - Well define each of the alarm checkpoints in a clear and unambiguous manner, also with explanation on details such as severity, implications, etc - Incorporate within the monitoring system an efficient (usually automatic) reporting system if any of the alarms is triggered or any of the thresholds is crossed - Deploy designated personnel to monitor and take immediate actions to respond to alarms being triggered - Well prepare in advance the detailed procedures / steps to handle triggered alarms, with details such as event logging, immediate remedy actions and if necessary, the escalation path for problem solving, etc - Ensure documentation of all events about triggered alarms from initial reporting to final settlement of the problem, for subsequent review and investigation if the necessity arises - Exhibit excellent anticipation skills to estimate the long term effects of the alarms to the product / service in concern and even the entire company - Take good care to prevent occurrence of careless mistakes, intentional frauds, structural loopholes, etc in the entire service level monitoring system - Always ensure all staff members contribute their greatest effort and taking the greatest care to implement the monitoring and follow up tasks in this job step - Always work with full capacity and ability to ensure successful operation of the monitoring and expedited completion of follow up remedy actions
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully set up measurement points to serve as alarms within the customer service level monitoring system - ensure all expected events are being triggered and appropriate remedy actions are taken to tackle the case in a timely manner	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Identify patterns and trends on customer revenue	
2. Code	ITCSPL424A	
3. Range	This UoC applies to all subsequent analysis work related to the customer revenue data collection and reporting tasks in the previous job step. The analysis focuses on identifying the patterns and trends on customer revenue, which are useful indicators revealing the preferences and choices of customer towards the product / service in concern.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Identify patterns and trends on customer revenue	<u>Performance Requirement</u> - Fully understand that data analysis is an extremely important phase after completion of data collection and report generation, in order to identify and uncover the important elements embedded - Aware of the existence of a wide range of methods and techniques in data analysis, each with its distinct advantages and applicability in different environments - Understand the importance of exploring customer revenue patterns and trends in order to review the degree of success / failure of the product / service in concern - Fully comprehend that the pattern and trend identification process can also serves as important guidelines on all future design, production and marketing of the product / service in concern - Be aware of the possible errors in interpreting the findings from the collected data, and its escalated effects on future decisions about the product / service in concern Be able to: - Exhibit the ability to correctly interpret and explain the facts contained in the customer revenue data and reports - Exhibit the ability to correctly identify and consolidate the customer usage patterns and trends based on findings from those customer revenue reports - Provide constructive suggestions / proposals for the product in concern, such as the future production volume, provision channels, product packaging, etc - Calculate and / or estimate with high accuracy the additional revenue / benefit that can be generated if the proposal for changes are approved and finally implemented - Estimate with high accuracy the future changes in customer usage pattern if the proposal for changes are approved and finally implemented. - Effectively communicate with all level of staff members regarding the customer pattern findings, to seek management's approval for changes and co-operation of other colleagues for implementing the changes - Take all reasonable precautions and reviewing to cater for mistakes in data interpretation or unexpected deviations while implementing the recommended changes

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in this task step for customer revenue patterns and trends identification ● Always work with full capacity and ability to ensure successful completion of this analysis phase
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully identify those customer trends and patterns based on the data and report solicited - ensure the releases of constructive and fruitful proposals to cope with the usage pattern uncovered
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Setup and review maintenance contract with customers	
2. Code	ITCSPL425A	
3. Range	This UoC applies to all considerations and procedures related to the setting up of product / service maintenance contracts with customers. Also included are the subsequent and periodic reviewing of the contracts.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance of providing satisfactory maintenance services in the entire product life cycle - Grasp comprehensively the company policies towards setting up of maintenance contracts with customers - Fully aware of the needs, concerns and worries of customers such as the guaranteed provision of continuous and reliable services - Be aware of the input resources and expenditure related to the new maintenance contract - Be aware of the contribution to income revenue derived from the new maintenance contract 6.2 Setup and review maintenance contract with customers Be able to: - Establish the maintenance charging scheme with reference to the company policies and features of the particular product / service - Fully comprehend customers' requirements and effectively introduce company's strength and commitment in the maintenance services - Liaise effectively with customers and acquire their key maintenance requirements - Review regularly with customers regarding the maintenance plan - Sustain a firm position for the baseline of company's maintenance policies while exercise flexibility in dealing with customers - Accurately estimate the impact of the details in the maintenance contracts towards the subsequent expenditure and resources input in this area - Properly associate details of the maintenance contract to potential legal aspects and compliance with guidelines / regulations set by authorities such as the OFTA 6.3 Exhibit professionalism - Follow established procedures at every step of customer contact and information seeking - Work with full capacity and ability to meet the quality standard of a product manager - Maintain the idea of customer focus at all time	
7. Assessment Criteria	The integrate outcome requirements of this UoC are the abilities to: i. set up maintenance contracts with customers which can identify and solicit their needs ii. effectively match the features of own products with customer needs and propose different alternatives in the maintenance contracts to satisfy the customers	
Remark		

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Setup and review maintenance contract with vendors / suppliers	
2. Code	ITCSPL426A	
3. Range	This UoC applies to all considerations and procedures relating to the setting up of maintenance contracts with vendors and suppliers of the product / service in concern. Also included is the subsequent and periodic reviewing of the contracts.	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Setup and review maintenance contract with vendors / suppliers 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the importance of acquiring reliable maintenance services from vendors / suppliers in the entire product / service life cycle - Accurately grasp the company policies governing the setting up of contracts - including maintenance contracts with vendors / suppliers - Understand the background and all relevant facts of the vendors / suppliers for evaluating the quality and reliability of their maintenance services - Be aware of the financial impact to the company resulting from paying vendors / suppliers regular and / or ad hoc maintenance charges - Be aware of the positive contribution to sales and profitability for securing and utilising the maintenance services of vendors / suppliers Be able to: - Undertake or supervise the preparation and setting up of maintenance contracts with vendors / suppliers, taking into consideration relevant company policies - Determine the maintenance charging scheme with reference to the features of the particular product / service and the expected quality of service from the suppliers - Take all possible measures to explore the background and other related facts of the vendors / suppliers such that maximum benefits of the company can be attained during the maintenance period - Review regularly with vendors / suppliers regarding the maintenance plan with them - Sustain a firm position for the baseline of company's maintenance policy with vendors while exercise flexibility in dealing with them - Determine a proper balance of responsibilities and interests among different vendors if the maintenance services involve multiple vendors - Ensure confidentiality of the maintenance contracts to cope with the competitive environment - Follow established procedures at every step in setting up the maintenance contract with vendors / suppliers - Work with full capacity and ability to meet the quality standard of a product manager responsible for dealing with suppliers - Maintain the balance of interests of suppliers and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - set up maintenance contracts with vendors / suppliers which guarantees the contribution of their greatest effort in maintenance services - inject flexibilities in the maintenance contract such that subsequent review and revisions can be done in a flexible manner	
Remark		

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Contact customers for the maintenance services mainly corporate accounts	
2. Code	ITCSPL427A	
3. Range	This UoC applies to all actions and tasks related to keeping in touch with corporate customers for all maintenance services related issues. This is one of job steps for “Customer Retaining”.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Contact customers for the maintenance services mainly corporate accounts	<u>Performance Requirement</u> - Fully understand that keeping in close contact with customers is extremely essential in customer relationship management - Fully comprehend that provision of satisfactory product / service maintenance services is one of the key elements in keeping customer loyalty - Demonstrate an in-depth understanding the differences in nature and requirements between individual customer accounts and corporate accounts, and the latter usually demands for distinct and specially tailored services - Understand the significant influences to the company in financial or image aspects if major corporate accounts can be handled successfully or unsatisfactorily - Be aware of the further possibilities in re-deployment of human and other input resources to cater for changes in volume and level of product / service maintenance services demanded by those corporate accounts Be able to: - Solicit and allocate sufficient resources to maintain the relationship with customers, especially those corporate accounts - Designate account manager for each corporate customer and serves as first point of contact for all customer communication, including provision of product / service maintenance services - Properly deploy existing monitoring mechanism to record all customer maintenance services related events, with additional resource for corporate accounts if necessary - Always cater for the objective of long term relationship with customers, which is especially important for corporate customers - Arrange periodic review and progress meetings with corporate customers regarding maintenance services, and follow up any requests or proposals from customers promptly - In case all or part of the maintenance services are outsourced, take necessary measures to guarantee their services will stick to all requirements as own employees - Exercise good anticipation skill to sense and capture further preferences of corporate customers, and make the necessary arrangement in advance

	6.3 Exhibit professionalism ● Always give high priority the interest of corporate customers, while strike a balance with say other customers and the company itself ● Always ensure all participating employees / outsourcers will contribute their greatest effort in providing customer maintenance services
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully get connected with all major corporate accounts - ensure customers' long term satisfaction with the product / service maintenance and / or other services they receive
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Carry out in-depth products / services analysis	
2. Code	ITCSPL428A	
3. Range	This UoC applies to all actions and tasks relating to the investigation and analysis work of the product / service in concern. This step is performed immediately after collection of the related QoS statistical data.	
4. Level	4	
5. Credit	5	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out in-depth products services analysis	<u>Performance Requirement</u> - Fully understand the necessity in performing an in-depth and comprehensive analysis of the product / service in concern, during some points in this phase of product / service maintenance - Fully aware of the importance in arranging suitable personnel with good understanding and skills for baseline analysis to perform the required tasks - Understand the necessity in assigning suitable personnel for the in-depth product / service analysis, and allocation of proper level of resources for the tasks - Grasp the immediate necessity to detect and tackle problems discovered after the in-depth product / service analysis, and propose feasible follow up actions - Be aware of the different techniques and methodologies in performing in-depth product / service analysis, and their applicability for the particular product / service in concern Be able to: - Establish in advance clear and unambiguous procedures and schedules for the in-depth product / service analysis - Actually carry out or supervise the conduction of the in-depth product / service analysis - Ensure the analysis is performed at the appropriate level of depth, balancing the situation of limited input resources and maximum expected findings - Closely and continuously monitor the work performed by personnel involved in in-depth product / service analysis - In case of outsourcing, ensure external personnel will perform in the same manner and produce comparable results as the company's own employees - Interpret with high accuracy the findings and summarise key findings in report format for perusal by personnel involved in follow up or remedy activities - Report in-depth product / service analysis findings and proposed feasible solutions to senior management for their decisions - Clearly disseminate in-depth product / service analysis findings to staff members in concern, and give clear instructions and directions to their subsequent follow up actions

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort while performing the in-depth product / service analysis ● Always report and make proposals based on actual findings during the in-depth product / service analysis, while maintaining a proper balance of interests between customers and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully conduct the detailed investigation and analysis for the product / service in concern ii. ensure timeliness, accuracy and proper level of depth for the product / service analysis iii. capture accurate and appropriate data from the investigation, then followed by suitable recommendations
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Carry out baseline analysis for performance monitoring	
2. Code	ITCSPL429A	
3. Range	This UoC applies to all actions and tasks relating to the baseline analysis work for the product / service in concern. This step is also performed immediately after collection of the related QoS statistical data, and with the special focus on baseline analysis.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Carry out baseline analysis for performance monitoring 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the necessity in carrying out a baseline analysis for the product / service in concern, in order to monitor its performance against the standard - Aware with alertness the importance in arranging suitable personnel with good understanding and skills for baseline analysis to perform the required tasks - Understand the deemed necessity in sticking to and follow the defined stages for baseline analysis - Fully comprehend the different effectiveness of baseline analysis under different situations, and explore its usefulness for CIS product / service - Be aware of the possible substandard product performance discovered by the baseline analysis, and its impact to the product and even the company as a whole Be able to: - Establish in advance the detailed steps and unambiguous guidelines for the baseline analysis of the product / service in concern - Actually carry out or supervise the tasks relating to the product baseline analysis - Well acquainted with and tightly follow the stages for baseline monitoring and analysis, including say building the baseline, deviation analysis, action based on analysis results and upgrading the baseline, etc - Ensure the product baseline analysis is done in accordance to pre-defined environment and stick to pre-established steps, and any deviation can be spotted and catered for immediately - In case of outsourcing the product baseline analysis, ensure external personnel will perform in the same manner and produce comparable results as the company's own employees - Report results of the product baseline analysis and propose follow-up actions to senior management for their decisions - Clearly disseminate results of the product baseline analysis to related staff members, and give clear instructions and directions to their subsequent follow up actions - Always ensure all related staff members contribute their greatest effort in performing the product / service baseline analysis - Always strike a proper balance of interests among customers, employees and the company
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully conduct the baseline analysis work for the product / service in concern ii. ensure timeliness, accuracy and proper level of depth for the baseline analysis iii. draw accurate and correct figures and conclusion for the baseline analysis, and propose proper follow up actions	
Remark		

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Monitor and rectify performance of products / services	
2. Code	ITCSPL430A	
3. Range	This UoC applies to all actions and procedures related to the monitoring and rectification of the product / services in concern. The purpose is to measure the performance of the products / services, compare against the original targets and if possible perform suitable rectifications.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Monitor and rectify performance of products / services 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the necessity in continuously monitoring the performance of the product / service in concern - Aware with alertness the unavoidability of performance deviations due to various internal, external and environmental factors, whereas limiting and stopping the adverse effects should always be treated as first priority - Understand the importance in performing timely and appropriate remedies or rectifications in case deviations are detected during product / service monitoring - Be aware of the wide range of monitoring methods and tools available and they have their relative advantages and disadvantages - Be aware with alertness the potential impacts to the company in case of inferior product performance, and further in case of unsatisfactory rectifications Be able to: - Establish in advance clear and unambiguous procedures and guidelines for monitoring performance of the product / service in concern - Actually carry out or supervise the product / service performance monitoring tasks - Closely attend to the work performed by personnel in charge of product / service performance monitoring to ensure the quality of their output - In case of outsourcing the monitoring tasks, take appropriate measures to ensure outsourcers will perform in the same manner and produce quality results as the company's own employees - Exercise outstanding observation to detect and grasp substandard performance areas, and identify the root causes - Exercise appropriate judgments and determine remedy actions to tackle the problems and eliminate those adverse effects - Summarise and report the aforesaid exceptional situations to senior management for their decision making - Summarise and report the aforesaid exceptional situations to staff members in concern, and give clear instructions and directions to their subsequent follow up actions - Always ensure all related staff members contribute their greatest effort in tasks relating to product / service performance monitoring - Always strike a proper balance of interests among customers, employees and the company while monitoring and rectifying product / service performance
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully perform the monitoring and rectifying for the product / service in concern ii. ensure timeliness, accuracy and proper level of depth for the monitoring and possibly subsequent rectifications iii. identify defects in product performance and perform the rectifications accordingly	
Remark		

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)								
1. Title	Co-ordinate manpower for the products / services maintenance							
2. Code	ITCSPL431A							
3. Range	This UoC applies to all arrangements and procedures related to the co-ordination and allocation of manpower resources for the products / services in concern, with special focus towards the related maintenance activities.							
4. Level	4							
5. Credit	2							
6. Competency	<table><tr><td colspan="2"><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> - Fully understand that product / service maintenances are usually very labour intensive, and it is highly important in allocating appropriate and sufficient manpower resources for the maintenance tasks - Aware of the fact that manpower is a highly valuable resources in CIS industry, with versatile demand for technical and general knowledge - Understand on the other hand that human resources constitute a significant portion in the overall costs of any CIS organisations, and their proper and economic deployment are vital to the company - Understand that training is essential to personnel involved in product / service maintenance and should be well-planned in advance - Be aware of the mobility of staff members at the front-line and technical level, which may have great impact to the product / service in concern or even the profitability of the company </td></tr><tr><td>6.2 Co-ordinate manpower for the products services maintenance</td><td> Be able to: - Well plan in advance the human resources requirement for the maintenance phase of the product / service in concern - Determine proper manpower deployment for the product / service maintenance, taking global consideration the influences to say other product lines or other task steps of the same product - Fully consider the pros and cons for the aforesaid manpower allocation and deployment, with focuses based on cost benefit analysis - Explore the necessity for providing different types and levels of training to staff members involved in product / service maintenance - Take good consideration and arrangement in case staff re-deployment to maintenance team is required, such as the provision of rapid skill upgrade training and / or soft skill training - In case of outsourcing the product maintenance, ensure external personnel will perform in the same manner and produce comparable results as the company's own employees - Take appropriate measures to ensure that maintenance personnel pursue and maintain very good relationships with customers carrying out the actual maintenance works </td></tr></table>		<u>Performance Requirement</u>		6.1 Possess the knowledge in the subject area	- Fully understand that product / service maintenances are usually very labour intensive, and it is highly important in allocating appropriate and sufficient manpower resources for the maintenance tasks - Aware of the fact that manpower is a highly valuable resources in CIS industry, with versatile demand for technical and general knowledge - Understand on the other hand that human resources constitute a significant portion in the overall costs of any CIS organisations, and their proper and economic deployment are vital to the company - Understand that training is essential to personnel involved in product / service maintenance and should be well-planned in advance - Be aware of the mobility of staff members at the front-line and technical level, which may have great impact to the product / service in concern or even the profitability of the company	6.2 Co-ordinate manpower for the products services maintenance	Be able to: - Well plan in advance the human resources requirement for the maintenance phase of the product / service in concern - Determine proper manpower deployment for the product / service maintenance, taking global consideration the influences to say other product lines or other task steps of the same product - Fully consider the pros and cons for the aforesaid manpower allocation and deployment, with focuses based on cost benefit analysis - Explore the necessity for providing different types and levels of training to staff members involved in product / service maintenance - Take good consideration and arrangement in case staff re-deployment to maintenance team is required, such as the provision of rapid skill upgrade training and / or soft skill training - In case of outsourcing the product maintenance, ensure external personnel will perform in the same manner and produce comparable results as the company's own employees - Take appropriate measures to ensure that maintenance personnel pursue and maintain very good relationships with customers carrying out the actual maintenance works
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	6.3 Exhibit professionalism ● Always ensure that only the most appropriate staff members are arranged to take charge of product / service maintenance ● Always ensure a proper balance of interest among customers, employees and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - accurately estimate the required manpower resources for the product / service maintenance - properly co-ordinate and allocate the required manpower resources for product maintenance - accurately transform the human resources into financial values for budgeting and cost calculation purposes
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Co-ordinate with vendors	
2. Code	ITCSPL432A	
3. Range	This UoC applies to all arrangements and tasks relating to the communication and co-ordination with vendors, but with special focus on the planning for the installation or de-installation of components for the product / service in concern.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Fully understand the importance in always keeping close contact with the company's vendors so as to solicit their prompt assistance and support when required ● Aware of the fact that for vendors' own products, they usually should be the best party to handle related maintenance tasks, say hardware and software installation / un-installation ● Understand the importance of proper vendors management and co-ordination to the long term benefits of the company ● Fully grasp the necessity of establishing standards in handling and co-ordinating with all the vendors, while maintaining flexibility in dealing with individual vendors ● Be aware of the possible mobility and major internal changes in vendor organisation, which may have impact to our own products, or even the company as a whole 6.2 Co-ordinate with vendors Be able to: ● Establish in advance a set of standard guidelines for handling and co-ordinating with various vendors ● Ensure the vendor guidelines are formally approved by senior management and resources are being allocated, if required ● Ensure all staff members getting involved with vendor contacts or co-ordination fully understand and firmly stick to the aforesaid guidelines ● Get in touch with and acquire vendor's support and services in case the demand arises, which usually is initiated by the company's own customers ● Ensure vendors fully understand the demand towards them and solicit their confirmation and / or guarantee of service provision upon request ● Arrange periodic and ad hoc reviews of the policies and relationships with individual vendors ● Keep accurate and detailed records about all communication and co-ordination events with the vendors 6.3 Exhibit professionalism ● Always ensure the vendors contribute their greatest effort and provide quality services upon request ● Always strike a proper balance of interests between the vendors and the company	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. efficiently and effectively co-ordinate with own vendors for the installation or de-installation of product components ii. ensure the arrangement is performed so as to achieve maximum benefits for the customers	
Remark		

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Establish the products / services decommissioning procedures	
2. Code	ITCSPL433A	
3. Range	This UoC applies to all arrangements and procedures related to the establishment of products / services decommissioning procedures during their retirement stage. This step is to ensure the orderly retreat of the particular product / service in concern with minimal impact to the organisation.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the necessity in the formation of a set of product / service decommissioning procedures to be followed by involved personnel - Accurately grasp the important elements such as clarity, consistency and un-ambiguity in the preparation of the decommissioning procedures - Fully comprehend the close relationship between product / service decommissioning and maintenance of good customer relationship - Understand the implication to resources allocation at decommissioning of the product / service in concern - Understand the implication to overall revenue at decommissioning of the product / service in concern - Be aware of the different approaches in establishing the product / service decommissioning procedures and their relative advantages to the organisation 6.2 Establish the products / services decommissioning procedures Be able to: - Establish a set of decommissioning procedures for the particular product / service in concern as soon as the necessity arises - Exercise good timing skill to ensure completion of the decommissioning procedures on time - Ensure all related internal and external personnel can gain access to the established procedures and understand the contents - Ensure proper documentation of the decommissioning procedures, and also ensure all subsequent amendments / updates obtain appropriate approval and follow proper procedures - Establish appropriate communication channels such that involved personnel are able to express their opinion and / or difficulties towards the decommissioning procedures - Effectively communicate with customers such that they know in advance the steps to follow for product / service decommission - Exercise good marketing and customer relationship retention skills such that a decommissioning procedure is able to transform to business opportunities 6.3 Exhibit professionalism - Always ensure all involved staff members contribute their greatest effort in preparing and understanding the product / service decommissioning procedures - Always strike a proper balance of interests between customers and the company as a whole in the decommissioning processing	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish on time the decommissioning procedures for the product / service in concern - ensure the decommissioning procedures can be understood and strictly followed by all related personnel - ensure the decommissioning procedures results in minimal impact to the overall revenue of the company	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Handle security needs for special customers	
2. Code	ITCSPL434A	
3. Range	This UoC applies to all considerations and arrangements to handle the security needs of special customers. This is one of the tasks in product /service security planning and designing, and at the same time involving customer relationship management and customer satisfaction handling.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Fully understand the fundamental necessity in planning and designing security features for embedding into the products / services for customers ● Accurately grasp the situation that different customers usually have different requirements towards the security features in the products / services they adopt ● Be aware of the key fact that security planning has to take into consideration a wide range of factors including government regulations, company security policies, customer requirements, budgets, etc ● Understand the additional benefits in customer satisfaction in case their special security requirements can be fulfilled ● Be aware of the wide choices of techniques and methodologies in designing and implementing the special security features for products / services for related customers 6.2 Handles security needs for special customers Be able to: ● Well-establish in advance the overall security policies for the company's products and services ● Effectively communicate with staff members at all levels to ensure they fully understand and be able to explain the security features embedded in the company's products and services ● Effectively communicate with customers to ensure that they are aware of the availability of those security features ● Effectively communicate and negotiate with customers who have special needs and requirements towards the product / service's security features they adopted ● Consolidate user's security feature requirements and arrive at the most cost effective means of security implementation ● Estimate with good accuracy the additional costs involved in security implementation and at the same time additional benefits derived ● Design and implement effective ways to test with users the special security features in the products and services, and solicit customer's confirmation and endorsement 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in handling the security needs for customers with such special requests ● Always strike a proper balance of interests between customers and the company, and even include the society as a whole	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully satisfy the security requirements raised by customers with special needs in this respect ii. ensure the security features are compatible with company security policies and government's legal requirement	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Ensure products / services confidentiality	
2. Code	ITCSPL435A	
3. Range	This UoC applies to all considerations and arrangements related to the ensuring and enforcement of confidentiality for the company's products / services. Confidentiality is one of the fundamental elements in security issues and is the primary objective to be fulfilled.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Ensure products / services confidentiality 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the deemed necessity in incorporating security measures in all CIS products, and own company's products / services are of no exception - Fully aware that ensuring confidentiality is the fundamental and key element in the context of product / service security protection - Grasp the key issue that confidentiality applies not only to the built-in features of the products / services, but also extends to all related customer administrative handlings - Understand the potential compromises with other requirements (such as availability) while designing methods and steps to enforce confidentiality - Be aware of the different available means and techniques in ensuring confidentiality, each with its own advantages and shortcomings Be able to: - Ensure that all related parties including staff members, customers and even management understand the meaning and nature of confidentiality - protecting information from being disclosed to unauthorised parties - Explore products / services features with exposures to the danger of information leakage and design effective measures to ensure confidentiality - Fully consider the available means and techniques to enforce confidentiality, and explore in details their relative advantages and disadvantages to the company - Actually perform or supervise the implementation of chosen means for confidentiality protection, which may involves the deployment of technical staff for creating or updating product features - Explore administrative procedures / processing with exposures to the danger of information leakage and design effective measures to ensure confidentiality - Fully consider the various means and steps to enforce confidentiality in the process of handling customers and customer information - Effectively communicate with customers to ensure they understand both the technical and administrative measures to protect their confidentiality, and invite their co-operation in adopting and following the related guidelines - Always ensure all related staff members contribute their greatest effort in carrying out steps to ensure products / services confidentiality - Always treat the protection of customer information as the highest priority task
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully adopt and implement technical and administrative measures to protect products / services confidentiality - ensure customers fully understand the available protection features and can make full use of them - ensure the implementation of confidentiality protections result in minimal disturbance to the operation of the company	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Products / services availability ensuring	
2. Code	ITCSPL436A	
3. Range	This UoC applies to all considerations and arrangements related to the ensuring of products / services availability. This is a key step in terms of security protection and at the same time also a key determinant in successful customer relationship management.	
4. Level	4	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Products / services availability ensuring	<u>Performance Requirement</u> - Fully understand the deemed necessity in incorporating security measures in all CIS products, and own company's products / services are of no exception - Grasp the key issue that ensuring products / services availability is a fundamental and key element in the context of security protection - Aware with alertness that availability basically refers to the release of information to authorised parties upon request, and thus the meaning of authority must be clearly defined - Understand the potential compromises with other security requirements (such as confidentiality, integrity) while designing methods and steps to enforce availability - Understand that products / services availability is also closely related to customer relationship management - Be aware of the different available means and techniques in ensuring products / services availability, each with its own advantages and shortcomings Be able to: - Take necessary steps to ensure that all related parties including staff members, customers and even management understand the meaning and nature of availability in security - the release of information to authorised parties only upon request - Establish agreements with customers or other stakeholders on the acceptable limits about products / services availability, say 99% of the time, 3 working days' lead time for information enquiry, etc - Fully consider related legislations while planning and determining the availability issues, such as the Unsolicited Electronic Messages Ordinance (UEMO) - Whenever feasible, formalise the above availability parameters in the form of say Service Level Agreement (SLA) with customers, and ensure all involved staff members fully understand the contents and necessity for fulfilling such agreements - Estimate with accuracy the input resources requirement for enforcing the agreed products / services availability parameters - Actually perform or supervise the implementation of the chosen means for security availability - Establish follow up or contingency planning in case the agreed products / services availability cannot be attained, with main focus to retain customer satisfaction and loyalty

	● Effectively communicate with customers to ensure they understand both the technical and administrative aspects for availability protection, and invite their co-operation in adopting and following the related guidelines
	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in working with monitoring and documenting products switching / phase-in ● Always strike a proper balance of interests between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully adopt and implement technical and administrative measures to implement agreed products / services availability - ensure customers fully understand the availability features and can make full use of them in case of necessity - ensure the implementation of products / services availability results in minimal disturbance to the operation of the company
Remark	

Functional Area: Product & Service Life Cycle (Security)

1. Title	Authentication procedures ensuring	
2. Code	ITCSPL437A	
3. Range	This UoC applies to all considerations and arrangements related to the implementation and ensuring of the authentication procedures. The main focus is to ensure all authentication related tasks will operate in the right track and fulfil pre-established constraints such as budget, time frame, legislation etc.	
4. Level	4	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that personal identity authentication is a fundamental issue in security protection, and applies to CIS customers / users with no exception - Fully aware of the importance in setting up a standardised authentication procedures to be followed by all involved personnel including employees and customers - Be aware of the wide range of approaches, methodologies and technology for authentication detection, each with its own advantages and shortcomings - Understand the necessity for broadcasting and promoting to all related personnel / parties once the company's authentication procedures have been confirmed and put into practices - Grasp the necessity for gathering comments towards the personal identity authentication procedures from participating staff member and other parties such as customers 6.2 Authentication procedures ensuring Be able to: - Design and implement an authentication procedure for use and followed by all related personnel of the company's products and services - Define in exact details and working steps on how a user (including staff members and customers) should be authenticated before gaining access to information or services - Explore and adopt the most effective and economic means to achieve the fundamental purpose of authentication - identifying an individual based on say username, password or biometric verification to ensure who the user claims to be - Explore the necessity to adopt and implement more advanced or strict means for identity authentication such as two factor authentication – ask for what the user knows and what the user has simultaneously - Effectively communicate with staff members and related parties the adopted authentication procedure and scheme, for their understanding and follow up - Effectively communicate with customers the authentication procedure before using the company's products / services, for their understanding and following	

	6.3 Exhibit professionalism ● Always ensure correctness and accuracy in the setting up and adoption of authentication procedures ● Always ensure all related parties work with full capacity and honesty in all tasks relating to identity authentication ● Always maintain the proper balance between the interests of the company, customers and the society as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully design and implement a clear authentication procedure for all personnel working with or using the company's products and services - ensure all related parties understand and observe the established authentication procedures, and be able to report and handle exceptions on time, etc
Remark	

Functional Area: Product & Service Life Cycle (Security)

1. Title	Products / services integrity ensuring	
2. Code	ITCSPL438A	
3. Range	This UoC applies to all considerations and arrangements related to the ensuring of products / services integrity. This is a key step in terms of security protection and goes hand in hand with other security issues such as confidentiality, availability, non-repudiation and authentication.	
4. Level	4	
5. Credit	2	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Fully understand the deemed necessity in incorporating security measures in all CIS products, and own company's products / services are of no exception - Aware with alertness that ensuring products / services integrity is a fundamental and key element in the context of security protection - Fully comprehend that products / services integrity basically refers to protecting information from being changed by unauthorised parties, and thus the meanings for "authorised" and "unauthorised" must be clearly defined - Understand the potential compromises with other security requirements (such as confidentiality, availability) while designing methods and steps to enforce integrity - Be aware of the different available means and techniques in ensuring products / services availability, each with its own advantages and shortcomings 6.2 Products / services integrity ensuring Be able to: - Ensure that all related parties including staff members, customers and even management understand the meaning and nature of integrity in security - protecting information from being changed by unauthorised parties - Establish agreements with customers or other stakeholders on exact conditions how a user will be regarded as "authorised", and the possibility for multi-levels security integrity setting - Fully consider related legislations while planning and determining the security integrity issues - Whenever feasible, formalise the above integrity parameters in the form of guidelines for or agreements with customers, and ensure all involved staff members fully understand the contents and necessity for fulfilling such agreements - Estimate with accuracy the input resources requirement for enforcing the agreed products / services integrity parameters - Actually perform or supervise the implementation of the chosen means for integrity availability - Establish follow up or contingency planning in case the established integrity protection cannot be achieved, with main focus to take remedy actions as soon as possible - Effectively communicate with customers to ensure they understand both the technical and administrative aspects for integrity protection, and invite their co-operation in adopting and following the related guidelines	

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort in working towards the ensuring of products / services security integrity ● Always strike a proper balance of interests between customers and the company, and even the society as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully adopt and implement technical and administrative measures to implement agreed products / services security integrity - ensure customers fully understand the security integrity features and can make optimal usage of them in case of necessity - ensure the implementation of products / services integrity measures result in minimal disturbance to the operation of the company
Remark	

Functional Area: Product & Service Life Cycle (Security)

1. Title	Identify normal / abnormal activities	
2. Code	ITCSPL439A	
3. Range	This UoC applies to all procedures and actions related to the identification of normal and abnormal customers / users activities related to security. Actually this step is a component of the overall security testing, and sometimes categorised as part of the security functional testing.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the fundamental necessity in recording all activities performed by customers / users of the company's products and services - Fully aware of the importance in analysing customers / user activities and categorised them as normal / abnormal for subsequent follow up actions - Aware with alertness that successful recording and identification of customer activities need their co-operation and can transform into potential business opportunities - Understand the importance in properly handling especially abnormal customers / users activities and eliminate the adverse effects to the company as early as possible - Be aware of a wide range of approaches and techniques for customer activities identification, recording and categorisation, each with its own benefits and shortcomings 6.2 Identify normal / abnormal activities Be able to: - Establish effective means to record and gather activities conducted by customers / users of the company's products / services, usually with the help of related computer software such as DBMSs. - Specify and establish in advance the criteria for classifying customer activities as normal / abnormal, bear in mind that such criteria can be subject to change frequently - Exercise good analysis skill to explore the reasons or intentions especially for those so-called abnormal activities, with the help of software systems such as DBMSs or even data mining tools - Fully understand that even for normal activities there are values in detailed investigation, and explore refined or more cost effective methods to serve them - Exercise quality problem solving skills and propose policies and methods to handle those abnormal customer activities identified - Effectively communicate with senior management to solicit their support towards the proposed remedy actions to tackle abnormal activities - Effectively communicate with all related staff members in case any follow up / ad hoc activities needed to be performed by them regarding abnormal customer activities tackling. 6.3 Exhibit professionalism - Always ensure all related staff members contribute their greatest effort honestly in identifying, classifying and tackling customer activities - Always strike a proper balance of interests between customers and the company as a whole	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully design a policy to identify, store and classify customers / users activities ii. ensure all normal / abnormal activities can be distinguished and being handled according to pre-established policies or methods	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Conduct products / services research	
2. Code	ITCSPL501A	
3. Range	This UoC applies to the investigation and research operations involved during the earliest stage of the product and service life cycle, aiming to clarify the situation of the new product / service involved, and to facilitate the subsequent product strategy formulation.	
4. Level	5	
5. Credit	6	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Conduct products / services research 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand that a detailed and accurate research is critical to the success or failure of the new product / service - Recognise that findings from the market research are important determinant in the allocation of input resources for the new products / services - Possess the clear insight that a product / service research is essentially a yardstick to evaluate market competition - Be acquainted with the wide range of available research techniques and methodologies - Possess the ability to forecast the impact of research results towards the overall financial expenditure of the company Be able to: - Summarise the key features of the new product / service for utilisation in the research process - Apply a wide range of research techniques and methodologies to solicit accurate and useful data for the product / service - Allocate appropriate level of resources and manpower for the research - Monitor the progress of the outsourcers in case of outsourcing the entire or part of the product / service research work - Effectively communicate with all levels of employees to identify their roles and responsibilities in the research process - Analyse, interpret and utilise the research findings to make forecast about the future prospect of the product / service in concern - Design the procedures for the remaining steps of the product life cycle based on the research findings - Ensure the following of established procedures are stick to agreed policies at every step of the product / service research processing - Work with full capacity and ability to meet the quality standard of a product manager / researcher - Maintain the idea of customer focus at all time, and keep a good balance between the benefits of the company and customers - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. complete the product research tasks within budget and timeframe ii. produce fruitful results with good accuracy for the remaining tasks of the product development life cycle	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Investigate the needs of different customer segments	
2. Code	ITCSPL502A	
3. Range	This UoC applies to needs of investigation during the early stage of the product and service life cycle, but with special focus on the wide spectrum of customer segments including existing, new and potential customers. Alternate segmenting can include factors such as age, sex, local or non-local, etc.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Investigate the needs of different customer segments 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand that there are a wide range of different customer groups and proper customer segmentation is essential - Grasp the insight that different customer segments require different levels of customer services and can have a significant impact to resources allocation - Comprehend the potential benefits to the overall profit of the company with proper customer segmentation - Be aware of the significant differences in requirements of various customer segments - Be aware of the changes in population of different customer segments and their continuous migration Be able to: - Effectively segment customers based on company policies, marketing strategies or established guidelines such as corporate accounts, individual accounts, etc - Supervise and ensure proper utilisation of investigation techniques to gather accurate, comprehensive and timely information from customers of various segments - Supervise the communication with customers in different segments to grasp their needs and introduce to them additional services of the company - Consolidate and disseminate the findings to all levels of employees and request their follow up actions in response to customer requirements - Forecast and adjust the allocation of resources to handle needs of different customer segments with the aim of Return on Investment (ROI) maximisation - Explore the necessity to prioritise the follow up marketing activities for focused customer segments - Critically review with management and different working teams the policy for handling various customer segments - Work with full capacity and ability during the entire process of customer needs investigation - Always place customers need as first priority, and the tasks of needs investigation aim for better customer services in the future - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. acquire the needs of customers with good accuracy ii. match / compare customer needs with existing product properties and functionalities, and propose constructive follow-up actions	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Conduct competitor analysis to identify competitors and their reactions	
2. Code	ITCSPL503A	
3. Range	This UoC applies to the operations involved in carrying out the investigation and analysis about existing and potential competitors of own products and services. The objective is to acquire a clear understanding of their possible moves and an accurate estimation of the impact to the company.	
4. Level	5	
5. Credit	6	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Fully understand the importance of knowing who the competitors are for the company's products / services ● Grasp the importance in evaluating the possible strategies and actions of the competitors ● Fully comprehend the necessity of adopting corresponding follow up actions to tackle the movements of competitors ● Fully understand that the analysis is not a linear step but rather an iterative process needing continuous review and redo ● Be aware of the resources and financial requirements to maintain competitive advantages ● Be aware of the customers' responses to the offerings of different vendors including own company and other competitors 6.2 Conduct competitor analysis to identify competitors and their reactions Be able to: ● Establish a list of criteria or targets in carrying out the competitor analysis ● Explore a wide range of tools / means to conduct the competitor analysis ● Exercise excellent skills in clearly identifying those existing and future competitors, and if necessary arrange them based on marketing strength ● Exercise excellent skills in predicting the possible short term and longer term actions of competitors ● Analyse the overall customer demand and requirement and evaluate the impact on the vendors of CIS products /services including own company and other competitors ● Clearly convey unambiguously the results of analysis to senior management and assist them in setting corresponding reacting strategies ● Clearly explain the results of analysis to all levels of staff members and assign them clear responsibilities in the follow up activities 6.3 Exhibit professionalism ● Follow established policies and follow agreed procedures to study and analyse those potential competitors ● Always work with full capacity and ability in all processes of competitors analysis ● Always maintain the idea of maximum benefits to own company and other stakeholders as far as possible ● Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully identify those key competitors ii. accurately collect information about those competitors, their products and estimation of their future reactions iii. propose feasibility and effective actions to tackle with the competitors	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Conduct market assessment	
2. Code	ITCSPL504A	
3. Range	This UoC applies to the collections of operations / activities related to the investigation and assessment of the market situation, in which own products / services have to deal with the combined influence of customers, competitors, vendors, regulatory bodies, etc.	
4. Level	5	
5. Credit	6	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance of acquiring knowledge about the existing market situation of CIS products / services - Grasp the importance in monitoring the respective actions of market participants including customers, vendors and regulatory bodies - Fully aware of the necessity of conducting such kind of market assessment on a continuous and iterative manner - Identify the different methods and procedures to conduct such kind of market assessment - Be aware of the impact on input resources allocation and profitability based on the results of market assessment 6.2 Conduct market assessment Be able to: - Determine the scope and scale of the market for the products / services in concern - Accurately identify the different interacting participants in the market including customers, own company, other competitors and even government departments and regulatory agencies - Ensure the usage of proven and standardised methods in conducting the market assessment on a continuous basis - Ensure proper recording of the results of assessment in an accurate and timely manner and make recommendation on appropriate follow up actions to senior management - Predict the outcomes and carry out different follow up actions and the effects to other competitors - In case the assessment is performed by outsourcers, liaise and monitor the work done by them closely to ensure their actions are consistent with our own requirements / instructions 6.3 Exhibit professionalism - Exercise objectivity and fairness in all steps of market investigation and assessment - Always work with full capacity and ability - Always maintain a proper balance of the interests of own company, customers and the society as a whole - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully grasp the actual market situation in the shortest time and by the most economic means ii. carry out accurate assessment about the market thereafter iii. propose feasible and reasonable follow-up actions	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Conduct technology assessment	
2. Code	ITCSPL505A	
3. Range	This UoC applies to the collections of operations / activities related to the investigation and assessment of own products / services concentrating on the technological aspects, which are having profound influences to the product, company and customers as a whole.	
4. Level	5	
5. Credit	6	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Conduct technology assessment 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the importance of acquiring knowledge about the current technological advancement of the CIS products / services in concern - Fully comprehend the perception and responses of customers towards the technological features of the CIS product / service in concern - Grasp the necessity of conducting such kind of technology assessment in a continuous, iterative and timely manner - Be aware of the different methods and procedures to conduct such kind of technology assessment - Be aware of the impact on input resources allocation and profitability based on the results of technology assessment Be able to: - Identify the different methods and procedures to evaluate the technological advancement of the CIS products / services in concern - Determine the correlation between advancement in technological features of the products and the choices of existing and potential customers - Ensure the usage of proven and standardised methods in conducting the technology assessment on a continuous basis - Ensure proper recording of the results of assessment in an accurate and timely manner and make recommendation on appropriate follow up actions to senior management - Predict the possible outcomes for choosing different follow up actions and the effects to customers and competitors - In case the technology assessment is performed by outsourcers, liaise and monitor the work done by them closely to ensure their actions are consistent with own requirements / instructions - Stick to established policies and follow agreed guidelines at every step and aspect of technology assessment - Always work with full capacity and ability - Maintain a proper balance of the interests of customers and own organisation at all time - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. grasp the key technological elements related to the products / services in concern ii. make recommendation on utilising new technologies to improve existing and explore new products	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Formulate products / services pricing strategy	
2. Code	ITCSPL506A	
3. Range	This UoC applies to the considerations, policies and activities involved in fixing the pricing structure and pricing levels of the new products / services in concern. Establishment of the product pricing strategy will have profound influence to all subsequent activities in the product life cycle.	
4. Level	5	
5. Credit	6	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance of building up the strategies for product / service pricing - Fully aware of the necessity in sticking to established pricing policy in maintaining the market position of the products / services - Grasp the necessity of a well-established set of strategies to the smooth operation of the company as a whole - Fully comprehend the different choices in methodology and reference materials in setting up the pricing strategies - Be aware of the necessity to train up all levels of staff members regarding the details of the established pricing strategies 6.2 Formulate products / services pricing strategy Be able to: - Clearly identify the different customer segments for the particular product / service and establish appropriate pricing structures for these segments - Establish the standards for different pricing structures (if any), which may based on differences in customer segments, usage volume, quality requirements, special service requirements, etc - Liaise effectively with customers for making recommendation on their choice of service levels and corresponding pricing structures - Guide and train all levels of staff members to ensure their understanding of the company's pricing strategies for the particular product / service, such that a consistent interface with customers can be attained - Ensure clear and unambiguous recording of the established pricing strategies and perform periodical review and changes as required 6.3 Exhibit professionalism - Work with full capacity and ability in the process of establishing the product pricing strategies to ensure long term profitability - Maintain the idea of customer focus at all time while taking into consideration the interests of the company - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. propose an appropriate set of pricing strategy incorporating the considerations for all related aspects such as profit, market share, market competition, etc ii. further propose the follow up activities for subsequent implementation of the established pricing strategies	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Formulate outsourcing strategy	
2. Code	ITCSPL507A	
3. Range	This UoC applies to the considerations, policies and activities involved in establishing and fixing the situations, terms, procedures and financial issues for outsourcing all or part of the processes in product development. Establishment of the outsourcing strategy will have profound influences to the relationship with vendors and even customers.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the benefits of making use of the services of outside organisations at different stages of the product service life cycle - Grasp the importance of tight co-ordination with outsourcers in order to bring maximum Return on Investment (ROI) to the company as a whole - Fully aware of the necessity in establishing comprehensive set of criteria for choosing partners in the process of outsourcing - Be aware of the significance in ensuring consistency of outsourcing partners' attitude towards the company objectives - Be aware of the necessity in managing third party staff as own staff members 6.2 Formulate outsourcing strategy Be able to: - Establish appropriate and feasible guidelines / standards in choosing partners for outsourced tasks - Ensure the following of established standards and guidelines strictly while interfacing with outsourcers at different stages of the product life cycle - Effectively disseminate the established outsourcer standards to all levels of own staff members and ensure they stick to them when dealing with outsourcing parties - Liaise and communicate closely and regularly with outsourcers to obtain their latest progress in a timely manner - Integrate outsourcers' work with own staff members to ensure maximum return from their combined efforts - Establish clear and unambiguous performance indicators for outsourcers and exercise those reward and / or penalty procedures accordingly 6.3 Exhibit professionalism - Work with full capacity and ability in the process of establishing the outsourcing strategies to ensure its long term stability and usability - Always maintain a proper balance of interests among own company, vendors and customers at all time - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. propose an appropriate set of outsourcing strategy incorporating considerations of all related factors ii. further propose the follow up activities for subsequent implementation of the outsourcing strategies	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Formulate self-developed products / services strategy	
2. Code	ITCSPL508A	
3. Range	This UoC applies to the considerations, policies and activities involved in establishing and fixing the guidelines, procedures and financial issues for all or part of the self developing processes in product development. Establishment of the self-developed strategy will have significant influences to all subsequent activities related to the product / service life cycle.	
4. Level	5	
5. Credit	3	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Fully understand the importance of establishing strategies and standards on how to carry out self development for products / services - Fully comprehend the various considerations and constraints before arriving at a set of self development strategies - Comprehend with alertness the impact of product / service self development to the company's overall financial situation and input resources allocation - Be aware of the cumulative effects to the company's image with the establishment and augmentation of own brandings for CIS products / services - Be aware of the necessity of interaction and co-ordination between self development and outsourcing activities 6.2 Formulate self-developed products / services strategy Be able to: - Establish appropriate standards and guidelines on how to carry out self development effort for products / services - Establish measurement yardsticks to monitor the entire process of self development work to ensure the close sticking to established standards - Effectively disseminate the established strategies to all levels of staff members and ensure their understanding and commitment to follow - Ensure the regular review of the self development strategies and perform any updating / amendment as required - Integrate the self development strategies with outsourcing strategies to resolve conflicts, ensure consistency and foster synergy - Establish clear and unambiguous performance indicators for the self development work and exercise those reward and / or penalty procedures accordingly 6.3 Exhibit professionalism - Stick to established policies and follow agreed procedures while setting up self-development strategies - Work with full capacity and ability at all time - Always maintain a proper balance of interests between the company and customers	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. propose an appropriate set of product self-development strategy incorporating considerations for all related aspects ii. further propose a set of feasible and effective activities for subsequent implementation / operation of the strategies	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)		
1. Title	Identify marketing strategies for new products / services	
2. Code	ITCSPL509A	
3. Range	This UoC applies to the considerations, policies and activities involved in establishing the marketing strategies for the new product / service in concern. Once established, its implementation will involve a broad range of staff members at all levels and functional areas, especially those at the front-end.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance of setting up appropriate strategies to launch a new product / service to the market - Fully comprehend the significance of attractive marketing campaigns and activities in arousing the attention and interest of customers - Identify the different possible outcomes and subsequent effects due to choices of different marketing strategies - Be aware of the keen market competition for CIS products / services and its correlation to the choice of marketing strategies - Be aware of the generally shorter life cycle and more significant price elasticity for CIS products / services while considering alternative marketing strategies 6.2 Identify marketing strategies for new products / services Be able to: - Determine all available alternatives while considering marketing strategies for the new products / services - Exercise accurate prediction about the responses of the market and consumers to those marketing campaigns and activities in consideration - Ensure reckoning with high accuracy the financial requirements of the different alternatives in marketing strategies - Effectively communicate with senior management and make recommendations about the final choices - Ensure continuous tracking of the latest development in market response, competition environment and customer preferences, etc, and make timely changes to marketing strategies as appropriate 6.3 Exhibit professionalism - Stick to established policies and follow agreed procedures in the process of identifying and establishing the marketing strategies - Work with full capacity and ability at all time - Always maintain a proper balance between return maximisation and customer satisfaction - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. propose an appropriate set of marketing strategy incorporating considerations of all related factors such as resources and return ii. further propose a set of feasible and effective activities for subsequent implementation / operation of the chosen marketing strategies	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Identify value-added opportunities in new products / services	
2. Code	ITCSPL510A	
3. Range	This UoC applies to investigation of additional opportunities and benefits arising from the introduction of new products / services. This is one of the tasks in the overall return on investment management regarding the new products / services.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Identify value-added opportunities in new products / services 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the importance of exploring the potential benefits that any new products / services can bring to the company - Fully aware of those immediate and subsequent opportunities to the company in association with a new product / service - Grasp the necessity for comparing alternate products / services based on their contributions to the company - Be ware of the different methods and procedures in evaluating and measuring the so called “value-added opportunities” of new products / services - Be aware of the impact on input resources including financial and manpower during the evaluation process Be able to: - Identify the key successful features in association with the particular product / service and evaluate the potential revenue thus realised - Forecast with good accuracy those additional / new demand derived from the successful launching of a new product / service - Analyse in monetary value the additional financial revenue after identifying the potential value-added opportunities from the existing products / services - Solicit a preliminary result of cost and benefit analysis from the above step and present clearly and unambiguously to senior management - Broaden the awareness and alertness to a wide range of products / services opened to the company and not restricting to those currently hot items - Follow established procedures at every working step of new product opportunities identification - Work with full capacity and ability to estimate, calculate and formulate additional benefits of the new product concerned - Maintain the idea of customer focus at all time while performing the above tasks
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with accuracy and efficiency for ROI management of the new products / services ii. effectively compare and contrasts the relative benefits of different potential products / services (if any), and consolidate the findings for management review	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Manage return on investment analysis	
2. Code	ITCSPL511A	
3. Range	This UoC applies to the actual conduction of the return on investment (ROI) analysis task for the new products / services concerned. This is the core task in the overall return on investment management phase.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance of return on investment analysis as the key fundamental factor in determining the abandoning or adoption of any new products / services - Fully aware that accuracy of the return on investment analysis is vital to the success or failure of the products / services or even the company as a whole - Accurately grasp the correct sequences and procedures in conducting the return on investment analysis - Fully aware of the wide range of different factors involved in conducting the return on investment analysis, and also their inter-acting and inter-influencing phenomenon - Be aware of the key processes or issues that need proper management during the analysing cycle 6.2 Manage return on investment analysis Be able to: - Clearly identify and calculate with accuracy the different cost elements in association with the new products / services during the analysis - Properly manage the above costing elements to ensure their behaviour are within acceptable limits - Properly manage the above costing elements and take timely remedy actions in case of unexpected outcome or drastic environmental changes - Consolidate results of the return on investment analysis and report to senior management in a timely manner, provide them with relevant advices when required - Make appropriate adjustment to the investment plan based on results of the ROI analysis and subsequent decision of senior management 6.3 Exhibit professionalism - Adopting established tools and following established procedures at every step of the return on investment management task - Work with full capacity and ability to meet the targets of quality and accurate completion of ROI tasks - Maintain the idea of customer focus at all time while performing the above tasks - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work through and complete all steps for ROI management and analysis with accuracy and efficiency ii. effectively communicate the findings and conclusion of the ROI tasks to senior management and different levels of other staff members	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Establish and Define the Product Specifications	
2. Code	ITCSPL512A	
3. Range	This UoC applies to preparation of the product specifications for the products / services in concern, which is an integral part of the design and development planning. The main objective of the product specifications is to establish clear references for subsequent steps of the product life cycle.	
4. Level	5	
5. Credit	5	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Establish and Define the Product Specifications 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Critically realise this is a mandatory and extremely important step in the product / service life cycle ● Fully understand the close relationship of this step with the pricing strategy and business case formulation ● Fully grasp the features and functionalities of the new products / services ● Fully aware of the importance in defining the accurate specifications for the products / services ● Be aware of the impact of the granularity of product / service specifications towards the overall budget ● Be aware of colleagues' reliance and consumers' confidence towards a clear set of product / service specifications Be able to: ● Supervise drafting of the features and functionalities of new products / services with the chosen language ● Precisely describe the features / functionalities using simple, clear and unambiguous wordings ● Identify the new and advanced areas of the products / services and highlight the differences with those existing ones ● Ensure description of the key feature items in the most appropriate order and depth to facilitate activities in subsequent steps of the product life cycle ● Fully consider budget allowances established at earlier stage of the product life cycle in the specifications ● Fully consider other influencing factors such as market competition, estimated customer preferences, etc while preparing the product specifications to enhance the product's competitiveness ● Fully consider environmental protection issues such as energy saving, green computing, reduced pollution, etc while preparing the product specifications to demonstrate the product's advantages on these issues in order to enhance the competitiveness, customer preference, etc. ● Effectively communicate with team members for all required follow up activities ● Always ensure correctness and accuracy in the process of preparing the product specifications ● Always ensure usefulness of the specifications for staff members in conducting tasks for subsequent steps of the product life cycle
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. produce a correct and unambiguous description for the new products / services in concern ii. establish quick and easy references to earlier stage tasks (such as pricing strategy) and subsequent processing (such as "go to market" tasks)	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Establish the products / services development plan	
2. Code	ITCSPL513A	
3. Range	This UoC applies to preparation of the development plan for the product / service in concern, which is an integral part of the development phase. The main objective of the product development plan is to establish an unambiguous reference for all staff members involved in the particular product, especially in budget and time frame.	
4. Level	5	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Establish the products / services development plan 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the development plan is an extremely important reference throughout the entire product development cycle - Fully aware that the essential indicators within the development plan are budget and time frame, etc - Grasp with high accuracy the full features and functionalities of the new product / service - Possess the insight that establishment of the development plan takes into consideration various factors such as technology, market competition, customer preferences and own development capacity - Be aware of the importance of unambiguous and consistent perception about the development plan by all levels of staff members Be able to: - Supervise drafting of the development plan with the chosen language in a simple, clear and consistent manner - Clearly identify the essential indicators such as levels of budget, resources allocation and their related criteria - Clearly and accurately determine the various time-frames throughout the product development cycle for observation by all involved staff members - Ensure the inclusion of essential elements such as product definition, customers needs in details such as product design, features, performance etc - Establish the pricing structures and pricing levels, which may be separated into different sets, one used internally for costing purpose and another used externally to cater for competition - Ensure the establishment of an internal communication and feedback channel to capture and handle comments / suggestions towards the product development plan - Effectively communicate with different levels of staff members for all subsequent activities after releasing the development plan - Always ensure correctness and accuracy during and after establishment of the development plan - Always ensure usefulness of the development plan for staff members involved in the particular product / service - Cater for customer interests and preferences at all time - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - produce a correct and easy to understand development plan for the product / service in concern - highlight the essential elements such as budget and time frame for sticking to and observation by all involved staff members	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Derive verification plan and procedures	
2. Code	ITCSPL514A	
3. Range	This UoC applies to the operations and tasks aimed to obtain the verification plan and procedures for the development of the new product / service in concern. This is a key step in ensuring that the product development and subsequent outcome and in the right track and under control.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that verification plan and procedures are mandatory and an extremely important means of control in determining the final success or failure of the product / service - Accurately grasp the importance in adopting the appropriate tools and means in order to solicit accurate and useful data - Aware with alertness the necessity of close monitoring and tight controlling of vendors in case of outsourcing the product development work - Grasp the necessity of arousing attention of all related staff members in own company and vendor locations about the plans and procedures adopted - Be aware of the wide range of tools and techniques available for the task and their relative advantages and disadvantages 6.2 Derive verification plan and procedures Be able to: - Consolidate and properly utilise all resources and manpower required for arriving at the verification plan and procedures for the new product / service - Identify the key performance factors of the new product / service and incorporate these indicators in the verification plan and procedures - Determine the most appropriate set of tools to be used for the task, such as SAT, UAT, etc - Ensure the final plan and procedures adopted can serve the purpose of testing the product / service before their actual delivery - Communicate effectively with all related staff members and outsourcers throughout the process of formulating the plan and procedures - Ensure all related staff members and outsourcers will strictly stick to requirements of the verification plan and strictly follow the procedures, once they are adopted 6.3 Exhibit professionalism - Always ensure correctness, effectiveness and fairness in the process of soliciting the verification plan and procedures for the new product / service - Always work with full capacity and ability to ensure the smooth and efficient completion of this task, and all related personnel contribute to the greatest extent - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. produce a set of verification plan and procedures most suitable for the product / service in concern ii. incorporate the established verification plan and procedures into the existing organisation structure and ensure their long term usefulness and contribution to the company	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Prepare implementation plan for launching	
2. Code	ITCSPL515A	
3. Range	This UoC applies to all considerations and preparation work to produce an implementation plan for the new product / service in concern. This is the very first step for the functional area “Service Commissioning”, immediately after product development.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Prepare implementation plan for launching 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand that a well prepared product launch plan is an important guiding document for various tasks relating to service commissioning, and even to remaining steps of the product life cycle - Master comprehensively the overall features of the new product / service in question - Understand in depth the resources allocation for the particular new product / service including financial and human resources - Understand in depth the time-frame issues for the product / service and be aware of the major milestones - Be aware of the various environmental factors and competitive situations in the process of preparing the launch plan Be able to: - Supervise and co-ordinate with staff members from various departments while preparing the launch plan, for the sake of getting from them useful information and their support - Supervise completion of the product / service implementation plan with the designated language, format and level of deepness - Clearly identify the roles and areas of responsibilities for third parties in case of outsourcing - Ensure arrangement of the contents in a logical manner such that all action steps are organised in a correct sequence - Establish clear, unambiguous and feasible steps to be followed by related staff members - Establish and always stick to an effective monitoring mechanism to ensure usefulness of the implementation plan after its release - Explore and get ready in advance any alternative solutions / actions to replace any part of the implementation plan to cater for any ad hoc changes - Always ensure all level of staff members can fully understand the contents and aware of the importance of the implementation plan - Always work with full capacity and ability to ensure correctness of the contents and accuracy of all figures - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully produce an implementation plan for the products /services - ensure the plan is the best output under the current resources, environment and market situation	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Draft the quality service procedures for validation	
2. Code	ITCSPL516A	
3. Range	This UoC applies to all considerations, measurements, methods and tasks related to the drafting of the quality service procedures for the new product / service in concern. This step serves as an important reference to validate the performance and attainment of the particular product at later steps of the product development life cycle.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Draft the quality service procedures for validation	<u>Performance Requirement</u> - Fully understand the mandatory necessity of establishing the quality service procedures to serve as key references for the product / service in concern - Fully aware of the importance of adopting correct measurements and appropriate methods for drafting of the useful procedures - Thoroughly master the keen market competition and that product quality is an extremely important consideration from the point of view of customers - Understand the necessity in gathering efforts and contributions from personnel with specific techniques / talents required for this phase, such as “Field Engineers” - Be aware of the impact of this current step to resources consumption, which are already budgeted at earlier phases and should always be tightly stick to Be able to: - Supervise drafting of the quality service procedures with the designated language, format and level of deepness requirements - Well co-ordinate and arrange personnel with required expertise to input or contribute to various parts of the quality service procedures, at the same time cater for their possible conflicts or contradictions - Ensure all measurement factors are actually useful and able to detect the performance levels of the final product, with the help of experts such as field engineers - Ensure the key performance indicators are tailored for the particular product / service, but can be extendable and applied to similar products of competitors - Ensure provision of clear and unambiguous briefings about the procedures to all internal and external personnel involved in subsequent testing / measuring of the particular product - Ensure long term applicability of the output from this step by establishing and sticking to an effective monitoring system - Ensure consistency of the quality service procedure with key issues / tasks at later stages such as the “Acceptance Test”

	6.3 Exhibit professionalism ● Always maintain a proper balance between the interests of the company and consumers while deciding and performing the various tasks in this current step ● Always work with full capacity and ability to ensure successfully completion of the quality service procedures ● Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully complete the quality service procedures on time and within budget constraints - ensure the output of this step is the most appropriate means to evaluate and measure the final products / services at different angles and levels
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Determine actual manpower input
2. Code	ITCSPL517A
3. Range	This UoC applies to all considerations and tasks relating to the estimation, arrangement and deployment of human resources to the new product / service in concern. This is the first step for the task area “Commissioning Resources Planning” and the output serves as important guidelines for subsequent steps involving human resources.
4. Level	5
5. Credit	2
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand human resources is one of the most important inputs for any CIS products / services - Grasp the importance issue that accurate estimation of human resources input is vital to the success or failure of the product / service in concern - Aware with alertness that individual employee has his / her own expertise, strength and weakness and the formation of an effective project team is a challenge - Be aware of the high mobility of employees in Hong Kong and its possible impact to the established human resources planning and manpower input - Be aware of the impact caused by fluctuation in employee salary levels, especially in time periods when experienced CIS personnel are in hot demand 6.2 Determine actual manpower input Be able to: - Exercise good forecasting and anticipation capabilities in preparing the manpower input for the particular product / service - Ensure the adoption of scientific methods in manpower needs estimation such as benchmarking with existing products and services - In case of outsourcing, be able to manage and supervise third-party employees and ensure their performance are comparable with own employees - Ensure provision of clear and unambiguous briefings to the product team staff members - Integrate manpower with other inputs and express the combined resources in numeric figures to aid calculations, forecasting and decision making - Co-ordinate tightly with the human resources department for quick and efficient handling of manpower issues such as recruitment, deployment, etc - Ensure availability of alternative manpower planning to cater for expected situations or external factors 6.3 Exhibit professionalism - Always maintain the balance of interests between the company and the employees - Always work with full capacity and ability to ensure the production of an optimal manpower planning - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. determine the optimal manpower input for the new product ii. maintain a good balance between factors such as cost saving, employee satisfaction, product profitability, etc
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Arrange training for staff involved in the new products and services	
2. Code	ITCSPL518A	
3. Range	This UoC applies to all tasks and arrangement for the provision of training to staff members / related personnel involved in the new products / services in concern. The step would be conducted immediately after confirmation of personnel input to catch up with the subsequent tasks in the product development life cycle.	
4. Level	5	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand training is a mandatory action to equip staff members / related personnel with the necessary knowledge and skills to handle all tasks related to the new products / services in concern - Grasp the fact that there is no shortcuts in acquiring knowledge and skills and that staff training should be conducted as early as possible, after confirmation of manpower input - Understand the complicated situations that different staff members will react differently to the requirement for new training, which can significantly affect the expected outcome - Be aware that product training can spread a wide range from technical knowledge to general soft skills, and the setting of a suitable curriculum can be a challenging task - Be aware of the wide range of sources for training provision including vendors, external training bodies and internal training departments, etc 6.2 Arrange training for staff involved in the new products and services Be able to: - Identify those significant areas of the new products / services that demand training for related personnel to pick up the working knowledge - Develop a comprehensive and curriculum-like specifications about the product related training, which is easy to understand and follow by all related personnel - Explore and co-ordinate with appropriate training sources such as vendors, outside training schools, agencies, etc to participate in the product training programmes - Develop or supervise the development of the training materials, training specifications and other training documents - Ensure deployment of suitable external and internal trainers to actually conduct the training programmes, which may also involve train the trainers activities - Ensure matching with accuracy the different training programmes and the staff members to ensure the latter attend classes that are most useful to them - Develop or supervise the development of post training evaluation systems to evaluate its effectiveness - Establish a monitoring system to keep track of staff performance after receiving product training 6.3 Exhibit professionalism - Always maintain a proper balance between the interest of the company and staff members enrolled in those product training programmes - Always work with full capacity and ability to ensure successful execution of the staff training activities	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - provide suitable product training to personnel most in need of them, - ensure training effectiveness by monitoring the improvement in staff performance after the training classes	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Prepare service oriented manpower planning	
2. Code	ITCSPL519A	
3. Range	This UoC applies to all considerations and tasks relating to the detailed product manpower planning, and with special emphasis on “Service” to customers. This can sometimes be an optional step but applicable to products with additional demand to strengthen the sales forces.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand human resources is one of the most important input for CIS products / services, especially those accompanied with special sales and promotion programmes - Aware with alertness the importance of allocating suitable manpower resources for this step to achieve cost effectiveness - Possess in-depth understanding that individual employee has his / her own strength and weakness, and “Service Oriented” usually demands for personnel with strong communication and soft skills - Be aware of the high employee mobility of in Hong Kong , especially sales personnel - Be aware of the impacts to other service areas or operations of the company when additional personnel are re-deployed for the new product / service in concern 6.2 Prepare service oriented manpower planning Be able to: - Clearly identify those specific product / service that deserves additional sales resources including manpower devoted to provision of services to customers - Exercise good anticipation and estimation skill to determine the appropriate level of manpower input for this task - Deploy suitable staff members for this step and perform all related and follow-up activities for the deployment - Determine suitable outsourcers or agents to fulfill the additional manpower need in case of necessity - Supervise and motivate related personnel to exercise their good communication skill in handling customers of the product / service in concern - Ensure clear explanation to related personnel the significance of quality soft skills to the success or failure of product promotion, and providing them with associated training if needed - Well estimate and work towards an ideal correlation between the cost for additional manpower input and the potential revenue - Establish an effective monitoring system to keep track of the product sales performance after inputting additional manpower resources for servicing 6.3 Exhibit professionalism - Always ensure all level of staff members fully understand the importance for providing customers with the best services - Always work with full capacity and ability to ensure successful completion of this task	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. allocate appropriate amount of manpower input for servicing ii. attract additional revenue and goodwill from the product in concern	
Remark		

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Allocate appropriate resources
2. Code	ITCSPL520A
3. Range	This UoC applies to all operations and tasks relating to the determination and actual allocation of various input resources for the new product / service in concern. This step concentrates on carrying out the actual undertakings as the relevant decisions should have been made in previous steps.
4. Level	5
5. Credit	3
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance of carrying out the resources allocation task as determined in the previous steps - Fully understand the importance for the timely and thorough completion of the tasks in this particular step - Aware with alertness the possibility of discrepancy between targeted and actual resources input due to various internal and external factors, which demands for intelligent and flexible handlings - Fully aware of the necessity of preparing an execution plan in advance for the current step to handle the numerous tasks involved - Be aware of the implicit competition for resources among the different products / services of the company 6.2 Allocate appropriate resources Be able to: - Supervise the carrying out of detailed tasks for resource allocation of the new product / service - Allocate with good estimation and forecasting skills the optimal amount of input resources - Ensure keeping of an accurate account on details of the allocated resources for subsequent review or replenishment purposes - Identify possible internal and external supplies of the required resources to ensure continuous availability, and within acceptance price levels - Effectively communicate with relevant parties significant status of the resources pool, for the purpose of identifying problems as early as possible - Anticipate and establish alternative resources allocation schemes to cater for the ever changing market and environmental factors - Ensure recording of important indicators about the resources allocation tasks for management's periodic monitoring and review - Ensure all cost performance policies established by senior management are strictly adhered to 6.3 Exhibit professionalism - Always ensure all staff members involved in resources allocation to contribute their best effort for this task - Always work with full capacity and ability to ensure optimal allocation of required resources for the particular product / service - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. allocate the optimal amount of input resources in time for the new products ii. ensure measurable and satisfactory results for the products in terms of cost benefit performance
Remark	

Functional Area: Product & Service Life Cycle (Service Commissioning)

1. Title	Establish partnership programmes with vendors	
2. Code	ITCSPL521A	
3. Range	This UoC applies to all considerations, policies, rules and operations for introducing outsourcers in the production, marketing and / or other activities in the life cycle of the new products / services. This task is however positioned at a broader and higher level, while detailed steps will be elaborated in the next task group of “Outside Parties Controlling and Monitoring”.	
4. Level	5	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Establish partnership programmes with vendors	<u>Performance Requirement</u> - Fully understand the strong necessity of introducing external vendors for a wide range of reasons such as unique expertise, cost saving, enlarged scale of operation, etc - Accurately grasp the advantages and disadvantages of working with partners instead of own staff members for product development - Fully aware of the versatility in the terms and conditions for establishing partnership programmes with vendors - Be aware of the necessity to manage vendor personnel as own employees and the difficulties in so doing - Be aware of the large number of possible vendors for a particular goods or services and the choice can be a challenging task Be able to: - Identify with great care and intelligence the suitable vendors for particular components / services related to the new products - Effectively negotiate with the different vendors with the aim to enter into partnership with the best terms to own company - Establish and conduct the necessary actions to continuously monitor vendors’ performance and highlight deviations as soon as possible - Supervise preparation of the partnership agreement with vendors with clear and unambiguous descriptions about requirements, measurements, rewards, penalties, etc - Ensure clear indication in the partnership agreement for important issues as such “Service Level Agreement” (SLA), equipment delivery (e.g. for how long), time for commission of services, vendors’ back end support, etc - Establish and ensure the effectiveness of contingency planning in case there are problems with the vendors affecting their provision of equipment or services - Exercise effective communication and management skill to ensure vendors’ own employees will work up to the same performance level as own company employees, and work towards the same goals - Monitor and react to possible fluctuation in the satisfaction level of customers after introduction of partnership vendors

	6.3 Exhibit professionalism ● Always ensure a proper balance between the interests of relevant parties such as vendors, customers and own company ● Always work with full capacity and ability to ensure the successful establishment of partnership programmes with vendors and achieve win-win situation
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - demonstrate care and professionalism in entering into partnership agreement with vendors which can help in various aspects of products / services - ensure the resulting benefits to all parties including customers, own company and vendors
Remark	

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Establish operational support procedures	
2. Code	ITCSPL522A	
3. Range	This UoC applies to all tasks and actions in the establishment of the operational support procedures, which act as the first step for the functional area “Operation/Support”. This very first item serves as important guidelines for all subsequent working steps.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the necessity in establishing standard procedures in guiding and reviewing the work of all related personnel - Accurately grasp the importance in the clear and unambiguous contents of the operation support procedures - Understand the mandatory requirements in well-defining the logical sequence of the tasks - Be aware of the situation that usability of the operational support procedures highly relies on the level of understanding of the different target users, and compatibility of their individual tasks - Be aware of the possible errors, omissions and easily misunderstood areas, which necessitate periodic review and updates 6.2 Establish operational support procedures Be able to: - Supervise write up of the operational support procedures for the new products / services using the agree-upon language - Ensure the adoption of clear, unambiguous and easy to understand wordings in explaining the tasks to be completed by individual staff members within the procedures - Ensure clear statement of the required levels of completion for all individual tasks - Ensure clear statement of the sharing of responsibility and detailed division of labour if more than one / one group of staff members have to work together for a particular step / task - Ensure clear statement of the required (or at least the minimum) level of completion for each task / work step, with the help of say Service Level Agreement (SLA) if applicable - Ensure quantifying of the expected outcome or required completion standard such as “T + N” days for service delivery, 60 minutes promised service restoration, 99.99% service availability, etc - Take good consideration not only for procedures for service provision, but also those relating to service restoration in case of service outage / suspension - Establish standard procedures to record and review how operation support procedures are being followed, and errors discovered during their implementation 6.3 Exhibit professionalism - Always ensure all staff members stick closely to the established operation support procedures and contribute their greatest effort while performing their assigned tasks - Always work with full capacity and ability to ensure successful completion and adoption of the procedures - Always maintain an optimal balance between all related technological, political, social and legal issues	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. complete the operational support procedures within required time-frame ii. successfully implement the established procedures iii. ensure all related personnel are able to understand and follow the instructions for their related tasks	
Remark		

Functional Area: Product & Service Life Cycle (Operation / Support)

1. Title	Prepare and propose the products / services upgrade / retirement plan	
2. Code	ITCSPL523A	
3. Range	This UoC applies to all necessary actions and tasks related to the preparation and production of the product / service upgrade / retirement plan once the decision on further upgrading or retiring has been confirmed. The document will serve as important guidelines for related subsequent processes.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the necessity for setting up a work plan for any major tasks, and product upgrading / retiring is of no exception - Fully aware of the fact that purposes of a work plan are to summarise the reasons / factors for the proposed new actions and point out the methods / procedures in implementing the proposed plan - Aware with alertness that a work plan is to be read and understood by a wide range of staff members at all levels, clarity and un-ambiguity of the details are of ultimate importance - Fully comprehend that a work plan has to be approved and endorsed by senior management before actual implementation, persuasiveness and comprehensiveness of the contents are of significant importance - Be aware of the constantly changing marketing and environmental situations and that the product upgrade / retirement plan may need frequent reviews and amendments 6.2 Prepare and propose the products / services upgrade / retirement plan Be able to: - Supervise the collection, summary and elaboration of the details for the product / service upgrade / retirement plan - Supervise writing up of the contents of the product / service upgrade / retirement working plan, in the language and format agreed beforehand - Elaborate in an accurate, clear and unambiguous manner the reasons / justifications for the proposed upgrading or retirement, utilising measurable units or monetary values as far as possible - In case of upgrading, clearly indicate or highlight the proposed new features, such as “Ring tone for overseas calls” - Master environmental protection issues such as energy saving, green computing, reduced pollution, etc while preparing the product / service upgrade / retire plan - Establish the product / service upgrade / retirement plan in a serious manner similar to the original product / service strategy and stick to all mandatory requirements on formats, procedures and wordings etc - Effectively identify those cases when product upgrading not only involves changes in design, features or functioning but is in fact a product / service re-positioning - Explore backup or alternative plans for the proposed actions in the product / service upgrade / retirement planning, to cater for changes in environmental factors or management’s decisions	

	6.3 Exhibit professionalism ● Always ensure the proper balance of the interests among customers, employees and the company as a whole ● Always work with full capacity and ability to ensure the production of an accurate and feasible product work plan ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. prepare and complete the required product / service upgrade / retirement plan on time ii. ensure the accuracy and measurability of the contents iii. ensure the unambiguous understanding of the contents by all involved staff members and stakeholders
Remark	

Functional Area: Product & Service Life Cycle (Products / Services Maintenance)

1. Title	Establish the maintenance plan and procedures for products / services	
2. Code	ITCSPL524A	
3. Range	This UoC applies to all considerations and arrangements to establish a maintenance plan and procedures for the product / service in concern. This is the very first step for the functional area “Product / Services Maintenance” and serves as guidelines and references for all subsequent steps in this area and even the remaining portions of the product / service life cycle.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Establish the maintenance plan and procedures for products / services	<u>Performance Requirement</u> - Fully understand the importance of setting up a concrete plan and detailed procedures for carrying out any specific task, and product / service maintenance is of no exception - Fully aware of the necessity of making thorough considerations of all influencing factors before arriving at a feasible maintenance planning - Accurately grasp the fact that periodic maintenance becomes an indispensable service once a product / service has been introduced, and this is a key influencing factor for retaining customers and customer loyalty - Fully comprehend that maintenance can usually be a labour intensive process and related personnel need a concrete set of procedures and guidelines to follow - Be aware of the potential financial impact to the company once a set of maintenance plan and procedures has been confirmed and put into practice Be able to: - Deploy suitable personnel to take charge of all maintenance issues for the product / service in concern, which most likely is also the product manager himself / herself - Supervise the preparation of a maintenance plan for the product / service in concern, adopting the required language, format, glossary, etc - Clearly determine within the plan different levels of maintenance service (say gold plan, silver plan, bronze plan, etc) and the mapping with different customer segments (say corporate, individual, etc) - Supervise and ensure the adoption of good writing and presentation skills such that the maintenance plan and procedures can be easily understood by different level of personnel without any ambiguity, including outsourcers - Ensure stepwise of the procedures and clearly indicate the sequences in case of describing multiple steps tasks - Ensure correctness of the contents and make provision for efficient updating, amending if the necessity arises - Establish proper communication channels such that all stakeholders using the maintenance plan and procedures can raise their feedbacks and questions directly to the in-charge personnel without delay

	6.3 Exhibit professionalism ● Always ensure the proper balance of the interests among customers, employees and the company as a whole while establishing and implementing the plan ● Always work with full capacity and ability to ensure successful completion of the maintenance plan and procedures ● Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully complete a feasible maintenance plan and related procedures for the product in concern within required time frame - ensure effectiveness and efficiency of the plan after its acceptance and implementation
Remark	

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Conduct market oriented products / services retirement analysis	
2. Code	ITCSPL525A	
3. Range	This UoC applies to all considerations, procedures and steps to conduct product / service retirement analysis, with the focal consideration for market situation and competition. This is the very first step for the group task “Retirement Plans Setting”, and the findings serve as important guidelines for subsequent activities.	
4. Level	5	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Conduct market oriented products service retirement analysis 6.3 Exhibit professionalism	<u>Performance Requirement</u> Exhibit the ability to: - Fully understand the fact that all technologies and related components will die or become obsolete at some point in time of the product life cycle - Aware with alertness the necessity to conduct a retirement analysis for any product / service of the company, and a lot of influencing factors needed to be consider - Accurately grasp the key issue that market consideration is not the only, but probably the most important factor to consider and emphasized in any product / service retirement analysis - Fully aware that the interest of customers using the product in concern should always be the first priority concern - Be aware of the long term impacts to the company say in terms of revenue or competitive situation if a particular product / service is finally retired Be able to: - Determine at start of the product life cycle the inclusion of and resources allocation for retirement analysis of the product / service in concern - Supervise the conduction of retirement analysis for the product / service in concern, with the major objectives of getting useful information for retirement preparation - Place strong emphasis during the analysis the availability of substitution products, and their relative influences to both the customers and the company - Skillfully group customers into distinct segments say corporate customers or individual customers, as they should have quite distinct attitude and expectation towards product retirement - Accurately master and take into consideration during the retirement analysis the number of existing and future customers for the product in concern - Effectively communicate and skillfully liaise with customers in all product retirement related issues, so as to solicit their trust and confidence towards the company’s products and arrangements - In case if the product / service involved outsourcers, take all necessary steps to ensure their full support and co-operation in the retirement analysis and subsequent phases - Always ensure all related staff members contribute their greatest effort in conducting the product / service retirement analysis - Always strike a proper balance of interests among customers, the company and even outsourcers during the retirement analysis phase - Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully complete the product / service analysis tasks, which effectively take the market situation and competition into consideration, and ii. effectively summary the analysis findings, draw valid conclusions and propose feasible follow up actions accordingly	
Remark		

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Analyse the impact of decommissioning procedure	
2. Code	ITCSPL526A	
3. Range	This UoC applies to all considerations and tasks relating to the analysis of the impact at conduction of the product / service decommissioning procedures. This step takes a more broadened view to consider the different angles and levels of the impact to the company as a whole.	
4. Level	5	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Analyse the impact of decommissioning procedure 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the great impact (but usually unobvious) to customers and the company at decommissioning of a particular product / service - Fully aware of the necessity for conducting a detailed analysis of the influences after executing the decommissioning procedure for the product / service in concern - Grasp the key issue that such analysis needs to focus on the interest of the customers - Aware with alertness the high correlation between product decommissioning and the long term profitability and market competition of the company - Be aware of the wide range of methodologies and techniques in conducting such analysis, each with its own advantages and disadvantages Be able to: - Setup in advance the scope and areas of interest to be included in the analysis about the various possible impacts at retirement of a product / service - Exercise good anticipation skills to determine the types of impacts and the parties being influenced while executing the decommissioning procedures - Always treat the interests and benefits of customers as the highest priority, which possibly results in using a weighted scheme to quantify the level and strength of influences - Exercise good analytical skill to grasp the essential findings and summarise them for management's attention and evaluation - Make recommendation for actions to follow up findings of the impact analysis, explaining the pros and cons of the different possible approaches - Effectively co-ordinate with third party outsources if they are involved in the product / service being decommissioned - Always ensure all related staff members contribute their greatest effort in the process of analysis the impacts of decommissioning procedures for the product/service concerned - Always strike a proper balance of interests between customers and the company - Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - effectively complete the analysis work for investigation of various impacts of the product decommissioning procedures - utilise the analysis findings and design appropriate follow up actions to alleviate those negative impacts - utilise the analysis findings and design appropriate follow up actions to strengthen effects of those positive impacts	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Security monitoring procedure designing	
2. Code	ITCSPL527A	
3. Range	This UoC applies to all considerations and operations related to the design of security monitoring procedures. The main focus is to ensure all tasks associated with security monitoring are in the right track and operate within pre-established limits such as budget, time frame, legislation etc.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Security monitoring procedure designing 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand that all established security measures needed to be monitored continuously and a well-designed monitoring procedure is mandatory - Grasp comprehensively the importance of effective monitoring of all security settings for discovering of problems in a timely manner - Fully aware of a wide range of approaches and techniques, tools etc for security monitoring and deviation detection - Understand the necessity for broadcasting and promoting to all related personnel / parties once the security monitoring procedure has been confirmed - Accurately grasp the necessity for gathering comments towards the security monitoring procedure from involved staff members and other parties such as customers Be able to: - Identify and determine all key security measures or features to be embedded in the company's products / services - Determine in concrete measures and definitions on how those security features are to be protected and the meaning of security leakage / infringement - Propose effective administrative and technical arrangement on how to enforce those security measures, which as a whole form a concrete procedure - Devise effective monitoring methods and activities to keep track of the status of those established security measures - Communicate effectively with staff members and related parties the entire security monitoring scheme, for their understanding and follow up - Formulate the subsequent follow up actions (and gather responsible personnel) in case of exception detections from security monitoring - Always ensure correctness and accuracy in the procedures of security monitoring - Always ensure all related parties work with full capacity and ability in the designing and formulation of the security monitoring procedure - Always maintain the proper balance between the interests of the company, customers and the society as a whole - Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successful design and implement a clear procedure for security monitoring of the company's products / services ii. ensure all related personnel understand and participate in security monitoring, and be able to report and handle exceptions on time, etc	
Remark		

Functional Area: Product & Service Life Cycle (Security)

1. Title	Review existing security control	
2. Code	ITCSPL528A	
3. Range	This UoC applies to all actions and tasks relating to the reviewing of the company's existing security control. This is a key step for the functional subarea "Security Audit Procedure Designing".	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that security audit is a means to assess the company's security posture, and reviewing existing security control is one of the key steps - Aware with alertness that a detailed review of the company's security related administrative procedures is mandatory in the spotting of problems and planning for subsequent related tasks - Accurately grasp the fact that a detailed review of security related issues about the company's products / services is mandatory in the spotting of problems and planning for subsequent tasks about the product / service in concern - Understand the necessity for adopting and sticking to a well-defined procedure to carry out the security control review task - Be aware of the different possible approaches and levels of depth to review existing security control, with corresponding differences in resources requirements and usefulness of information obtained 6.2 Review existing security control Be able to: - Well-define in advance the scope and levels of depth for conducting the reviewing of existing security control - Well plan in advance staff deployment for the security control reviewing, which may comprises of one for all and recurrent requirements - Actually carry out or supervise the security control review tasks according to the established procedure and scope - Fully consider critical influencing factors during the security control review, such as government legislations, customer requirements and even market competition, etc - Demonstrate good analysis skills and be able to recommend positive subsequent actions after the review, with the expectation to increase sales revenue or raise customer satisfaction, etc - Effectively disseminate the review findings to senior management and / or committees responsible for decisions / directions in security related issues, and seek their further advices for further actions - Effectively disseminate the review findings to all levels of staff members to secure their understanding and participation in subsequent follow up tasks	

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort and honesty in all security control review tasks ● Always strike a proper balance of interests between customers, employees and the company as a whole ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully design the procedure and scope for conducting review of the company's existing security control - successfully conduct the review processes according to the plan
Remark	

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Explore the needs of existing and potential customers for CIS products / services	
2. Code	ITCSPL601A	
3. Range	This UoC applies to needs investigation during the early stage of the product and service life cycle, aiming to facilitate product strategy formulation. The products actually can be physical goods or CIS related services.	
4. Level	6	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully comprehend the objectives of needs analysis in order to identify the kinds of information to be collected - Recognise the importance of collecting useful customer information in order to provide quality products / services - Master the profiles and requirements of current and potential customers - Grasp in depth the current market situation for physical goods as well as CIS products / services - Demonstrate a good knowledge in how to conduct market research for physical goods and CIS products / services - Fully comprehend the different techniques in data collection under different situations in order to gather accurate and timely information on market supply and customer needs 6.2 Explore the needs of existing and potential customers for CIS products / services Be able to: - Identify the key design features and functionalities of products / services that could be provided by the company - Manage the necessary study, research and investigation tasks for the new product / service - Manage the design of effective questioning techniques to capture useful information to determine customers' needs - Accurately match user requirements with features of existing products and, if necessary propose the necessary product upgrading / modifications with scale appropriate at this stage - Design and supervise the stepping through of a structured process for the consolidation of information by making use of computer application software such as data warehousing, CRM, etc if applicable - Forecast customer needs by using sound judgment and understanding - Disseminate effectively the findings from information analysis and forecast to top management and product / service committees for strategic planning - Recommend the feasibility of the product / service in concern to top management and product / service committees	

	6.3 Exhibit professionalism ● Ensure the following of established procedures at every step of customer contact and information seeking ● Work with full capacity and ability to meet the performance standard of a product manager / director ● Maintain the idea of customer focus at all time ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - identify and solicit the needs of customers at all levels and stages - effectively match the features of own products with customer needs and propose different alternatives to satisfy the customers
Remark	

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Explore the threats and opportunities of new products / services	
2. Code	ITCSPL602A	
3. Range	This UoC applies to the operations involved in identifying the positive and negative outcomes about the new product / service in concern, aiming to determine with accuracy the remaining actions in the product service life cycle.	
4. Level	6	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Explore the threats and opportunities of new products / services 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Recognise and articulate the importance of threats and opportunities analysis to the profitability of the company as a whole ● Recognise and articulate the importance of threats and opportunities analysis to the relative market position and competitiveness of the company ● Recognise and articulate the threats and opportunities analysis for the new products / services is a continuous process ● Possess good insight on how to select the appropriate tools and means to carry out threats and opportunities analysis ● Identify different options to follow after obtaining results of these threats and opportunities analysis Be able to: ● Manage the wide range of available tools to conduct the threats and opportunities analysis for the new products / services, such as the SWOT analysis ● Transform the results of such analysis into financial figures and forecast the impact to the financial situation of the company as a whole ● Evaluate the extent to which the success or failure of the new products / services can affect the competition position of the company in the CIS industry ● Consolidate and report the results of analysis and forecast to top management accurately and timely ● Enlighten various levels of staff members about the results of such analysis and forecast, clearly assign each member group their related responsibilities and involvement ● Recommend to top management valid and effective remedial actions to overcome those potential threats identified ● Recommend to top management follow up actions in case potential opportunities are identified such that maximum benefits to the company can be grasped on time ● Ensure the following of established procedures and sticking to agreed policies at every step of the product threats and opportunities identification ● Always work with full capacity and ability in all related processing ● Maintain the idea of customer focus at all time to ensure the development of the most beneficial products / services to both customers and the company ● Always take into consideration and strike a proper balance among all related technological, political, social and legal factors ● Always take into consideration the interests of all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. identify the pros and cons of the products / services in concern with good accuracy ii. evaluate the results from the study and suggest useful follow up actions	
Remark		

Functional Area: Product & Service Life Cycle (Product Strategy Formulation)

1. Title	Formulate the business cases	
2. Code	ITCSPL603A	
3. Range	This UoC applies to preparation of the business case for the product / service in concern, which is part of the product / service business plan development. The main objective of the business cases is for fund requisition.	
4. Level	6	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Formulate the business cases 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the importance of a business case in the acquisition of sufficient funding for a new product / service - Fully comprehend the wide range of environmental factors affecting the setting up of an appropriate business case - Aware with alertness the significance of accuracy and timeliness of the contents of a business case to the decision making of senior management - Accurately grasp the correlation of a business case to subsequent strategies such as pricing and cost control, etc - Be aware of the different possible alternatives for utilisation of available funds and their corresponding contribution to the revenue of the company Be able to: - Supervise drafting of the business case after consolidating all relevant information regarding the input requirements and potential revenue about the new products / services - Fully understand the important issue of costing and supervise preparation of a detailed cost estimation in the business cases - Ensure the listing in details within the business cases all expenditure items covering the amount, time frame, etc - Ensure the detailed listing within the business case all revenue items covering the amount, time frame, and range of fluctuation, etc - Ensure the adoption of objective, clear and easy to understand narration to introduce the benefits of launching the new products / services to the company as a whole - Supervise the close monitoring about latest market situations, competition environment and findings from market / customer researches and ensure appropriate updates to the business cases periodically - Following established procedures at every step of the business case write up - Always work with full capacity and ability and ensure correctness and accuracy of the business case contents - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. produce a quality business case which is useful for management's references and decision ii. bundle in the business case all relevant costing factors for later references by all levels of staff members in the remaining steps of the product life cycle	
Remark		

Functional Area: Product & Service Life Cycle (Development)

1. Title	Allocate resources for products / services development and / or acquisition	
2. Code	ITCSPL604A	
3. Range	This UoC applies to the considerations and necessary tasks in allocating resources for the development of the new product / service in concern. This forms the very first movement in the phase of product development	
4. Level	6	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Allocate resources for products / services development and / or acquisition 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the necessity for allocating sufficient resources for any new product / service development - Aware with alertness that all resources are limited and consideration for other opportunities must be accounted for in any allocation decision - Fully grasp the principle that amount of input resources for any product / service should be proportional to the estimated revenue - Fully aware of the existence of various models and tools for setting the appropriate level of resources input - Grasp the important issue that decision on resource allocation should be related to the overall company policies and marketing strategies Be able to: - Accurately identify all key consideration factors while planning for resources allocation - Lead and effectively communicate with all level of staff members involved in financing the designated product / service - Ensure close monitoring and understanding of the financial situation of the company and decide on the mode of product resources allocation such as one-time, by phase or on-request, etc - Sustain a close and accurate understanding of the supply market in case of direct product acquisition instead of self development - Always be alert of the market performance of various products offered by the company and react flexibly and timely through adjusting the level of input resources - Supervise and ensure an accurate and clear logging about the resource allocation of the designated product - Forecast customer needs of the particular product by using sound judgment and understanding - Follow established procedures and stick to company policies throughout the entire process of resources allocation - Work with full capacity and ability to meet the quality - Always maintain an optimal balance between the benefits of the company and customers - Always take into consideration and strike a proper balance among all related technological, political, social and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. allocate optimal levels of resources to the new products at different stages to ensure overall smooth running ii. maintain a good balance between input resources and gained revenue	
Remark		

Functional Area: Product & Service Life Cycle (Retire)

1. Title	Establish the retirement plan and procedures	
2. Code	ITCSPL605A	
3. Range	This UoC applies to all tasks and actions relating to the actual establishment of the retirement plan and procedures for the product / service in concern. This step is the core for the task group “Retirement plan setting”, and the completed plan serves as important references for all upcoming activities.	
4. Level	6	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Establish the retirement plan and procedures	<u>Performance Requirement</u> - Fully understand the importance in establishing a retirement plan and procedures to guide all related tasks to be performed by different groups of staff members - Aware with alertness the establishment of the product / service retirement plan requires consideration for many factors, usually with focuses on customers and market competition - Accurately grasp the key fact that a retirement plan usually associated with stepwise procedures to indicate the detailed working steps for retirement - Fully comprehend that the retirement procedures needed to be clear, simple and unambiguous to facilitate different groups of personnel involved in the actual retirement tasks - Be aware of the long term impacts to the company say in terms of revenue or competitive situation if a particular product / service is finally retired - Be aware and prepare for situations where problems occur while executing product retirement related tasks Be able to: - Setup or supervise the setting up of the retirement plan and procedures for the product / service in concern - Demonstrate careful consideration to ensure that the retirement plan can be executed in a smooth manner with minimal influences to customers and the company – a “full shutdown” - Demonstrate accurate measurement of existing and estimation of future number of customers for the particular product while establishing the retirement plan - Demonstrate good arrangement to enable customer’ harmonious transition after retirement of a particular product / service, say substitution product or shifting to a different plan, etc - Effectively produce the best retirement procedures with simple, clear and logical steps to guide personnel in the actual execution - Evaluate with high accuracy the effects of the wide range of substitution product / service to the customers and the company - Fully comprehend environmental protection issues such as energy saving, green computing, reduced pollution, etc while establishing the retirement plan and procedures - Effectively master third party outsourcers in case they are involved with the particular product / service to be retired

	6.3 Exhibit professionalism ● Always ensure all related staff members and outsourcers contribute their greatest effort in establishing and executing the retirement plan and procedures ● Always strike a proper balance of interests among customers, employees, the company and outsourcers, if applicable
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish the product retirement plan and procedures in an accurate and timely manner - ensure feasibility of the details within the retirement plan - ensure clear and unambiguous contents and easy understanding by all related staff members for the retirement plan
Remark	

UoCs in Customer Relationship Management

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Undertake general administrative work for accounts services	
2. Code	ITCSCR201A	
3. Range	This UoC applies to all routine administrative procedures, steps and tasks related to product and service delivery to customers. This applies to account services for various service plans offered to different customer segments via product / service provision channels.	
4. Level	2	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Undertake general administrative work for accounts services 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of fundamental services - including the general administrative work for customer accounts, to the overall success of the company's CRM programme ● Understand the standard operation procedures and compliance requirements associated with different customer segmentation groups ● Understand the close relationship between the accurate and proper storage of customer information and the effective delivery of supporting administrative services ● Understand that even for fundamental administrative services, there can be significant differences in expectation and behaviour between different customer segmentations ● Be aware of the wide range of methods and practices in providing general supporting services, and their suitability in different circumstances Be able to: ● Update customer accounts with the most current information in a periodic manner ● Perform periodic analysis of customer accounts of different segmentation groups ● Compel to a high level of control around sensitive data and processes from account opening to closing ● Undertake the accomplishment of customer account administration tasks in an efficient and timely manner ● Offer customers full range of administrative services for the opening and administration of account, and allow customers all types of services as permitted by relevant legislation ● Efficiently deal with customer inquiries, provide them with advices and recommendations with respect to different aspects of the company's products and services ● Always treat those customer administrative work as an integral and essential part of the overall CRM programme ● Always ensure that all staff members are involved in customer administration and contribute their greatest effort in performing the daily supporting services ● Always treat the interests and requests of customers with the highest priority
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - maintain an effective and efficient general administrative services for customers in different segments - gain the appreciation of customers through administrative support as an element of CRM	
Remark		

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Gain customer commitment in buying products and services	
2. Code	ITCSCR301A	
3. Range	This UoC applies to all planning, consideration and action to solicit customers' commitment in buying and adopting the ICT products and services of the company. This definitely is the ultimate objective for the activity group of execution & implementation of CRM.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the fact that closing the deals and gaining their commitment in buying own company's products and services is the ultimate objective for any business, and ICT companies are of no exception ● Understand the buying outcomes of customers rely heavily on the ability to read and interpret the signal of customers ● Understand the buying outcomes of customers also depend on the soft skills, such as the persuasion techniques at appropriate time ● Understand the importance of any activities which materialise the buying commitment from customers must stick to the policies and guidelines as imposed by company management such as the code of conduct for employees ● Understand the importance that any activities which materialise the buying commitment from customers must observe all government legislations such as the protection of personal information and personal privacy ● Understand the deemed necessity in establishing preventive measures / remedy actions to reduce / cater for complaints raised by customers ● Be aware of the fact that buying commitment from customers can become the opportunities for new businesses and chances to strengthen customer relationship 6.2 Gain customer commitment in buying products and services Be able to: ● Read and interpret correctly the buying signals of customers during the interaction and can adjust the pace of selling accordingly ● Skilfully watch out for customer's emotion behind the words to prevent from initiating the closing of the deal when he / she is in a negative emotional state ● Tactfully ask permission to proceed or close the deal and observe customer's response to determine if the sales process is on the right track ● Exercise persuasive skill such as conducting incremental closing to engage customer commitment to recommended products and services ● Exercise sales techniques such as asking for commitment to obtain / provide more relevant information or agree on a time for next meeting if immediate closing is deemed to be inappropriate ● Use selling approaches which are consistent with the company's guidelines and general professional ethics in order to prevent complaints from customers	

	● Adhere to the principle that all sales are initiated for the benefits of the company and customers as well, and only products or services which genuinely tied in with customer's needs are recommended ● Establish monitoring measures to record and investigate how sales activities are being conducted by employees, utilising software tools such as DMBS if appropriate ● Establish reporting channels for customers to express their opinion / raise their complaints for issues relating to the products and services they purchased, automate the process by means of software tools whenever applicable
	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly in the process of selling the company's products and services to our customers ● Always stick to the company's policies and observe government legislations for all sales related activity, even if it affects sales performance to a certain extent ● Respect and protect customer privacy at all times
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - obtain commitments from customers in buying products and services from the company - display effective persuasive skills according to different emotions identified and buying intentions of customers - ensure all sales activities comply to regulatory requirements and code of conduct such that minimal complaints from customers is raised
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Manage customer profile and activity record	
2. Code	ITCSCR302A	
3. Range	This UoC applies to all daily activities and procedures to manage and record customers' sales records, and correspondingly the related profit and loss calculation and data recording.	
4. Level	3	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Manage customer profile and activity record 6.3 Exhibit professionalism	<u>Performance Requirement</u> ● Understand the importance of the timely and accurate recording of sales data in every step of the sales cycle ● Understand the necessity in collecting all relevant information such as information related to customers, products, transactions, etc ● Understand the need of a unique level of integrated and accurate treatment while managing customer profit and sales records across all customer segmentations ● Understand the standard procedures of tracking systems so that the system can be operated independently ● Understand that the handling of customer profit and sales records must comply with the requirements of the company's internal tracking mechanism ● Be aware of the close relationship between the company's CRM strategies and customer records handling activities Be able to: ● Maintain and update the data to ensure its accuracy and integrity, utilising computer systems and application packages whenever applicable ● Detect the irregularities or missing data and seek information from appropriate sources to supplement the insufficiency ● Generate reports to provide visibility on sales activities and monitor sales results ● Provide relevant statistics and conduct analysis related to sales cycle management upon request ● Document the records and information regarding customer sales and profit accurately, probably with the use of computerised database management software ● Always ensure all related staff members contribute their greatest effort honestly while managing customer sales and profit records ● Always maintain the proper balance of interests between customers and the company as a whole ● Always handle customer data in a scientific and objective manner
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully provide accurate and timely reports on sales data - fulfil the information requirements as requested by different parties - permanently record the relevant information and make available for future queries or updates upon request	
Remark		

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Conduct market survey, customer needs and expectation survey periodically	
2. Code	ITCSCR303A	
3. Range	This UoC applies to all operations / activities related to the periodic conduction of surveys on customer needs, customer expectation and the market situation, etc. This process can be regarded as the data collection phase to prepare for subsequent activities to promote customer satisfactions.	
4. Level	3	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand the importance of relationship between customer satisfaction and the success / failure of the company's products / services, and even the company as a whole ● Understand that maintenance of customer satisfaction requires the carrying out of a series of customer relationship enhancement activities, whereas these activities must be supported by accurate and timely customer information ● Understand the necessity in soliciting precise and timely customer information via market surveys, and surveys on customer needs, etc., and such measures have to be conducted on a recurrent basis ● Understand the company's criteria and policies of collecting information from customers in different market segments, if any ● Understand the relevant legislations (e.g. privacy) and code of conduct to structure an appropriate communication approach to solicit customer information and needs about ICT products / services ● Be aware of the different methods / approaches to conduct the above surveys, each with its own relative advantages and resources input 6.2 Conduct market survey, customer needs and expectation survey periodically Be able to: ● Work out a regular mechanism to conduct market and customer surveys on a recurrent basis to collect market and customer information for references by subsequent activities on customer satisfaction maintenance / enhancement ● Apply the techniques in data collection to different situations in order to gather a comprehensive range of accurate and timely information on market situation and customer demand, etc. ● Employ diverse communication skills according to the situations and communication styles of customers in different market segments ● Employ effective questioning techniques to capture useful information to determine customer needs, preferences, and expectations, etc. ● Provide valid reasons to ask sensitive questions and collect related documents / evidences to support customer needs assessment ● Closely monitor all customer survey activities / programmes to ensure that all company's policies and government legislations regarding information collection are being observed in the entire process ● Compile customer information collected to outline the needs and expectations of customers and present the information to suitable parties	

	● Prevent leakage of customer data throughout the different processes of data recording, storing and retrieving ● Make recommendation to management a series of follow up actions to fulfill customer needs based on those survey findings 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly in all activities relating to customer and marketing surveys ● Always strike a proper balance of interests among customers, the company and the society as a whole while conducting customer surveys
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully launch a series of regular survey programs to collect information about market situation, customer needs and preferences ii. solicit customer information within the boundaries indicated by company policies and government legislation in accurate and timely manner iii. devise and submit proposals for follow up actions to management based on survey findings
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Build and maintain customer relationship by conducting periodic sales call	
2. Code	ITCSCR304A	
3. Range	This UoC applies to all considerations and arrangements for the carrying out of periodic sales call with the aim to establish and maintain a good relationship with customers.	
4. Level	3	
5. Credit	2	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that contacting customers on a periodic basis is a fundamental yet important means to sell the company's products / services, and concurrently maintaining the good relationship with them ● Understand the necessity in arranging sales calls in an orderly and tactful manner, so as to achieve the best results from the limited resources ● Understand the importance of tightly sticking to the company's guidelines and policies regarding customer contacts and sales promotion ● Understand the related government legislation (such as the Privacy Act) while conducting sales calls to existing / potential customers ● Understand that sales calls can be conducted through many different channels. It should be individually tailored for customers in different market segments if applicable ● Fully understand that qualified sales personnel with excellent soft skills and product knowledge are the key successful factors for sales calls ● Be aware of the keen competition in the ICT products / services market, and effectiveness of our sales calls are deeply influenced by similar activities of competitors 6.2 Build and maintain customer relationship by conducting periodic sales call Be able to: ● Follow established mechanisms to govern / regulate all sales call related activities of the company's products / services, and ensure oneself will stick to the formats, frequencies and regulations therein while carrying out customer contact activities ● Ensure all customer sales calls are conducted, recorded, reported and followed up on a regular basis as planned ● Organise existing customer account information and intelligence in different market segments to identify prospects for sales calls ● Leverage existing customer contacts and information from different sources to explore opportunities for new business contacts ● Arrange suitable and qualified personnel to conduct the customer sales calls and related activities, including utilisation of sales services from outsourcers ● Allocate training, sales promotion related materials and marketing fund to sales personnel and service teams in different sales channels established for different market segments	

	● Ensure all sales calls are properly recorded and useful findings are being analysed to explore key issues such as the existing level of customer satisfaction, propensity to consume, etc. ● Evaluate with good accuracy the correlation between routine sales calls and improvement in customer relationship, and propose changes / enforcements in sales activities in case of necessity ● In case if sales activities are outsourced, ensure that the outsourcers will perform in same manner and achieve similar performance as own staff members by following established guidelines / checklists 6.3 Exhibit professionalism ● Always ensure all internal / external sales personnel will contribute their greatest effort honestly while carrying out customer sales call and associated sales activities ● Always treat the interests of customers as the highest priority issue, while at the same time strike a proper balance of interests between customers and the company
7. Assessment Criteria	The integrated outcome requirements of UoC are the abilities to: - successfully carry out sales call activities according to established mechanism - solicit useful information about our customers during the sales calls - propose suitable follow up actions to promote sales and enhance customer relationship
Remark	

**Functional Area: Customer Relationship Management
(CRM Philosophy & Strategic Formulation)**

1. Title	Identify critical success factors and how success is going to be measured	
2. Code	ITCSCR401A	
3. Range	This UoC applies to all considerations and actions in identifying those critical successful factors associated with customer relationship management. The successful identification of these factors will contribute to the proper adoption and implementation of CRM related actions and activities in subsequent steps.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that the ultimate success or failure of all kinds of activities are affected by a certain number of critical factors, and those related to CRM are of no exception - Fully aware of the importance of correctly identifying the above critical successful factors for formulating the company's CRM strategies and activities - Understand that the level of success / failure needed to be defined in concrete terms and preferably bundled with quantity measurements if they are to be measured with accuracy - Grasp the key issue that the proposed standards or level of completion for the above critical successful factors must follow the established CRM philosophy and ethics of the company - Understand that as those critical successful factors will serve as long-term guidelines / objectives in setting up the company's CRM related activities and policies, any mistakes overlooked / ignored will incur prolonged or propagated harmful effects - Be aware of the wide range of methods / techniques in measuring and evaluating the success / failure of those CRM related critical factors 6.2 Identify critical success factors and how success is going to be measured Be able to: - Exercise good analytical skill to identify and capture those critical success factors relating to CRM in general or factors dedicated to a particular CRM activity - Skilfully integrate / mingle the above identified critical success factors such that they can become part of the company's CRM philosophy or ethics established earlier - Establish with good accuracy some quantitative or qualitative measurements for those critical successful factors such that performance grading becomes possible - Skilfully and tactfully process those critical success factors such that the resulting levels of performance are in line with the company's established CRM policies and other factors such as budget, resources allocation, etc - Exercise good communication skill / administrative technique such that all levels of staff members are knowledgeable of those successful factors and established performance guidelines	

	● Design measures and actions to ensure that all levels of staff members will strictly stick to those established CRM policies (established based on the above critical success factors) and contribute their best efforts to meet the established performance level set for them ● Establish an effective procedure to document the details and any subsequent amendment to those success factors and performance settings ● Report the findings and subsequent updates related to CRM success factors to management, for supporting their decision making or policy formulation ● Disseminate necessary portions of the above findings to staff members / outsourcers involved in the company's CRM activities 6.3 Exhibit professionalism ● Always ensure all related parties contribute their greatest effort honestly in the process of critical success factors identification and performance grading ● Always strike a proper balance of the interests between parties such as customers, staff members and the company as whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully and correctly identify those critical success factors relating to the company's CRM policies and activities - successfully establish levels of performance guidelines for measuring the success / failure of activities based on those critical success factors identified earlier
Remark	

**Functional Area: Customer Relationship Management
(CRM Philosophy & Strategic Formulation)**

1. Title	Design and match company products and services for the different market segments that the company has elected to serve	
2. Code	ITCSCR402A	
3. Range	This UoC applies to all considerations and action steps relating to the designing and matching of the company's own products and services for the different market segments to be served by the company. This is an important step in the overall design of CRM related activities.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the fundamental nature that the wide range of company's products / services are not intended to serve any single customer / market segment, but a large number of customers in different market segments - Understand that on the other hand those product and customer matching activities may be influenced / dictated by the company's policies or preferences say towards a particular product or a focused customer group, etc - Fully recognize the wide range of company's products and services are different in performance and features, and matching them with the demand of customers in different market segments is an extremely important task for the company - Clearly aware that matching products with customer demands may not be a simple task and can demand the carrying out of intensive research activities - Be aware of the close relationship between customer satisfaction and effort placed upon the products / services to be offered, no matter for which established customer segment - Be aware of the strong influences of the success / failure of product and customer matching activities towards the company's financial situation and performance in customer retention 6.2 Design and match company products and services for the different market segments that the company has elected to serve Be able to: - Comprehend with good knowledge and accuracy the wide range of the products / services provided by the company, especially on their relative performance and unique features - Grasp with correctness the most current information about the status and favourite of customers in different market segments established by the company - Exercise the technique in data collection & analysis in order to gather a comprehensive range of accurate and timely information on market / own company products and customer demand - Effectively materialise the above findings by arranging the necessary human and financial resources to link up the established product customer matching - Establish effective communication channels with customers such that their changes in preferences and demand for new product features can be solicited in a timely manner	

	● Closely monitor the current market situation of ICT products and competitors' movements, and prepare to change the established product customer matching accordingly ● Establish effective communication channels with staff members / outsourcers involved in this job task, such that any new products / customer information can be timely captured whereas new decisions / directions can also be disseminate to them promptly
	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly in activities related to product and customer segment matching ● Always strike a proper balance of the interests between customers, employees and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully identify the key features and functionalities of the company's products and services - effectively segment the company's customers into different segment groups to facilitate CRM related activities - optimally arrange the matching between company's products / services and customers in those established market segments
Remark	

**Functional Area: Customer Relationship Management
(CRM Philosophy & Strategic Formulation)**

1. Title	Incorporate and fine-tune strategic proposals by other organisations such as outsourcing party	
2. Code	ITCSCR403A	
3. Range	This UoC applies to all considerations and actions to incorporate and refine those CRM strategic proposals submitted by partnering organisations such as third party outsourcers.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Be aware of the situation that benefits of making use of the services of outside organisations at different stages of providing ICT products, including the initial step of CRM strategies formulation ● Clearly understand the importance of tight co-ordination with and close monitoring over outsourcers in order to bring maximum benefits and Return on Investment (ROI) to the company ● Grasp the necessity in establishing a comprehensive set of criteria for choosing partners in outsourcing ● Be aware of the significance in ensuring consistency of outsourcing partners' attitude towards own company objectives ● Be aware of the necessity in managing third party staff as company's own staff members 6.2 Incorporate and fine-tune strategic proposals by other organisations such as outsourcing party Be able to: ● Setup appropriate and feasible guidelines / standards in choosing partners for the company's outsourced tasks ● Ensure the established standards and guidelines are strictly interfacing with outsourcers at different stages, such as the initial formulation of CRM strategies ● Disseminate the established outsourcer standards to all levels of own staff members and ensure that they will stick to them when dealing with outsourcing parties ● Liaise and communicate closely and regularly with outsourcers to obtain their latest progress and ideas in a timely manner ● Skilfully / tactfully demand outsourcers to submit their own CRM strategies such that their effectiveness can be evaluated and more importantly the compatibility with own company ● Integrate outsourcers' work in CRM strategies with own company to ensure maximum results from the combined efforts ● Establish clear and unambiguous performance indicators for outsourcers and exercise those reward or penalty procedures accordingly 6.3 Exhibit professionalism ● Always work with full capacity and ability in the process of handling outsourcers' CRM strategic proposals to ensure long term stability and usability ● Always strike a proper balance of the interests between outsourcers and own company	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully acquire those useful CRM strategies proposals from outsourcers - successfully integrate the CRM strategies of outsourcers and those of own company to realise the combined benefits - ensure the adoption and implementation of the combined CRM strategies at subsequent stages	
Remark		

**Functional Area: Customer Relationship Management
(CRM Philosophy & Strategic Formulation)**

1. Title	Devise organisation structure and manpower requirements for delivery of CRM strategies	
2. Code	ITCSCR404A	
3. Range	This UoC applies to all considerations and actions associated with the formulation of the company's organisation structure and manpower resources for implementation of CRM strategies already developed. This step concludes the design phase and paves the foundation for execution of the company's CRM strategies / sub-strategies.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the fact that a suitable organisation structure together with proper manpower allocation is the foundation for successful operation of an organisation towards a particular target, and delivery of CRM strategies for an ICT company is of no exception - Grasp the key issue that the fundamental necessity in setting up an optimal organisation structure based on business requirements and growth needs, but at the same time must be subject to constraints like budget, etc - Fully aware that human resources is one of the most important resources, especially for labour intensive activities related to customer services management - Understand the importance of arranging the most suitable personnel to fill up different positions within an organisation structure, so as to yield the best output performance - Understand that individual employees have their own strength and weakness, and CRM activities usually demand for personnel with strong communication and soft skills - Be aware of the high employee mobility in Hong Kong, especially front line customer contact and sales personnel - Be aware of impacts to other service areas or operations of the company when additional personnel are re-deployed for say CRM strategies implementation roles 6.2 Devise organisation structure and manpower requirements for delivery of CRM strategies Be able to: - Comprehend a thorough understanding and knowledge about the CRM strategies / sub-strategies established by management of the company - Exercise superior design skills to propose an organisation structure which can best respond to CRM requirements while at the same time can be implemented with the least resources - Exercise good estimation and evaluation skills to identify the optimal number of employees to fill up the different postings of the new organisation structure - Ensure that the required number of employees with suitable qualifications and skills will be available, say through recruitment, re-deployment, re-training, etc - Identify suitable outsourcers or agents to fulfill the additional manpower needs in case of necessity	

	● Influence and motivate staff members to fully exercise their communication and soft skills to handle CRM activities in their daily routine ● Identify the training requirements of staff members in this respect and provide such trainings to them promptly ● Establish an effective monitoring system to keep track of staff performance under the new / revised organisation structure, and propose amendments in case of necessity 6.3 Exhibit professionalism ● Always ensure all levels of staff members fully understand their roles in the propose organisation structure and contribute their best effort honestly in their daily duties ● Always place the interest of customer in the highest priority, but at the same time strike a proper balance and cater for the interest of staff members
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully devise the most suitable organisation structure which can cater for and implement the CRM strategies established - successfully arrange the optimal number of staff members with the required skill / qualifications to populate the proposed organisation structure - ensure the new structure will function properly and contribute towards the CRM targets and strategies established earlier
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Supervise the carrying out of loyalty marketing to increase customer loyalty and enhance CRM	
2. Code	ITCSCR405A	
3. Range	This UoC applies to considerations and actions relating to the conduction of loyalty marketing activities with the aim to increase customer loyalty and strengthen the existing customer relationship management programmes.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Understand that the ability to maintain or enhance customer loyalty is the fundamental factor in determining the success / failure of any particular ICT product / service or even the company as a whole ● Understand that the customer loyalty needed to be cultivated, supported and maintained through a series of long term marketing and customer relationship programmes ● Understand that there is a broad range of different customer groups, and proper customer segmentation is essential if loyalty and customer relationship programmes are to be effectively carried out ● Understand that different customer segment groups require different levels and forms of customer services to retain their loyalty and improve the relationships with them ● Understand that effectiveness of any loyalty and CRM programme depends heavily on similar actions / programmes conducted by the competitors, and therefore must be constantly kept under observation ● Be aware that the significant differences in requirements of various customer segments can have significant impact to the overall costing and profitability of the company 6.2 Carry out loyalty marketing to increase customer loyalty and enhance CRM Be able to: ● Apply investigation techniques to gather accurate, comprehensive and timely information from customers of various segments, utilising software tools such as DBMS, Business Intelligence and CRM packages, etc. ● Plan and establish various customer loyalty and CRM programmes after considering the needs and behaviour of customers in different marketing segment groups ● Design the contents of those loyalty programmes such that the elements therein can fulfil the needs of customers and build up their confidence and organisation memory towards the company ● Implement those marketing and CRM programmes to engender and enhance customer loyalty ● Design customer interaction processes in the service delivery flow to ensure that smooth relationship with customer is established ● Establish evaluation and measurement metrics to keep track of and for investigation on how well the loyalty and CRM programmes are launched and received by customers	

	Establish mechanism in analysing and reporting the findings regarding the effectiveness of such loyalty and CRM programmes, and propose suitable follow-up actions in case of necessity
	6.3 Exhibit professionalism - Always ensure all related staff members contribute their greatest effort honestly while working with activities relating to loyalty and CRM programmes - Always place customer related tasks in the highest priority, but at the same time maintain a proper balance between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully segment customers into different groupings and launch appropriate loyalty and CRM programmes in different groups - launch the loyalty programme to achieve the purposes of maintaining customer loyalty and strengthen the relationship with customers, as originally planned - successfully monitor and measure the effectiveness of these loyalty programmes and conduct follow up activities in an appropriate manner
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Handle customer feedback and objection, and provide response with consultative advices	
2. Code	ITCSCR406A	
3. Range	This UoC applies to all activities and procedures relating to the handling of customer feedbacks, opinions and even objections to the company and the company's products / services. Also included are the formulation of answers and responses to customers with the aim to producing positive effects with their relationship.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the deemed necessity for obtaining customer feedback and probe if there is really any customer concerns to the company's products and services - Alert of the great importance in listening to customers' concerns, queries, questions or objections attentively and respect their right to express opposite opinions - Understand the necessity in probing and identifying the undermined genuine concerns of customers in addition to the superficial reasons or objections - Understand the importance in offering solutions to customers and check their acceptance - Aware of the close relationship between the company's CRM strategies and customer handling activities 6.2 Handle customer feedback and objection, and provide response with consultative advices Be able to: - Propose sound reasoning such as cost-price comparison among different products / services in order to support the recommendations / responses to customer feedback - Skilfully share customer's objection appropriately and check the understanding of the answers / recommendations provided to them - Provide alternative products / services recommendations after grasping a clearer understanding of customer needs - Provide alternative products / services recommendations or propose alternative service levels after getting a clearer picture about customer's budgeting and expectations - Assist customers to make their optimal final decision by articulating the benefits of the products / services recommended - Accurately document the correspondence with customers for recording purpose and serves as guidelines for future customer related activities, utilising computer systems and software whenever applicable 6.3 Exhibit professionalism - Always ensure all related staff members contribute their greatest effort honestly while dealing with customer feedback and objections - Always maintain the proper balance of interests among customers, staff members and also the company as a whole - Always handle customer feedbacks with a considerate and respectful manner	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully solve the problems raised by customers after responding to their objections - bundle customers alternatives in the recommendations for customers' selection and provide sound logical reasoning to persuade customers - gain customer satisfaction in the long run	
Remark		

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Recruit, train, reward, and motivate staff to enable successful delivery of the CRM strategy, enrich product knowledge of staff through outsourcing parties if applicable	
2. Code	ITCSCR407A	
3. Range	This UoC applies to all operations and activities related to the recruiting, rewarding and motivating of staff members to contribute to the successful delivery of the company's CRM strategies. Training for enrichment of their product knowledge will also be offered by various means, including those provided by outsourcing parties.	
4. Level	4	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that successful delivery of the company's CRM strategies need allocation of sufficient input resources, whereas manpower is the most significant input - Fully alert that manpower input is measured not just in numbers but also quality aspects such as technical and soft skills, personal attitudes, and even product knowledge, etc - Grasp the importance in establishing a long term mechanism in recruiting and deploying employees to conduct all CRM strategies related duties - Understand the advantages of involving and utilising the services of outsourcers, especially in situation where the products / services are actually supplied by those outsourcers - Understand the importance in providing all necessary training to employees recruited and deployed for CRM strategies related duties - Comprehend the necessity in establishing policies / guidelines for staff performance issues, such as reward, motivation, and even penalty schemes - Be aware of the mobility in the manpower market of the ICT industry, and the impact to the company in case of high turnover rate - Be aware of the stability and status of the outsourcers, in case if they are to provide their products / services, and offer training of their product / service knowledge to own company's employees 6.2 Recruit, train, reward, and motivate staff to enable successful delivery of the CRM strategy, enrich product knowledge of staff through outsourcing parties if applicable Be able to: - Co-ordinate the recruitment of qualified employees to carry out the company's CRM strategies, as endorsed by management at an earlier stage - Develop employees with a foresight by providing appropriate training to meet the company's CRM strategic requirements, including technical training such as the use of computer and related software tools - Establish policies on training and development, and design training activities which can match with human resources development strategies and to support the company's CRM strategies - Collaborate with different parties including outsourcers to identify skills and knowledge required to support and conduct those CRM strategies, such as product specific knowledge - Effectively carry out programmes to motivate employees to improve quality of work in CRM strategy related duties, such as developing recognition programmes and compensation schemes for encouraging excellent services	

	● Establish inspection mechanisms to ensure that human resources policies, recruitment guidelines, employee opportunities, compensation, employee benefits and all employment activities are adhered to the most updated Employment Ordinance and other legal requirements ● Review all CRM related operations, structures, manpower allocation and other human resources issues with business and operation units on a periodic basis to update the policies / procedures when necessary ● Formulate communication strategies such as employee handbook, meetings and activities etc. to facilitate and document the internal communication with employees 6.3 Exhibit professionalism ● Always ensure all related parties contribute their greatest effort honestly while handling human resources issues in association with CRM strategies ● Always maintain the proper balance of interests between customers, employees and the company as a whole ● Always ensure that the performance of outsourcing parties will be comparable with own employees
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully recruit sufficient and qualified employees to conduct CRM strategy related duties of the company ii. ensure all employees receive the proper training from suitable providers including outsourcers on a periodic basis iii. ensure all employees efforts are properly monitored, recorded and rewarded
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Measure and manage customer value of selected customer base, devise motivation to retain and maximise their potential value to the company	
2. Code	ITCSCR408A	
3. Range	This UoC applies to all considerations and arrangement to measure and manage customer value of those selected segment groups. Associated with it is the formulation of motivation programmes to retain and maximise the potential values derivable from them.	
4. Level	4	
5. Credit	4	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Measure and manage customer value of selected customer base, devise motivation to retain and maximise their potential value to the company	<u>Performance Requirement</u> - Fully understand the necessity in properly and accurately measuring customer value of customers in different segment groups, if the company business is to prosper and the products / services are to be introduced to the market - Fully alert that devising various motivation programmes for customers in different segment groups is a proactive approach to retain and maximise customers' potential value to the company - Understand the company's guidelines in organising and reviewing customer data in order to manage customer value effectively within permitted boundaries - Understand the company's guidelines in identifying sales leads in order to execute the tasks of measuring customer value accurately and independently - Grasp the key factor that customer value is highly correlated with customer satisfaction and requires specific technique to measure / calculate and quantify - Understand that customer value is the value received by the customer of products / services and is conceived variously as <u>utility</u>, <u>quality</u>, benefits, and <u>customer satisfaction</u>, thus customer value measurement and management can be quite complicated - Be aware of the significant differences in the customer behaviour of different segment groups, such as buying habit, perception towards ICT products / services, demand for customised support, etc Be able to: - Effectively segment customers into affinity and churn map - Effectively organise existing accounting information and intelligence from different sources to identify prospects for sales activities in different customer segment groups, utilising data mining tools, Business Intelligence and CRM packages as appropriate - Record customer intelligence of different varieties into database / data warehouse to compile a comprehensive profile for customers in different segment groups - Accurately measure / calculate the value of customer to the company based on the above customer information and intelligence gathered, the actual measurement / calculation should be conducted by expertise or qualified outsourcers

	● Design various customer motivation programmes to retain existing and maximise potential customer value in different customer segment groups, after measuring and comparing their relative performance in this respect ● Enrich the contents of such customer motivation programmes, say utilising market intelligence solicited to identify customer needs vs. product features and match, formulate plans to deepen customer relationship based on the financial behaviour of customers in different segment groups, etc ● Co-ordinate with various departments to identify the level of “affinity” (financial commitment of customers), loyalty, churn risk of customers 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly while handling and surveying customer value related tasks ● Always maintain the proper balance of interests between customers in individual segment groups and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully manage and accurately measure the customer value in different segment groups - correctly analyse and utilise those data related to customer value - formulate programmes tailored for different customer segment groups for retaining existing and maximising potential customer value
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Set up proactive procedures for customer fault management	
2. Code	ITCSCR409A	
3. Range	This UoC applies to all considerations and arrangements related to the establishment of procedures to handle issues arise from customer faults. The emphasis here is on a proactive approach, which if properly handled, can reduce negative effects to a minimal and even contributes to positive results in customer relationship.	
4. Level	4	
5. Credit	3	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Fully understand that faults such as errors embedded in customer handling procedures and mistakes made by employees can bring up serious harmful effects to customer relationship and may lead to unanticipated outcomes - Fully aware of the necessity of pre-establishing standard procedures to cater for customer fault management, and the proactive approach is usually more preferred than passive actions - Understand the significant benefits in reducing customer dissatisfaction by adopting a proactive approach for customer fault management, but at the same time aware of the unpredictability about the actual situation - Understand the necessity in provision of relevant training to employees involved in customer contact, as a parallel measure in setting up customer fault management procedures - Be aware of wide choices of methods and standards in the actual materialisation of customer fault management procedures, and their relative advantages as well as shortcomings 6.2 Set up proactive procedures for customer fault management Be able to: - Thoroughly investigate and identify sensitive issues / weaknesses / potential faulty areas in the products and services which are likely to invoke customer complaints, and estimate the seriousness of the problems - Demonstrate the ability to plan and judge in a proactive manner, and evaluate faults before customers complaint, or even before customers are aware of the faults - Establish effective procedures to prevent happening of the potential faults to a minimum, or relieve the resulting harmful effects in case if such customer faults really occur - Establish effective communication channels to disseminate those fault prevention procedures to those employees involved in customer handling and may likely trigger those identified faults in their daily job duties - Design appropriate training to staff members involved, such as soft skills as part of the customer fault management procedures, as good customer relationship is usually the best proactive measures to avoid customer un-satisfaction and complaints - Lead and instruct employees to exercise flexibility in serving customers such as rewarding / compensating customers up to a permitted limit, so as to avoid customer complaints or relieve customers' negative feelings - Establish effective and efficient escalation channels so that employees can obtain timely and concrete advices from superiors if they encounter problems in managing customer faults - Establish monitor and review mechanism to periodically evaluate the effectiveness of those customer fault management procedures, and make amendments to those established procedures if necessary	

	6.3 Exhibit professionalism ● Always ensure all staff members contribute their greatest effort honestly in their daily duties of customer management, including fault management ● Always treat the interest of customers as the highest priority issue
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish standard procedures for customer fault management to be followed by all related personnel - adopt a proactive approach to establish the procedures such that most customer complaints can be eliminated before they actually happen
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Organise and review customer profile to acquire potential customers and add value to existing customers	
2. Code	ITCSCR410A	
3. Range	This UoC applies to all tasks and actions relating to the organisation and reviewing of customer profiles, with the objective to obtain new customers for our products, or alternatively adding values to existing customers.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Organise and review customer profile to acquire potential customers and add value to existing customers 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the importance of retaining existing and exploring new customers to the overall profitability and survival of the company - Fully grasp the close relationship between knowing the customers and securing the customers - Alert of the necessity in properly organising and storing customer profiles and related information for the sake of subsequent review and analysis - Be aware of the wide range of available database management and analysis tools and their relative performance - Be aware of the keen CIS market competition in retaining existing and attracting new customers, and also customers' high expectation of continuous value-added services Be able to: - Integrate existing customer account information and intelligence from different sources to prepare executing plans for sales activities - Develop a support network of new business contacts by leveraging existing customer contacts - Supervise the recording of customer inquiries or information obtained through different means of contact - Integrate customer intelligence of different varieties into the database system - Qualify customer leads by applying pre-defined standards laid down by management - Develop a list of customer leads which include key information related to the customers - Comply to the privacy ordinance and company's internal guidelines when handling different sources of customer information - Effectively prevent leakage of customer data throughout the whole process of recording, storing and retrieving - Effectively present findings to management after conducting customer data review, with solid and feasible recommendations for further actions - Always maintain the proper balance between the interests of existing customers, potential new customers and the company at all time - Always work with full capacity and ability to ensure successful completion of customer profile analysis
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully and accurately complete the customer profiles analysis within the required time frame - make use of the findings and follow up actions to refine the situation of existing customers and attract new customers	
Remark		

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Review “what we have” and “what we will have” for existing products services regularly to sustain customer satisfaction	
2. Code	ITCSCR411A	
3. Range	This UoC applies to all considerations and arrangements for reviewing the company’s products / services periodically. The primary objective here is to sustain customer satisfaction by means of carefully investigating “what we now have” and “what we will have” in the products / services.	
4. Level	4	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the key importance of the success of the products / services and even the whole company by retaining / enhancing the existing level of customer satisfaction - Fully alert that the level of customer satisfaction relies mainly on their feelings / perceptions towards the products / services offered to them - Grasp the key issue that a thorough knowledge about the features, functionalities, pricing, etc. of a particular product / service (what we have) is vital in conducting consultative selling to customers and gaining their confidence / satisfaction - Understand that a good comprehension of the future development of a particular product / service in areas such as new features, new selling package, design, etc. (what we will have) is equally important in selling to customers and sustaining their satisfaction / loyalty - Be aware of the impact of market competition and competitor movements to the effectiveness of customer satisfaction retention efforts / activities 6.2 Review “what we have” and “what we will have” regularly for existing products and services, in order to sustain customer satisfaction Be able to: - Co-ordinate all necessary steps to ensure that involved employees possess a thorough understanding of the features and background knowledge of the products / services, say by means of orientation or training programmes - Effectively organise activities for related staff members to keep abreast of the planned development / upgrading of the company’s products / services such as new appearances, features, functionalities and sales packages, etc. again in the form such as briefing and training sessions - Lead and ensure staff members to proficiently convey to customers the above “what we have” and “what we will have” features of the company’s products / services, and record / report their feedbacks / responses accurately and promptly - Lead and ensure staff members involved in consultative sales do possess and exercise soft skills when dealing with customers, with the aim to maintain and sustain their satisfactions in the company’s products / services	

	● Lead and ensure the employees work with the aim to raise customer satisfaction by communicate with customers proactively to probe for their opinions and needs, also employees show caring and respect to the customers and react responsively and timely to their demand ● Keep close observation of the details / features and similar products / services provided by competitors in the market, consumers' perceptions and reactions towards them ● Ensure the following up of customers' enquiries and proposals towards the company's products / services, commit to embed proposed changes in future releases of the products if applicable ● Establish a recurrent review mechanism such that the effectiveness of the effort in retaining customer satisfaction can be examined promptly and regularly, and adopt appropriate follow up actions if necessary
	6.3 Exhibit professionalism ● Always ensure all related personnel work with their greatest effort honestly in all customer dealings to retain and enhance their satisfaction ● Always strike a proper balance of interests between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully convey the existing and potential future features and benefits of the products / services to customers - retain customer loyalty and satisfaction with the products / services and ensure the continuity of such customer attitudes
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Develop various promotion programmes to retain existing customers	
2. Code	ITCSCR412A	
3. Range	This UoC applies to all arrangements and action plans for the development of promotion programmes and activities aimed at retaining the satisfaction and loyalty of existing customers of the company's products and services.	
4. Level	4	
5. Credit	4	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Fully understand the necessity to evaluate real time customer information for both marketing and service, along with detailed service centre management operations reporting in order to design suitable programmes - Alert of the importance for analysing information about customer's buying habits, utilisation of the company's products and services, or demographics to accomplish targeted promotions - Comprehend the mandatory requirement in evaluating findings of the aforesaid targeted marketing analysis to market the right products / services to the right customers - Alert of the close relationship between the company's established CRM policies and promotion programmes targeted for customers - Be aware of the constantly changing preferences and behaviours of customers, and thus the necessity to change any customer related promotion activities on a continuous basis 6.2 Develop various promotion programmes to retain existing customers Be able to: - Establish different communication channels to provide customers access to latest information about the company's products and services, say dates about coming promotion activities - Develop and implement loyalty programmes to engender and enhance customer loyalty - Develop customer interaction processes in the service delivery flow to ensure individual relationship with customers is established - Develop evaluation metrics and performance standards for the programmes by utilising specialised skills in performance - Identify and select suitable tracking and monitoring methods to evaluate the performance of the programmes - Analyse and report the evaluation on programme effectiveness which include bottom-line figures, customer perception, costs, participation rates, etc 6.3 Exhibit professionalism - Always ensure all related staff members contribute their greatest effort in developing and implementing promotion programmes targeted for existing customers - Always maintain the proper balance of interests among customers, staff members and also the company as a whole	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully coordinate programmes and activities which enhance customer loyalty with the company - ensure the design of programmes is able to demonstrate understanding of the target customers and expertise, and expertise in design loyalty programmes or activities	
Remark		

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Safeguard customer information to enhance security	
2. Code	ITCSCR413A	
3. Range	This UoC applies to all procedures and actions for handling all kinds of personal data of customers possessed by the company. At all time the company policies relating to customer information protection will be strictly adhered to.	
4. Level	4	
5. Credit	5	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Safeguard customer information to enhance security 6.3 Exhibit professionalism	<u>Performance Requirement</u> - Fully understand the ultimate importance for personal data protection of today, and those related to ICT company customers are of no exception - Understand the regulations or ordinances governing privacy of personal data to identify the impact of privacy regulation on daily work - Fully understand and alert of the policies and practices of the company in handling customer's personal data to prevent standards violation - Grasp the key factor that today's customers also have high expectation about the protection of their personal data, and CRM activities should include security protection as an important element - Be aware of the constantly changing attitude and development towards personal data and privacy protection, thus the company's related practices should be reviewed periodically Be able to: - Persistently review the most current regulations and outline the future trend in privacy regulations - Comply to the stated interaction processes with account holders in order to better safeguard customer information - Comply with the requirements of laws and regulations when collect and retain information, protect and administer customer records and accounts - Adhere strictly to the company's privacy policies and practices, such as not disclosing any customer account information to any third parties, except as permitted by law - Respect customers' privacy and take all necessary actions to safeguard their personal and account information - Provide customers with helpful information about privacy and information security so as to help protect themselves from theft, and limit direct marketing from other parties - Take initiative steps to constantly observe and review the most recent development in privacy and security protection, and explore grounds for improving own company standards - Maintain database systems to store customer personal and account information, and ensure all protection features are implemented - Always ensure that all related staff members contribute their greatest effort in protecting and safeguarding customer information - Always treat the interests of customers, including their stored information with the company, with the highest priority - Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully safeguard all customer information in implementing the company's customer protection policies and procedures - gain the appreciation of customers through data protection as an element of CRM	
Remark		

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Determine own CRM target positions in the market for all customer segmentation	
2. Code	ITCSCR501A	
3. Range	This UoC applies to all considerations and arrangements in determining the company's particular target market positions in relation to customer relationship management. The step is performed taking into consideration all customer segmentations already established.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess knowledge in the subject area ● Fully comprehend the necessity for customer segmentation in order to match the wide range of company's product and services to the preferences of different customer groups ● Clearly identify the close relationship between the different customer segments and their corresponding CRM position ● Fully understand that the determination on CRM positioning relies on a clear and accurate understanding of the market environment and also the customers ● Understand that the determination on CRM position should stick to the company's established CRM philosophy and be planned according to the resources being allocated ● Be aware of the necessity for appropriate follow up actions once the CRM market positioning has been confirmed ● Comprehend an excellent understanding of the CRM philosophy of the company established by senior management ● Comprehend an excellent understanding of the ethical philosophy and standards of the company, especially those related to CRM issues 6.2 Determine own CRM target positions in the market for all customer segmentation Be able to: ● Project with good accuracy the optimal CRM market positioning for the company, taking into consideration the different customer segmentation groups in existence ● Design a working plan towards the setting up and determination of the aforesaid targeted CRM market positioning ● Formulate the finalised CRM market positioning decisions for different customer segments, and direct the delivery and briefing to all subsequently related staff members ● Lead the periodic reviews and probably revisions of the CRM market positioning details to cater for changes in market situation, customer preferences, or external factors such as government regulations 6.3 Exhibit professionalism ● Always strike an optimal balance between the interests of the different customer segment groups and the company as a whole ● Always work with full capacity and ability to ensure successful determination of the CRM market positioning tasks	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully determine the most ideal CRM target positions for the company across the different customer segments on time - propose appropriate follow up actions to realise the targeted CRM positioning	
Remark		

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Analyse and predict market trends for the specific industry	
2. Code	ITCSCR502A	
3. Range	This UoC applies to all considerations, procedures and actions to predict and analyse the market trends of products and services in the ICT industry, and with special focus on customer relationship. This is the first step for the task group “Analysing the market for CRM related issues”.	
4. Level	5	
5. Credit	7	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully grasp the common nature of CRM across all industries but also significant differences for the ICT industry and its unique products and services - Fully understand the necessity of conducting a careful and detailed analysis before getting relevant and precious information about anything, and ICT market trend is of no exception - Be aware of the importance of allocating sufficient and relevant resources for any analysis work - Fully understand the value of any analysis task is in facilitating accurate prediction of the future trends, such that the company can react accordingly - Be aware of the availability of a wide range of methods and tools for market trend analysis and prediction, and their relative advantages and disadvantages - Be aware of the close relationship between the company’s customer relationship policies and the direction and focuses of the aforesaid analysis and prediction tasks 6.2 Analyse and predict market trends for the specific industry Be able to: - Determine and adopt the most ideal set of market analysis and survey methodologies and tools for the company’s ICT industry specific market trend survey purpose - Supervise the actual conduction of the market survey and ensure correctness and timeliness through the entire process - Skilfully incorporate the specific features of ICT industry and the consumers’ behaviour of ICT products / services while conducting the market trend survey - Take good consideration of the significant differences in the behavioural pattern of different customer segments, such as corporate accounts or individual customers - Supervise the carrying out of subsequent analysis of the survey findings with special focus on the future market trends - Summarise the findings, predictions and recommendations on possible follow up actions for submission to management and related groups of staff members - Make recommendation on future activities relating to CRM, with the purpose of sustaining in the future market through customer loyalty and support	

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly in this task step for industry specific market trend survey and analysis ● Always work with full capacity and ability to ensure successful completion of this analysis and prediction phase ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully complete the industry specific market survey and analysis in a timely and accurate manner - predict with good accuracy the future market situation - recommend effective actions to strengthen the company's competitiveness in the future market
Remark	

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Analyse and predict customer needs to arrive at meaningful segmentations	
2. Code	ITCSCR503A	
3. Range	This UoC applies to all considerations and actions to analyse existing and predict future customer needs with the objective to segment customers into meaningful groupings for subsequent tasks on customer management. The set can also be regarded as customer loyalty prediction.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that an accurate and detailed analysis of customer needs is extremely essential in achieving the long term objective of building good customer relationship - Grasp the necessity of satisfying both the current and future needs of customers and the latter needs accurate prediction - Fully comprehend the necessity of segmenting customers for tailored resources allocation and customer services - Fully comprehend that a proper customer segmentation is an essential step in maintaining and strengthening customer loyalty - Be aware of the availability of a wide range of methods and tools for customer needs collection and analysis - Be aware of the close relationship between the company's customer relationship policies and the manner on how customers are segmented 6.2 Analyse and predict customer needs to arrive at meaningful segmentations Be able to: - Summarise the key features of products and services bundled as different packages to customers and the competitive landscape in the CIS sector - Accurately identify the focus of research programmes to solicit customer needs for subsequent analysis - Manage the process of data collection in different situations and customer segments in order to gather a comprehensive range of accurate and timely information on customer needs - Manage customer research project / programme, find existing information resources and survey customers to acquire critical market intelligence by providing independent perspective - Well comprehend fore-knowledge of competitors strategies and how they are implementing their plans to predict future challenges and safeguard own business - Analyse and compare results with the range of returns achieved by other companies who are operating in similar product / service markets - Design a structured process for the consolidation and analysis of information - Make accurate and sensitive prediction on customer needs based on the information gathered and in accordance with company specifics such as budget level, market strategy, etc	

		● Consolidate the results of analysis and forecast for management's strategic planning on future customer segmentation. ● Estimate with high accuracy the additional revenue / benefit that can be generated from related analysis and prediction ● Ensure changes are approved and finally implemented ● Estimate with high accuracy the future changes in customer usage pattern if the proposal for changes are approved and finally implemented. ● Effectively communicate with all levels of staff members regarding the customer pattern findings, and seek management's approval for changes and co-operation of other colleagues for implementing the changes ● Take all reasonable precautions and reviews to cater for mistakes in data interpretation or unexpected deviations while implementing the recommended changes
	6.3 Exhibit professionalism	● Always maintain the proper balance between the interests of customers and the company at all time ● Always work with full capacity and ability to ensure successful completion of the customer analysis and segmentation tasks ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully and accurately analyse the existing and future needs of customers - segment customers into meaningful groups to enhance subsequent customer relationship related tasks, based on the above needs findings	
Remark		

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Analyse and predict competitors vs. own standings on all fronts of CRM covering all customer segmentation - trend prediction	
2. Code	ITCSCR504A	
3. Range	This UoC applies to all considerations and actions to analyse and predict competitors' actions, with focuses on their impact towards the market situation and standing of own company. The analysis will cover all customer segments already established. The step can also be regarded as trend prediction.	
4. Level	5	
5. Credit	6	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that an accurate and detailed analysis of competitors' existing and potential movements is extremely important to maintain the company's own market position - Grasp the fact that actions of competitors can be observed but are always difficult to identify the underlining intention. Accurate and sensible analysis skill is thus essential. - Fully comprehend that a comprehensive competitors analysis has to be done across the range of customer segmentations established by the company - Be aware that a good understanding of the company's own market position and competitive edge is essential in the analysis and prediction of the competitors' actions - Be aware of the rapidly changing market and competitive situations while performing the analysis tasks - Be aware of the close relationship between competitors analysis and own CRM related issues 6.2 Analyse and predict competitors vs. own standings on all fronts of CRM covering all customer segmentation Be able to: - Summarise the key features of own products and services and those of the competitors so as to accurately comprehend their relative differences and advantages / disadvantages - Accurately identify the focus of the competitors analysis to solicit useful information for formulating subsequent follow up actions - Manage the process of data collection in different situations and customer segments in order to gather a comprehensive range of accurate and timely information on all relevant aspects of competitors - Well comprehend fore-knowledge of competitors strategies and how they implement their action plans - Analyse and compare results with the range of returns achieved by competitors who are operating in similar product / service markets - Design a structured process for the consolidation and analysis of information - Make accurate and sensitive prediction on the impact of competitors actions upon own company's products and services - Accurately consolidate and effectively present the results of competitors analysis and forecast for management's strategic planning on future market trends - Effectively communicate with all levels of staff	

	- members regarding the customer pattern findings - Design and set up reasonable precautions and review measures to cater for mistakes during the competitors analysis processes
6.3 Exhibit professionalism	- Always ensure all related staff members contribute their greatest effort in this task step for competitors analysis and prediction - Always work with full capacity and ability to ensure successful completion of this analysis phase - Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully explore and explain the actions and behaviours of competitors in a timely manner so as to retain own market standing - ensure the analysis covers the full range of existing customer segmentations - propose appropriate follow up actions after comparing competitors' movement with the company's own situations
Remark	

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Identify potential major risks which may result with the strategy execution and devise appropriate risk mitigation plans accordingly	
2. Code	ITCSCR505A	
3. Range	This UoC applies to all considerations and activities relating to the identification of major risks in executing CRM related activities based upon / in accordance with the CRM strategies established by the company. Also closely related is the exploring of appropriate risk mitigation plans / actions to handle those risk factors identified earlier.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that all business activities are exposed to a certain level of risk and those associated to the execution of established CRM strategies are of no exception - Grasp the importance in correctly identifying the above major risks, for establishing appropriate risk mitigation plans and get-around - Clearly grasp the necessity in establishing a risk management plan to closely monitor and measure risk factors associated with CRM strategy execution - Fully understand the necessity in conducting risk assessment after carrying out the CRM risk identification and measurement processes - Be aware and keep abreast of the latest development of CRM in service sectors, particularly the ICT industry - Be aware of the wide choices of methods and techniques in exploring major risk factors and implementing risk mitigations, each with its own strength and shortcomings 6.2 Identify potential major risks which may result with the strategy execution and devise appropriate risk mitigation plans accordingly Be able to: - Analyse the different operations and actual contents of the company's CRM activities which warrants risk management and controls - Exercise good analytical skill to identify / discover those major risk factors incurred in the process of executing activities towards accomplishing the company's CRM strategies - Determine with high accuracy the potential impact and influences of those major risk factors identified, to an individual ICT product or the company as a whole - Master specialised methods or measures to conduct risk assessment and review those CRM strategy related activities - Develop risk mitigation techniques and procedures which are tailored or pinpointing to the different kinds of risks identified earlier - Design contingency plans on different kinds of risks identified in order to minimise disruption to the particular ICT product or customer relationship - Finalise and consolidate all risk mitigation and get around procedures into a risk mitigation plan, for subsequent execution if required - Establish an effective mechanism to document the risk mitigation plan, and ensure all latest updates /	

	- amendments are incorporated ● Lead all personnel associated with CRM activities and ensure that they are aware of the established risk mitigation plan and act accordingly 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly in the identification of risks associated with CRM activities ● Always strike a proper balance among the interests of customers, employees and the company as a whole ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully identify those major risk factors relating to execution of activities for implementing the company's CRM strategies - successfully establish an effective and efficient risk mitigation plan for the company - effectively drive related staff members to stick to and act according to the risk mitigation plan established
Remark	

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Formulate customer needs analysis and risk profiling	
2. Code	ITCSCR506A	
3. Range	This UoC applies to all considerations and actions to formulate analysis on customers' needs, preferences, and also risk profiling. It includes the conduction of assessment on customer needs and risk appetite to the company's products and services.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the objectives of needs analysis and risk profiling so as to identify what kinds of information are needed to be collected - Fully aware of the importance of collecting useful information about the needs of customers in order to provide them with quality services - Grasp the importance of collecting useful information regarding risk profiling of customers in order to safeguard the interests of the company - Be aware of the wide range of methodologies and techniques in needs and risk analysis, and their relative applicability to different situations, such as corporate or individual customers - Be aware of the close relationship between customer needs and risk analysis, as well as the company's CRM strategies and related issues 6.2 Formulate customer needs analysis and risk profiling Be able to: - Master effective questioning techniques to capture useful information to determine customer's financial situation and risk profile, especially for corporate or high-end customers - Capture and excavate relevant information via established communication channels with customers including say risk appetite, previous ICT products consumption pattern, consumption objective and horizon, etc - Fully comprehend valid reasons to ask sensitive questions - Capture related documents and other sensible evidence to support customer needs assessment - Forecast customers' needs by using sound judgment and checking of their understandings - Ensure presentation of established product / service usage regulations, and risk disclosure statement (if applicable) to customers in accordance with risk assessment - Analyse customer information collected to outline customers' financial needs, consumption preferences, risk bearing ability, protection requirements, etc - Report the results of customer needs and risk analysis, together with relevant forecasts for management's strategic planning on future CRM related activities - Effectively communicate with related staff members regarding the customer needs and risk analysis findings	

	6.3 Exhibit professionalism ● Establish reasonable precautions and review to cater for mistakes during the analysis processes ● Always ensure all related staff members contribute their greatest effort honestly while performing customer needs and risk analysis ● Always work with full capacity and ability to ensure successful completion of this analysis phase ● Comply to the privacy ordinance and company's internal standard while handing different sources of customer information
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully perform analysis on customer needs and risk profile - ensure the analysis are done based on sufficient amount of information and evaluated according to the company's established policies
Remark	

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Formulate risk management plans	
2. Code	ITCSCR507A	
3. Range	This UoC applies to all considerations and actions associated with the formulation of the CRM risk management plan for the company. An important issue is that the formulation of such plan involves not only staff member of own company, but also outsourcing parties.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the importance in formulating and setting up a CRM risk management plan and include it as a concrete part of the overall company CRM strategy - Clearly grasp that the risk management plan is to monitor risk levels for CRM and should cover measurement on different kinds of risk - Clearly identify that the formulation and implementation of a proper CRM risk management plan is vital in the retention of existing and exploration of new customers - Fully aware of the necessity of consolidating the ideas of management and all levels of staff members in the process of establishing / formulating the risk management plan - Master the situation that a lot of ICT products / services related activities and even customer management tasks are outsourced, thus the input from outsourcing parties are also vital in the process of risk management plan formulation - Be aware of the wide choices of risk assessment tools and measurement methods while formulating the company's risk management plan, each with its relative strength and shortcomings 6.2 Formulate risk management plans Be able to: - Identify key risk management areas including outsourcing parties (risk of not delivery), service recovery (usually built into CRM sub-strategies), etc - Carefully analyse different operations of the company (as an ICT products / services provider) which warrant risk management and controls - Create an appropriate CRM risk management plan for the company based on the risk of the above risk analysis - Develop specific risk management tactics according to the types of products, customer segments or even geographical locations - Always take full effort to ensure that the risk management plan developed is consistent with the company's CRM strategies and risk appetites - Set up risk limits in key CRM activities of the company after identifying and categorising possible risks - Develop relevant infrastructure to support the CRM risk management plan - Design and apply monitoring measures to ensure smooth implementation of the CRM risk management plan	

	● Develop or acquire different assessment tools or measurement methods after considering particular needs of the plan such as nature, business need, staff expertise, etc ● Design measures to ensure limit utilisation and that risk levels are within preset criteria ● In terms of implementation, always ensure the existence of a concrete mechanism for staff members / outsourcers to follow, for example employees can compensate the customers up to a certain level 6.3 Exhibit professionalism ● Always ensure all related staff members / outsourcers contribute their greatest effort honestly in the formulation and implementation of the company's CRM risk management plan ● While devoting all preferences to customer, try hard to strike a proper balance of interests between different parties including employees, outsourcers and the company as a whole ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully formulate / create an optimal CRM risk management plan for the company ii. ensure the risk management plan will be understood and complied by all involved parties including own employees and outsourcers iii. ensure customer relationship will be enhanced and customer retention can be achieved after implementation of the established risk management plan
Remark	

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Formulate strategy execution plan with appropriate management oversight, regular check-back and strategy review processes	
2. Code	ITCSCR508A	
3. Range	This UoC applies to all considerations and arrangements in the formulation of strategy execution plan for the company. The essential considerations for this task step includes management oversight, check-back and strategic review on a routine basis, etc.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand the fundamental fact that established CRM strategies / sub-strategies need a well-defined execution plan as guidelines if they are to be implemented successfully - Fully aware of the necessity of considering a lot of essential factors in order to arrive at an optimal CRM strategy execution plan for the company - Fully comprehend that the so-called essential factors include the consideration for sufficient and timely management oversight - Clearly understand that the essential factors include the embedding of an effective check-back mechanism - Fully understand that the essential factors include the embedding of a periodic strategic review mechanism - Be aware of the significant benefits in maintaining a proper balance and mix of the above consideration factors 6.2 Formulate strategy execution plan with appropriate management oversight, regular check-back and strategy review processes Be able to: - Demonstrate a thorough understanding and knowledge of the CRM strategies / sub-strategies endorsed by management - Supervise the development of the associated execution plan for the company CRM strategies / sub-strategies - Effectively design built-in / embedded mechanism into the execution plan so that management can always monitor all operations and inject changes as appropriate - Establish a comprehensive documentation system into the CRM strategy execution plan such that all events / tasks performed are fully recorded, stored and be available for check-back or enquiry purposes - Establish a standard periodic mechanism within the CRM strategic execution plan to enforce review of the plan and associated strategies / sub-strategies on a re-current basis - Establish efficient and effective communication channels with all levels of staff members / outsourcers to ensure their understanding, support and observance of the CRM strategy execution plan - Demonstrate accurate and sensitive prediction on the impact of competitor actions upon own company's products and services 6.3 Exhibit professionalism - Always ensure all related staff members / outsourcers contribute their greatest effort honestly in formulating the CRM strategy execution plan for the company - Always strike a proper balance between customers and the company while formulating and executing the plan - Always maintain an optimal balance between all related technological, political, social and legal issues	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully formulate a CRM strategy execution plan incorporating all essential factors mentioned for the company - ensure the execution plan could be understood and will be strictly adhered to by all involved personnel - ensure the implementation of the established execution plan will bring long term benefits to the company	
Remark		

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Formulate staff training at all levels for the established corporate CRM strategies	
2. Code	ITCSCR509A	
3. Range	This UoC applies to all tasks and arrangement for the formulation and provision of training to staff members / related personnel involved in the implementation of the established corporate CRM strategies. The step would be conducted after endorsement of the CRM strategies and manpower input, to avoid delay of all subsequent tasks.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that training is a mandatory method to equip staff members with the necessary knowledge and skills to handle any assignment, and implementation of the established corporate CRM strategies is of no exception - Grasp the key issue that there are no shortcuts in acquiring knowledge and skills and staff training should be conducted as early as possible, say after confirmation of the corporate CRM strategies - Fully comprehend the complicated situations that different staff members will react differently to the training provided, which can significantly affect the expected outcome - Fully aware that CRM strategies training can spread a wide range from technical knowledge to general soft skills, and the setting of a suitable curriculum can be very challenging - Master the situation that training needs to be provided on a continuous or periodic basis in order to introduce the most updated information to trainees (staff members) - Be aware of the wide range of sources for training provision including vendors, external training bodies and internal training departments, etc - Be aware that training can be offered in very different formats and modes and that designing an appropriate mix can enhance its effectiveness 6.2 Formulate staff training at all levels for the established corporate CRM strategies Be able to: - Establish in advance the CRM strategies training material / contents with appropriate coverage and depth for different levels of staff members - Supervise the development of a training schedule for different staff members groups, and consider their working schedule, required level of knowledge, depth of involvement, etc - Design the best mix of training for the established CRM strategies, such as classroom teaching, practical workshop, scenario based training, etc - Effectively make use of computer systems and related software to conduct training on top of or even substitute traditional training methods - Recruit / deploy suitable external and internal trainers to conduct the CRM strategies training programs, and determine the necessity of training activities for trainers	

	● Consistently stick to the principle that effective training goes hand in hand with well-designed assessments such as quiz, examination or practical workshop ● Supervise the development of mechanisms to accurately monitor the progress and performance of individual trainees ● Estimate with good accuracy to arrive at a compromise between the costs for training provision, and the benefits after equipping staff members with the required knowledge and skills 6.3 Exhibit professionalism ● Always ensure all trainers and trainees contribute their greatest effort while formulating, conducting or receiving training relating to the corporate CRM strategies ● Always strike a proper balance of interest between staff members and the company, and even customers while performing tasks relating to staff training
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. formulate and arrange the most appropriate corporate CRM strategies trainings for different levels of staff members ii. realise the original training objectives that staff members' knowledge and skills can be enhanced / upgraded afterwards iii. ensure that the training provided to staff members can bring long term improvement in customer relationship, retention and loyalty, etc
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Develop programmes or activities to maintain and intensify customer relationship	
2. Code	ITCSCR510A	
3. Range	This UoC applies to all considerations and arrangements for the development of programmes or activities geared to maintain and intensify customer relationship. This includes different public relations or marketing programmes for different business areas at various market segments to promote customer loyalty.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully grasp the key issue that maintenance and upgrading / intensifying of customer relationship is fundamental to the success of any ICT product / service, and even the entire company as a whole - Fully understand the necessity in evaluating existing customer profiles and related business activities for the purpose of appropriately designing customized CRM activities - Fully aware of the necessity in developing a range of different programmes or activities to interact with customers based on the preference of different market segments - Fully alert that performance of the different programmes / activities developed must be accurately monitored and measured to evaluate their effectiveness in enhancing customer relationship - Be aware of the wide range of factors needed to be considered in segmenting customers and designing CRM programmes / activities for individual segments - Be aware of the wide choices of methods and metrics in measuring performance of the different programmes / activities 6.2 Develop programmes or activities to maintain and intensify customer relationship Be able to: - Evaluate real time customer information for both marketing and service, along with service centre management operations reporting in order to design suitable programmes / activities - Analyse with good accuracy information about customers' buying habits, utilisation of ICT services or demographics to accomplish targeted marketing and customer servicing, with the aid of software tools / techniques such as data warehousing, data mining, etc. - Evaluate the findings of targeted marketing / servicing analysis so as to market the right products to the right customers - Establish different communication channels to provide customer accesses to own ICT products / services information and provide feedback - Develop and implement loyalty programmes to engender and enhance customer loyalty - Design customer interaction processes in the service delivery flow to ensure individual relationship with customer is established - Develop evaluation metrics and performance standards for the programmes / activities by utilising specialised skills in performance measurement	

	● Determine suitable tracking and monitoring methods and software tools to evaluate the performance of the programmes / activities ● Design mechanism in analysing and reporting the evaluation on programme effectiveness which include bottom-line figures, customer perceptions, cost, participation rates, etc 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort and honestly while designing or performing programmes / activities targeted for customer relationship ● Always maintain the proper balance of interests between customers, employees and even the company as a whole ● Handle all activities / findings in a scientific and objective manner
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully design a set of programmes / activities together with the evaluation mechanism on enhancing customer loyalty to the company ii. ensure the design of programmes / activities is based on the analysis of the target customers and expertise in designing loyalty programmes iii. ensure the successful implementation of the CRM programmes / activities and the ability to maintain and intensify customer relationship
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Develop a customer-centric culture in the organisation and organisation memory of customers	
2. Code	ITCSCR511A	
3. Range	This UoC applies to all considerations and actions relating to the development of a customer-centric culture within the organisation. On the other hand the UoC also cater for the creation and maintenance of “Organization Memory” for the customers.	
4. Level	5	
5. Credit	3	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Fully understand the worthiness in establishing a customer-centric culture within the organisation, such that all levels of staff members will work towards such a target - Grasp the deemed necessity in influencing / motivating all levels of staff members about the idea and importance of “customer-centric” - Fully alert that the target of customer-centric can be materialised only when accompanied with a set of well designed CRM programmes / activities loyally performed by different levels of staff members - Grasp the key issue that in complementary with the company’s customer-centric culture, there is the necessity of developing an organisation memory among the customers - Understand that the building of organisation memory is a long term and resources consuming task requiring the support of suitable CRM programmes / activities - Be aware of the wide range of factors to be considered and the wide choice of methods / techniques in performing the “customer centric” and “organisation memory” cultivations 6.2 Develop a customer-centric culture in the organisation and organisation memory of customers Be able to: - Create a customer-centric atmosphere within the company and ensure all levels of staff members are aware of it and act accordingly in their daily routines - Sustain and intensify the idea and importance of customer-centric culture in the company, including training, periodic review, reward and penalty programmes, etc - Set up behavioural samples to demonstrate customer-centric mindset such as observing customers and identifying their needs when interacting with them, showing respects to customers, etc - Set up behavioural samples for dealing with customers to cultivate the seed of organisation memory in them, such as greeting customers proactively in a timely and professional manner, answering customer enquires by providing appropriate information and following up their needs when necessary, offering value-added services to customers proactively when appropriate - Establish and maintain an effective monitoring mechanism for recording and subsequent review of the effectiveness of those tasks targeted for “customer-centric” and “organisation memory”, utilising software tools / packages if appropriate	

	6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly while handling and contacting customers ● Always treat the interest of customer as the highest priority issue
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully cultivate a customer-centric culture within the company - successfully build up an organisation memory among customers in different market segments - ensure sustainability of the above activities and their continuous positive contribution to the company
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Establish policies and guidelines for customer contact management including customer acquisition and retention programme	
2. Code	ITCSCR512A	
3. Range	This UoC applies to all considerations and operations relating to the establishment of policies and guidelines for customer contact management. This task covers a broad range of activities relating to customer contacts and the focus is upon those directly related to customer acquisition and retention.	
4. Level	5	
5. Credit	5	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Establish policies and guidelines for customer contact management including customer acquisition and retention programme	<u>Performance Requirement</u> ● Recognise that customer contact is a fundamental but probably the most important activity in the execution and implementation of the company's CRM programmes ● Recognise that as customer contact will be carried out by large number of staff members at all levels, the establishment of well-defined guidelines and policies becomes mandatory ● Fully understand that successful customer contact can be measured in a multi-dimensional manner, and customer acquisition & customer retention are two key performance indicators ● Fully alert that as customers are usually grouped into different segments (e.g. corporate accounts and individual accounts), their significantly different modes and focuses in customer contacts need separate policies and instructions for guidance ● Grasp the importance in correctly disseminate the policies regarding customer contact to all related personnel to ensure consistent services are being provided to customers ● Be aware of the wide choices of means, methods, skills (mainly soft skills) that can be adopted for customer contact management, each with its own relative strength and resources requirement ● Be aware of the importance in the periodic review of those performance indicators for customer contact management, and take appropriate follow up actions when required Be able to: ● Establish an atmosphere / culture within the company so that all level of staff members from seniors to front-end will agree to the concept of providing the best customer services through successful customer contacts ● Lead and educate all involved staff members the outcome expectation for their daily routines in customer contacts, say the number of new customers acquired, or the customer retention rate achieved ● Supervise the implementation of necessary procedures to ensure that all staff members involved in customer contacts are equipped with the necessary knowledge and skills in dealing with customers, say through the provision of trainings

	● Predict with accuracy the human and other resources needed to be allocated to achieve the expected outcomes and seek management's support and endorsement ● Deploy the most suitable employees for contacting and servicing customers in the different segment groups of the company ● Establish an accurate and timely monitoring system (using software tools if applicable) to record details such as the monthly (or other periodic intervals) increases in new customers, mobility and changes of existing customers, etc ● Ensure the monitoring system can also reflect whether established customer contact management policies and guidelines are being observed by the employees ● Ensure that in case if part or all of the customer contact assignments are outsourced, the outsourcers will perform in the same manner and achieve the same expected outcomes as own employees 6.3 Exhibit professionalism ● Always ensure all related staff members / outsourcers contribute their greatest effort honestly while contacting and serving the customers ● Always maintain the proper balance of interests between customers and the company as a whole ● Always ensure all company guidelines and legal requirements (such as the Privacy Act) are being considered and observed in all customer contact activities
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully launch a set of feasible policies and guidelines for customer contact management - ensure all executing parties including own employees and outsourcers will work according to guidelines - ensure the performance indicators measured as customer acquisition and retention can be achieved
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Develop policies, procedures, processes and preventive measures to handle customer mis-service recovery	
2. Code	ITCSCR513A	
3. Range	This UoC applies to all considerations and arrangements in developing specific policies, procedures and preventive measures to handle problems arise from customer mis-service. The main focus is to eliminate the harmful effects thus incurred and recover customer relationship back to normal.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area Exhibit the ability to: ● Recognise the fact that errors and mistakes are unavoidable when dealing with customers and these mis-services may have harmful effects to customer relationship ● Fully understand that the customer mis-service rate can be kept at a minimum if proper preventive measures have been planned and implemented beforehand ● Recognise that proper and timely handling of customer mis-services can reduce loss and may even create chances for strengthening customer relationship and sales opportunities ● Fully alert of the necessity in formulating concrete policies and guidelines for employees involved in customer contact to follow ● Understand the handling of customer mis-service recovery need the allowance of a certain degree of flexibility and autonomy for employees to accomplish ● Be aware of the fact that customers' perception towards mis-service recovery procedures are influenced by those adopted by own company's competitors 6.2 Develop policies, procedures, processes and preventive measures to handle customer mis-service recovery Be able to: ● Clearly establish at the earliest stage a clear set of preventive measures to reduce the possibility of customer mis-services, and ensure all involved personnel understand and observe such measures ● Elaborate the details of such preventive measures in a careful and thoughtful manner, present them in plain language and list out items in logical sequence for easy understanding ● Develop a set of clear, concrete and comprehensive policies and guidelines for the handling of customer mis-services recovery, for example the compensation level that can be offered to customers ● Set up measures to ensure that all involved personnel fully understand and adhere to the established set of mis-service recovery guidelines ● Design with thorough consideration a set of alternative actions / measures that employees can follow / adopt in case flexible handling of customer mis-service cases is deemed necessary ● Establish proper escalation channels such that employees can refer special or difficult customer mis-service cases to senior management for further directions or assistance promptly ● Exploit every opportunity to turn the negative recovery cases to positive chances of strengthening customer relationship or creating new sales ● Closely monitor similar customer mis-service recovery actions adopted by competitors, and evaluate the necessity of changing / upgrading those of our own to attract customers	

	6.3 Exhibit professionalism ● Always ensure all related staff members / outsourcers contribute their greatest effort honesty while handling customer mis-service recovery tasks ● Always put the interests of customers in the highest priority ● Always handle all related issues in an objective but considerate manner
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully launch a set of preventive measures that can reduce the occurrence of customer mis-services - successfully launch another set of policies / guidelines to smoothly handle customer mis-service cases actually occur - maintain and strengthen the relationship with customers after settlement of the mis-service cases
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Develop policies, procedures and processes to ensure customer data privacy is always protected	
2. Code	ITCSCR514A	
3. Range	This UoC applies to all considerations and actions relating to the data privacy protection for all kinds of personal data of customers possessed by the company.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Clearly understand the existing regulations and ordinances governing privacy of personal data in Hong Kong, namely the “Personal Data (Privacy) Ordinance” - Understand comprehensively the privacy requirements on personal data of customers and its implication on daily work - Fully understand the related policies and practices adopted by the company in handling customer’s personal data to prevent violation of the standards - Tightly grasp the fundamental principle of displaying with respect to customer’s privacy when handling customer personal data - Fully alert of the fact that the company’s established policies and practices towards customer data privacy must be made known to all levels of staff members and demand their strict observance - Always aware of the recommendation raised by the Office of The Privacy Commissioner for Personal Data (PCPD) in Hong Kong 6.2 Develop policies, procedures and processes to ensure customer data privacy is always protected Be able to: - Fully comprehend the current regulations / ordinances governing privacy of personal data in Hong Kong and based upon it to establish / review own company’s policies and practices - Establish with thorough consideration the company’s policies, procedures and processes to handle customers’ personal data, and ensure all levels of staff members understand and stick to the requirements - Carry out or supervise the collection and recording of customer information according to the established policies to prevent leakage - Comply with the stated processes while interacting with customer account holders in order to better safeguard customer information - Comply with the requirements of laws and regulations when collecting and retaining information - Adhere to the privacy policies and practices and do not disclose any customer account information to any other third party, except as permitted / demanded by law - Respect customer’s privacy and take strong actions to safeguard their account information - Provide customer with helpful information about privacy and information security so as to help protect themselves from identity theft, and limit direct marketing from other parties 6.3 Exhibit professionalism - Always ensure all related staff members contribute their greatest effort honestly while handling customers’ personal information - Always treat the safeguarding of customers’ data privacy as the highest priority task	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully establish the company's own set of policies and practices in protecting customers' data privacy ii. ensure the established policies fully compatible with Hong Kong's existing regulation and legislation iii. ensure all levels of staff members understand and stick to such policies in their daily routines that may access customers' personal information
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Identify alternative approaches to accomplish organisation CRM strategies	
2. Code	ITCSCR515A	
3. Range	This UoC applies to all planning and consideration for the exploration and investigation of alternative approaches to accomplish the company's CRM strategies and sub-strategies. Such CRM strategies and the initial means to accomplish them should have been established at an earlier stage.	
4. Level	5	
5. Credit	6	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that the CRM strategies and sub-strategies, as established by management need a well-planned programme for accomplishment - Fully alert of the availability of a wide range of choices for methods, procedures and programmes to accomplish those CRM strategies, and exploration and investigation of these different approaches is beneficiary to the company - Understand that investigating and establishing alternative approaches to the existing choices is not a waste of effort, but can satisfy multiple purposes such as backup, complementary, replacement, and contingency, etc - Grasp the key issue that multiple and alternative approaches can also be adopted to cater for different products / services, scenarios, customer segments groups, geographic locations, etc - Be aware of the impact to resources allocation and costing if alternative approaches are decided to be adopted as the accomplishing CRM strategies - Be aware of the necessity of employees deployment or re-training if alternative approaches for CRM strategies are to be adopted 6.2 Identify alternative approaches to accomplish organisation CRM strategies Be able to: - Accurately identify different approaches to accomplish the company's CRM strategies, and understand their relative strengths and weaknesses - Formulate the roadmap of CRM strategies which cover different scenarios, customer segment groups, products / services, etc - Develop a cohesive and compelling CRM roadmap by conducting research to find out the effectiveness and efficiency of different alternatives and prioritise / arrange them appropriately according to the company's context - Tailor different approaches and make choices among say insourcing, outsourcing, combination, or relying on the services of an independent organisation - Evaluate and select among different CRM software systems for the company - Ensure proper documentation of the details and implications about these alternative approaches for management's review and new direction with the help of appropriate software such as a CRM package	

	6.3 Exhibit professionalism ● Always ensure all related staff members to contribute their greatest effort, accurately and honestly while investigating and exploring the different approaches and means to accomplish the company's CRM strategies ● Always maintain the proper balance of interests between customers in different market segment groups and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully investigate and identify a list of feasible and reasonable approaches to accomplish the company's CRM strategies as established earlier ii. ensure any such alternative approach can be put into practice in a timely manner in case of necessity iii. ensure the different approaches can bring the expected returns / results if adopted
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Identify procedure and processes to ensure customer perception of the company is consistently maintained and further enhanced	
2. Code	ITCSCR516A	
3. Range	This UoC applies to all methods and actions relating to the sustenance of customer perception towards the company and exploring of chances for its enhancement and strengthening. This task is closely related to the UoC ITCSCR511A - “Develop a customer-centric culture in the organisation and organisation memory of customers”.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area ● Recognise the importance in sustaining positive perception of customers towards the products / services supplied by the company and the company as a whole ● Recognise the necessity that customer perception must be maintained / enhanced / strengthened over the long run if development of the company is to be continued ● Fully understand the target of customer perception sustenance / enhancement can only be achieved with a set of well designed CRM programmes / activities ● Master the key factor that accomplishment of customer perception sustenance / enhancement demand the effort from all levels of staff members responsible for communicating with and serving the customers ● Comprehend the deemed necessity in influencing / motivating all levels of staff members towards the idea and importance of keeping positive customer perception ● Be aware of the wide range of factors to be considered and the wide choice of methods / techniques in designing CRM activities for enhancing customer perception 6.2 Identify procedure and processes to ensure customer perception of the company is consistently maintained and further enhanced Be able to: ● Create an atmosphere of “quality customer service” within the company such that all levels of staff members are aware of and will act accordingly in their daily routines, say in the form of mission statement ● Promote the company’s “quality customer service” pledge to customers in all market segments, and even the society as a whole, say by means of advertisements ● Establish and disseminate to staff members practical examples to improve / enhance customer perception towards the company, such as observing customers and identifying their needs when interacting with them, showing respects to customers, etc. ● Establish and implement various programmes to enhance customer loyalty and relationship, such as long term discount programme, trade-in programme, rewards for introducing new customer, periodic product / service news release for existing customers, etc	

	● Strengthen internal administrative arrangements such that all levels of employees can gain access to and share the same information about customers, and thus can act in a consistent and positive manner when dealing with them ● Lead periodic reviews / meetings with staff members involved in customer contact / service so as to investigate the effectiveness of existing customer perception enhancement programmes, also explore opportunities to improve customer relationships 6.3 Exhibit professionalism ● Always ensure all related staff members contribute greatest effort and express the “quality customer service” image in their daily routines of customer handling ● Always maintain the proper balance of interests between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish the “quality customer service” atmosphere in the company - successfully establish various programmes for sustenance / enhancement of customer perception towards the company - ensure there is an increase in the number new customers and product loyalty of existing customers
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Set up measurement yardsticks / metrics / service level agreement (SLA) for customer satisfaction and quality assurance (QA)	
2. Code	ITCSCR517A	
3. Range	This UoC applies to all considerations and arrangements in the setting up of various means to measure customer satisfaction and for quality assurance of the company's products and services. This is the first task for the task group "Managing Customer Satisfaction" and paves the foundation for all subsequent activities in this aspect.	
4. Level	5	
5. Credit	6	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Set up measurement yardsticks / metrics / service level agreement (SLA) for customer satisfaction and quality assurance (QA)	<u>Performance Requirement</u> - Fully understand that the foundation of customer satisfaction management is the accurate measurement and evaluation of the quality of the products / services from the perception of customers - Fully grasp the necessity in setting up effective means / yardsticks / metrics to measure or quantify the level of customer satisfaction - Fully understand in case of necessity the entering into agreements / compromises with customers regarding the quality levels of the services to them, say by means of a Service Level Agreement (SLA) - Be aware of the importance in arranging qualified personnel to manage the setting up & usage of tools, and reporting / interpreting of those measured outcomes related to customer satisfaction and quality assurance - Be aware of the importance in ensuring a barrier free communication among employees, management, and even customers in issues regarding customer satisfaction and products / services quality assurance Be able to: - Analyse both the customer base of the company and the market to identify the different customer segments and their characteristics so as to discern customer service required - Clearly identify and compare requirements and expectations on customer services of different groups of customers - Establish standards / metrics of customer service quality in different selling stage and scenarios, the standards / metrics can be quite versatile depending on the actual products / services delivered, with examples such as MTBF, MTTR, etc - Precisely develop processes and measurement yardsticks / metrics to ensure the company's requisite customer service is delivered in proper manner to the correct target customer groups - Tactfully develop customer service strategies based on targeted customers which can address customer needs and satisfaction, and even take full advantage of new business opportunities simultaneously

	● Design service improvement programmes for different sales channels which are essential for customer acquisition / retention, and raising their satisfaction level ● Explore opportunities to develop and offer SLA type guarantees to customers to assure them of the quality of the products / services, which in reality is a part of a service contract where the level of service is formally defined ● Design assessment tools to review regularly how customers benefit from the products / services offered to them and how well the company's service systems can address their needs 6.3 Exhibit professionalism ● Always ensure that all related personnel contribute their greatest effort honestly in offering their services to customers ● Always stick to all established measures and agreements when dealing with customers and take the latter interests as the highest priority issue ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully set up quality assurance and evaluation measures on customer services to ensure the quality of services during the entire selling processes ii. devise measures / metrics based on the analysis on the characteristics of different customer segments and their requirements iii. ensure the ultimate increase in the quality of customer services and successfully raise customers' satisfaction level
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Set up appropriate customer feedback channels including communication channel with outsourcing parties for conveying customer needs and recommending improvement proposals	
2. Code	ITCSCR518A	
3. Range	This UoC applies to all tasks and actions related to the establishment of communication channels with customer to solicit their needs and feedbacks regarding the products / services they purchased. Such feedback channels are also set up for similar communication with related outsourcing parties.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Set up appropriate customer feedback channels including communication channel with outsourcing parties for conveying customer needs and recommending improvement proposals	<u>Performance Requirement</u> - Fully understand the importance in maintaining continuous communication with customers and also outsourcers in order to solicit their needs and proposals regarding the products / services - Fully aware of the necessity in establishing efficient and effective channels in order to achieve the purpose of communicating with customers in different market segments established earlier - Be fully aware of the contribution of outsourcers in broadening the communication with customers, and must therefore take them into consideration for communication channels establishment - Grasp the key issue that channels for communication with customers and outsourcers can exist in a wide variety of forms, each with its relative advantages and different establishment costs, examples include formal and casual meetings, visits, interviews, charity and social activities, etc. - Fully alert that timely and accurate collection of customer needs and proposals must be succeeded by their detailed analysis and appropriate follow up actions - Be aware of the potential huge benefits derived from the exchange of ideas with customers and solicitation of accurate and constructive feedbacks / proposals from them Be able to: - Ensure allocation of sufficient resources to conduct regular and ad hoc contacts / meetings with customers, and outsourcers participating in customer communication - Design original usage of the wide variety of means to contact customers, always with the idea of offering maximum flexibility for the customers - Comprehend all opportunities to explore the requirements and needs of customers, and also seek their proposals for improvement during all chances in meeting with them - Skilfully transform customer requirements into actions or tasks to be followed up by designated employees - Evaluate and determine the necessity in requesting additional resources from management to accomplish the fruitful solicitation of customer requirements / recommendations

	● Supervise the recording and documentation of the essential details during the contacts and meetings with customers for review, analysis and follow up purposes
	6.3 Exhibit professionalism ● Always ensure all employees / outsourcers contribute their greatest effort honestly in the process of communication with customers ● Always place the interest of customers in the highest priority during the contact with them
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully establish effective and efficient communication channels with customers and / or participating outsourcers - obtain useful information in the form of customer feedbacks and recommendations towards the products / services - design appropriate follow up actions / activities to raise customer satisfaction
Remark	

Functional Area: Customer Relationship Management (Customer Satisfaction Management)

1. Title	Analyse customer feedbacks and / or UAT results, take appropriate actions to address and propose alternative follow up actions	
2. Code	ITCSCR519A	
3. Range	This UoC applies to all tasks and actions related to the analysis of customer feedbacks and user acceptance test results if applicable. Also included is the setting up of alternative follow up actions to address customer comments and feedbacks.	
4. Level	5	
5. Credit	6	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Analyse customer feedbacks and / or UAT results, take appropriate actions to address and propose alternative follow up actions	<u>Performance Requirement</u> - Fully understand the necessity in collecting customer opinions and feedbacks, and if applicable other forms of customer information such as results of user acceptance tests for the company's products / services - Grasp the importance in conducting a detailed analysis of those customer information gathered in order to obtain performance figures in a number of indicators including customer satisfaction level, potential sales, etc. - Fully comprehend the fact that any business analysis should be followed by proposals of actions / activities to tackle the problems discovered or explore any new opportunities identified - Be aware of the potential demand for additional human and other resources in order to implement the follow up actions / activities proposed in response to customer feedbacks - Be aware of the influence of market competition and competitors' actions / movements to customer analysis and remedy actions establishment tasks Be able to: - Establish in advance clear and unambiguous guidelines and procedures for the in-depth analysis of customer feedbacks gathered from different sources and via different channels (such as results of an UAT) - Lead and arrange qualified employees to provide pro-active and responsive service to handle customers' grievances on products / services related incidents, resolving them promptly and at the same time clarify / consolidate customers' concern - Solicit customer feedbacks and probe if there are any concerns on customer satisfaction, also probe and identify the undermined genuine concerns of customers in additional to those superficial reasons - Establish a comprehensive database of customer feedbacks and the appropriate ways in storing, handling, analysing and reporting the information therein - Ensure the analysis is performed at the appropriate level of depth, balancing the situation of limited input resources and maximum expected findings

	● Closely monitor the work performed by personnel involved in in-depth product / service analysis on a continuous basis, and in case of outsourcing, ensure external personnel will perform in the same manner and produce comparable results as the company's own employees ● Interpret with high accuracy the feedback findings and summarise them in suitable format for perusal / understanding by employees involved in those follow up or remedy activities ● Demonstrate the ability to provide alternative products / services recommendation / solutions after investigating and understanding customer's needs and concerns as expressed in their feedbacks ● Consolidate those in-depth product / service analysis findings and recommended solutions to senior management for their decisions / approvals ● Disseminate those product / service analysis findings to related staff members, and give clear instructions and directions to their subsequent follow up actions 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly in the process of soliciting and analysing customers' feedbacks towards the company's products and services ● Always strike a proper balance of interests between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully set up the procedure to capture customer feedbacks via various channels ii. accurately interpret those customer feedbacks findings with key underlying reasons and concerns identified iii. propose alternative solutions / activities in response to the concerns and suggestions of customers iv. arrange suitable employees to perform those proposed follow up actions and be able to improve customer satisfaction
Remark	

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Define and adopt a CRM philosophy of the company	
2. Code	ITCSCR601A	
3. Range	This UoC applies to all considerations, operations and steps relating to the defining and adopting of a customer relationship management philosophy for the company. This job step is a high level operation and paves the foundation for all subsequent CRM activities.	
4. Level	6	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Fully understand that all CRM related activities of an organisation need a set of company-wide philosophy as the objectives to pursue and guidelines to follow - Fully comprehend that the setting of company-wide CRM philosophy can be time consuming and take into consideration a wide range of factors and situations - Accurately grasp the fact that the setting of company-wide CRM philosophy involves different groups of people as stakeholders, including customers, employees, and even the general public - Clearly identify the importance of compatibility between the company's corporate objectives / missions and the company's CRM philosophy - Master the fundamental nature that any CRM philosophy must be geared towards the maximum benefits of the customers - Be aware of the versatility in opinions, theories, practices and academic researches towards the setting of corporate wide CRM philosophy 6.2 Define and adopt a CRM philosophy of the company Be able to: - Lead, co-ordinate and supervise the proposal of a set of company wide CRM philosophy for consideration and evaluation by top management - Demonstrate good and thorough understanding of the company's overall objectives and missions. Incorporate the ideas into the set of proposed CRM philosophy for the company - Clearly explain the different sets of CRM philosophy and highlight their differences for management's consideration and later adoption - Effectively bundle the final set of adopted CRM philosophy into a format which is easily understood by all levels of staff members, using clear and unambiguous descriptions and narrations - Clearly and persuasively present the finally adopted set of CRM philosophy to all stakeholders and also the general public for propagation purpose - Plan and direct various follow up and subsequent activities to promote the CRM philosophy of the company	

	6.3 Exhibit professionalism	● Always strike an optimal balance of interests between customers and the company during the CRM philosophy definition and formulation steps ● Always work with full capacity and ability to ensure successful adoption of the most ideal set of CRM philosophy for the company ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - successfully define and adopt a final set of CRM philosophy for the company - ensure the long lasting of the adopted company's CRM philosophy - ensure the improvement of company image and profitability over the long run	
Remark		

Functional Area: Customer Relationship Management (CRM Philosophy & Strategic Formulation)

1. Title	Define and adopt the company ethical contents for CRM	
2. Code	ITCSCR602A	
3. Range	This UoC applies to all considerations, operations and steps relating to the defining and adopting of a set of corporate CRM ethics for the company. This job step is a high level operation and paves the foundation for all subsequent CRM ethics related activities.	
4. Level	6	
5. Credit	2	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Define and adopt the company ethical contents for CRM	<u>Performance Requirement</u> - Fully understand that all ethical related activities of an organisation need a set of established corporate CRM ethics as the objectives to pursue and guidelines to follow - Fully comprehend that the setting of a corporate-wide CRM ethics can be time consuming and take into consideration many factors and situations - Fully aware of the situation that the setting of a corporate CRM ethics involved different groups of people as stakeholders, including customers, employees, and even the general public - Skilfully grasp the importance of compatibility between the company's corporate objectives / missions and the company's CRM ethics - Fully understand the nature that CRM ethics always requires the compromise or trade off between profit against the needs and desires of society - Be aware of the versatility in opinions, theories, practices and academic researches towards the setting of corporate-wide CRM ethics Be able to: - Lead, co-ordinate and supervise the setting up of CRM ethics for consideration and evaluation by top management - Demonstrate good and thorough understanding of the company's overall objectives and missions, and incorporate the ideas into a set of business ethics for the company - Clearly explain the different sets of CRM ethics and highlight their differences between management's consideration and subsequent adoption - Clearly express the company's CRM ethics into concrete items such as rules, standards, and moral principles so as to what is right or wrong in specific situations - Effectively bundle the final set of adopted CRM ethics into a format easily understood by all levels of staff members, using clear and unambiguous descriptions and narrations - Clearly present the finally adopted set of CRM ethics to all stakeholders and the general public for propagation purpose - Plan and direct various follow up and subsequent activities to promote and implement the CRM ethics of the company

	6.3 Exhibit professionalism ● Always strike an optimal balance of interests between customers, general public, employees and the company during the business ethics definition and formulation steps ● Always work with full capacity and ability to ensure successful adoption of the most ideal set of business ethics for the company ● Always maintain an optimal balance between all related technological, political, social and legal issues
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully define and adopt an ideal set of business ethics for the company ii. ensure long lasting of the adopted business ethics iii. ensure positive feedbacks from customers through the improvement of company image and profitability over the long run
Remark	

Functional Area: Customer Relationship Management (Execution & Implementation)

1. Title	Develop overall CRM framework covering all programme of activities from pre-sale to post-sale	
2. Code	ITCSCR603A	
3. Range	This UoC applies to all considerations and actions relating to the development of an overall CRM framework for the company, which serves as guidelines for all subsequent customer relationship activities with time-frames from pre-sale and post-sale periods.	
4. Level	6	
5. Credit	6	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Develop overall CRM framework covering all programme of activities from pre-sale to post-sale	<u>Performance Requirement</u> - Fully understand that the setting up of a framework is common to all programme of activities which serves as guidelines or references, and CRM activities also need such a framework - Accurately grasp the fact that the nature of CRM activities is quite versatile, labour intensive and covers a long time period ranging from pre-sale and post-sale of an ICT product / service - Fully aware that the setting up of a practicable framework of activities depends heavily on the specific type of industry, for example the pre-sale and post-sale issues for subscription of services are quite different from computer hardware procurement - Master the specific nature of products / services and the specific demand and response of consumers for such products / services - Grasp the key issue that even a well designed and established framework of activities need a suitable qualified and enthusiastic personnel to achieve successful implementation - Be aware of the wide range of factors needed to be considered in setting a CRM framework of activities for the company Be able to: - Demonstrate the ability to establish an overall CRM framework of activities for the company, taking into consideration factors such as customer needs, stakeholders requirements and resources constraints - State clearly in the framework the different time periods elapsed (usually divided into pre-sale and post-sale periods) and activity items to be included in each specific time period - Demonstrate the ability to formulate pre-sale CRM activities such as marketing, advertising, information dissemination, etc - Demonstrate the ability to formulate post-sale CRM activities such as feedback mechanism, recovery mechanism, and even some marketing goings-on - Properly arrange staff members with proficient technical knowledge, business knowhow and soft skills to participate at various phases set at the CRM framework

	● Supervise the documentation / recording of CRM framework activities and business processes, at the same time suitably deploy application software such as Office Tools, popular DBMS, Business Intelligence packages and data mining ● Lead all involved stakeholders to understand and stick to the details as stated in the CRM framework 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort honestly while developing and / or working according to the CRM framework of activities ● Always maintain the proper balance of interests between customers and the company as a whole
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully establish the company's CRM framework of activities after considering all relevant factors ii. ensure all involved staff members stick to and observe the requirements set in the CRM framework iii. ensure customers react positively to all CRM activities organised by the company
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Prepare budget based on business plans	
2. Code	ITCSSG401A	
3. Range	There are different types of budgets in an organisation. This UoC concerns developing operating budgets based on the business plan of an organisation.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Prepare budget based on business plans 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Possess extensive knowledge of different types of budgeting techniques, such as “incremental activity based”, “zero based”, etc. • Possess extensive knowledge of the organisation’s budget guidelines and related policies • Possess extensive knowledge of the organisation’s business goals and targets • Extensive experience in business intelligence within the telecommunication industry • Possess extensive knowledge of the organisation’s business areas and their resources requirements, such as people, telecom projects allocation, marketing, sales generation, support, operations, etc. • Experience in developing and presenting budget plans • Proficient with commercial and management skills such as management of business finance, communication, people, change, negotiation and business operations Be able to: • Identify the existing available resources of the organisation • Assess current and projected revenues of the business areas, including new products and services. • Assess ongoing and one-time expenses of business areas including network infrastructure construction, expansion, maintenance, salaries, professional fees, new initiatives, etc. • Develop budgetary estimates according to historical figures and past information • Document the budget plan in accordance with the organisation and industry standards • Present the budget plan to appropriate colleagues for reviews and finally to the board, with appropriate recommendation, for adoption • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of UoC are the ability to: - prepare a coherent operating budget plans for the organization - assess and consider every business areas of the organization - document and present the budget plan effectively to the board for adoption	
Remark		

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Develop and implement technology adoption plans	
2. Code	ITCSSG402A	
3. Range	Technology has always been an integral part of a telecom business. It is essential to have vision to use technologies to deliver products and services with increasing efficiency, quality, and client satisfaction. This UOC concerns implementing technology adoption plan.	
4. Level	4	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Develop and implement technology adoption plans 6.3 Exhibit professionalism	<u>Performance Requirement</u> • Possess experience with deploying technology plans • Possess extensive knowledge of current and new network architecture and technologies. • Possess extensive experience with project management, migration, network deployments, troubleshooting techniques • Possess extensive knowledge of regulatory regulations and compliances, etc. Be able to: • Work with colleagues to formulate and drive the technology deployment team comprising various stakeholders, including senior management and representatives of business units • Clarify the goals and objectives of technology deployment plans and strategies of the organisation • Establish a technical team to perform evaluation/assessment of the concerned network technologies, services, hardware, software and other services • Determine the budget, timeline and feasibility of deploying the concerned technologies • Formulate monitoring and measuring controls/procedures that can determine the effectiveness of the deployment • Identify risk factors for deploying the concerned technologies and identify a suitable deployment model (single site, multisite, parallel,” big bang”, phased, etc.) • Work with HR to plan personnel requirements and staff deployment schedules. Also determine the types of training required, when and how to perform training (e-learning, classroom, lecture, on-job training, lab based, etc.) on applying the technologies • Report, on regular basis, on the progress of the implementation to stakeholders • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance of interest among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoCs are the abilities to: - implement the required technology conforming to the technology plans - work with the necessary parties to determine the goals and objectives of the implementation - formulate monitoring and measuring procedures, based on the objectives, that can determine the effectiveness of the implementation and the concerned technologies - communicate, with regularity, the implementation progress and status to stakeholders	
Remark		

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate business positioning and branding	
2. Code	ITCSSG502A	
3. Range	In the highly competitive telecom market, creating and having a strong brand is invaluable as the battle for customers intensifies day by day. This UoC concerns formulating business positioning and branding strategies of an organisation	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess knowledge in the subject area • Exhibit extensive knowledge of the organisation's core values, mission, vision and objectives • Fully understand the organisation's business strategies, objectives and goals of business plans • Fully aware of the cumulative effects on the organisation's image and financial impacts with successful or wrongly formed strategies • Fully in tune with the telecommunication industry trends and technologies • Possess extensive experience with various marketing methodologies and techniques and capable of applying these techniques for business branding • Experienced with applying various business analysis tools such as SWOT, competitive analysis, etc. • Possess extensive experience with development of branding strategies • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Formulate business positioning and branding Be able to: • Steer a team to identify and/or review the business model of the organisation, understand the objectives of the branding strategies, and then proceed to the strategies as follows • Identify the organisation's target marketing needs • Define positioning statement to provide the direction or focus of the business or organisation after performing the following: • Identify a list of competitors and analyse the differences between the organisation and competitors • Determine unique competitive edge of the products and services over competitors • Formulate positioning statement • Formulate an branding image that conforms with the organisation's mission and visions • Identify methods of communication in branding such as advertisements, logos or even corporate letter heads, business cards, etc. • Determine and recommend suitable review periods based on the business dynamics and the corporate's business development strategies • Manage the documentation of branding strategic plans • Present the plans to stakeholders and verify strategic plans are acceptable and applicable to the organisation's business needs	

	6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance between all stakeholders
7. Assessment Criteria	The integrated outcome requirements of UoC are the ability to: - identify the organisation's objectives and needs of having well defined positioning and branding - work with colleagues to perform research and define the organisation's positioning statement. The statement should create clarity, consistency, and continuity to the target market that the organisation serves - identify effective methods of communicating the organisation branding - present the branding strategy plans effectively to appropriate stakeholders and convince the plausibility of the plans
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate products and services strategies	
2. Code	ITCSSG504A	
3. Range	In the face of continuous competition, product and service strategist are constantly challenged to deliver long term product roadmap which is of optimal product mix and favourable release time. This UoC applies to the considerations of formulating the organisation's business product and services strategies.	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically aware of the importance of establishing strategies and standards for products / services • Fully comprehend and in tune with the organisation's Missions and Visions as well as the organisation's overall business strategies • Fully aware of the products and services offered by the organisation as well as those offered by competitors • Critically aware of the impact of products / services to the company's overall financial situation and resource allocation • Fully aware of the implication of the cumulative effects to the organisation's image on successfully or wrongly formed strategies • Possess extensive knowledge with the products and services life cycle • Possess experience with tools and methodologies used in product strategy planning, such as: scenario planning, SWOT analysis, etc. • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Formulation of products and services strategies Be able to: • Drive the strategy planning team with stakeholders of various departments to formulate the products/services strategy framework with some or all of the following steps: • Analyse technology trends, such as broadband penetration, powerful and diverse mobile devices, flexibility network infrastructure, etc. • Analyse emerging customer needs such as wanting seamless connection, speed, connection at anytime, anywhere with any device • Analyse industry trend, such as convergence of telecommunication technologies, multiplay products/services, etc. • Work with Sales and Marketing to identify product segmentation using various techniques like market survey, product trial, or historical records • Identify suitable brand positioning (repositioning) and formulate branding strategy for the products/services	

	• Acquire “customer insight” on their reaction to introduction of new/change of products/services/pricing by using various analytic methodologies such as market research, historical market levers, culture, psychological perspectives of customers etc. • Forecast the adoption of new products/services, forecast the impact of enhancement on market penetration, forecast uptake in different market segments and loyalty across segments • Present the products/services strategy framework to senior management for approval 6.3 Exhibit professionalism • Always strike a proper balance between all stakeholders • Always develop products and services strategies to take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. propose an appropriate products/services strategy framework that matches the products/services ii. ensure the strategy framework defines suitable actions that can determine the viability of the products/services iii. ensure the strategy framework can easily be understood and is approved by stakeholders
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate technology plan/direction	
2. Code	ITCSSG505A	
3. Range	This UoC concerns formulating a technology plan to exemplify a road map that navigates the business direction and enables the organisation to be more competitive by guiding the use of “right” technology for its products. Technologies in this context include network hardware (switches, transmitters, routers, mobile phones, etc.), software (IP protocols, applications, video streaming applications, etc.), systems (NOC systems, SS7 mobile systems, billing, MVNO, etc.), telecommunication technologies (HSDPA, 4G, Mobile TV, etc.) and network technologies (GSM, WIMAX, LTE, Multiplex, etc.), etc.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the importance of having a business plan to implement and fulfil the objectives of the business model in an telecommunication operator or services company • Fully knowledgeable of the organisation’s business objectives and goals to which the business plan to be aligned with • Fully in tune with current and up coming trends and technologies of telecommunication industry • Extensively aware of competitors' technology plans and activities • Fully aware of the national and international telecommunication regulations and policies • Possess extensive experience in formulating technology plans that cohere to the organisation’s business strategies • Possess extensive knowledge of IT Service Management methodologies, frameworks and best practices such as ITIL • Possess extensive experience with project management tools and techniques to manage the documentation and presentation of the technology plans/directions to facilitate easy adoption • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Formulate technology plan/direction Be able to: • Steer a planning team to • review the current technologies used within the organisation • review the needs of clientele • review current technologies effectiveness to meet the clientele’s needs • review business competitions to determine whether the organisation matching or having a competitive edge • Review whether the currently used technology is sustainable to meet the organisation’s business strategies • Work with technology experts and products and services colleagues or other planning teams to evaluate and identify suitable technologies that can fulfil the organisation’s business needs and be implemented with acceptable CAPEX	

	• Evaluate the resource, staff training, and the timeline for implementation of the new technologies • Formulate and define monitoring controls that can determine the status of the implemented technologies • Manage the documentation of the technology plan in accordance with the organisation standards • Present the plan/direction to appropriate stakeholders for approval and adoption. 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - effectively work with appropriate parties to identify the suitable technologies that can be implemented and fulfil the organisation's business strategy - formulate implementation plans for deploying the suitable technology - effectively manage the documentation of the technology plan/direction that should conform to the organisation's standards - present the technology plan/direction effectively to appropriate business units to seek approval and adoption
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate the overall CRM strategy and sub-strategies for the company	
2. Code	ITCSSG506A	
3. Range	This UoC applies to all considerations and actions to formulate the overall CRM strategy and sub-strategies for the company. This is the fundamental step for establishing targets and guidelines for subsequent steps relating to the formulation of CRM strategies and detailed implementation tasks.	
4. Level	5	
5. Credit	3	
6. Competency	6.1 Possess the knowledge in the subject area 6.2 Formulate the overall CRM strategy and sub-strategies for the company	<u>Performance Requirement</u> ● Possess extensive knowledge of the fundamental necessity in establishing and formulating the company's overall CRM strategy and related sub-strategies, which serves as directions / guidelines for all related subsequent activities ● Possess knowledge that CRM is not just a piece of software, technology or processes used to operate the business, rather CRM is itself a strategy and needed to be established strategically ● Experienced with conducting competitive analysis and understand that a comprehensive competitors analysis has to be conducted across the range of customer segmentations established by the company ● Critically understand that strategy setting is usually indicative in nature and formulation of associated sub-strategies can effectively facilitate the actual implementation ● Be aware of the numerous factors needed to be considered, weighted and judged during the process of CRM strategy and sub-strategies formulation ● Fully aware of the crucial effects in formulating the correct CRM strategies towards the overall success of the products / services or even the company as a whole ● Keep abreast of the latest development of CRM, especially in the ICT industry Be able to: ● Critically evaluate information which influences the establishment of CRM strategies such as basic principles of CRM, common approaches and tools in CRM, etc ● Formulate roadmaps of CRM strategies and sub-strategies which cover different scenarios, with particular references to the ICT industry ● Demonstrate a high capability to ensure the roadmap of CRM strategies and sub-strategies are cohesive and compelling, and take into consideration the effectiveness and efficiencies of different alternatives ● Plan the deployment of CRM strategies and sub-strategies to ensure it is in line with the roadmap developed and in consistency with the overall company objectives and policies ● If necessary, proceed to evaluate different alternatives and select CRM software solutions that best fit the established CRM strategies and sub-strategies

	● Establish effective communication and reporting channels with management to ensure their understanding and support of the CRM strategies and sub-strategies proposed ● Establish effective communication and monitoring channels with staff members to ensure their understanding of the CRM strategies / sub-strategies, and work towards their implementation 6.3 Exhibit professionalism ● Always ensure all related staff members contribute their greatest effort and honestly in working towards the final establishment of the company's CRM strategies and sub-strategies ● Always prioritise customers' interest as highest while considering and formulating CRM strategies
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. successfully propose and establish a set of CRM strategies and sub-strategies for the company ii. present the chosen CRM strategies and sub-strategies with critical analysis against the alternative choices iii. ensure the actual implementation of the established CRM strategies and sub-strategies are following the CRM roadmap created
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate corporate culture strategies	
2. Code	ITCSSG507A	
3. Range	A corporate with well formed culture that is aligned to their vision and mission will always have a competitive edge over its competitors. This is particularly true for telecommunication organisations to compete more effectively by giving its customers and staff a clear perception of what business image the organisation is targeting to. But cultures will change, the changes can be positive or negative which might be due to some particular reasons. Hence, the corporate should be aware of such changes that take place for the smooth sailing in the future. This UoC concerns formulating corporate culture strategies. There are three ingredients for successful formation of corporate culture strategies: determine the desired corporate culture, assess the corporate culture (values), and align the corporate culture	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the importance of having an a corporate culture in telecommunication operator or services company • Fully knowledgeable of the organisation’s mission and vision and its core values • Possess extensive experience in corporate culture formation methodologies and techniques • Possess extensive knowledge of business strategy and business planning • Possess extensive experience in establishing corporate events such as team building, leadership quality, staff outings, etc. • Possess good communication skills to enable communicating the plan effectively to stakeholders 6.2 Formulate the corporate culture plan Be able to: • Steer a team to determine the desired cultures for organisation which conform with the organisation’s mission and vision and has the most benefits to the organisation • Critically explore for signs of any corporate culture issues, such as high turnovers, difficult to recruit talented staff, staff arriving and leaving right on time, lack of honest communication, declined customer satisfaction, etc. • Review adequacy of corporate culture “artefacts” to determine whether new ones are required or old ones needed modification. Artefacts like organisation slogans, logos, “employee of the month”, etc • Formulate a plan of conducting interviews, surveys or observations with staff to identify “natural” (formed by staff) corporate value, like job satisfaction, commitments, staff attitude, loyalties, etc. • Identify management “values” like standards, ethics, empowerment structure, quality, quality circle, corporate social responsibilities, etc. • Drive the transformation of values to corporate cultures strategies which most benefit the organisation	

	• Formulate a recommended timeline and deployment methodology on the implementation of the corporate culture changes • Present the strategies to appropriate senior management and seek approval for deployment of strategies 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. analyse and determine any corporate culture issues and corporate culture changes ii. identify “natural” and managerial defined corporate values within the organisation iii. effectively transform these values to corporate cultures and implement these new corporate culture iv. thoroughly document the corporate culture strategies in the organisation standards and effectively presented to seek senior management approval and commitment
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate asset management strategies	
2. Code	ITCSSG509A	
3. Range	Asset management is all about creating a portfolio of assets with minimal downside risk and maximum upside profit potential with minimum investment of limited resources. It is easy to say than done in a telecommunication service organisation, where so many physical assets are needed in providing services, and they offer things such as triple or multiple play. This UoC applies to the considerations for formulating asset management strategies. Assets in a telecommunication organisation is not just confined to the network infrastructure, people, equipment or properties they own, it also includes services they use, digital data they created, customer database, media productions, etc. Hence, a comprehensive asset management strategy is essential.	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess knowledge in the subject area • Critically understand the importance of establishing strategies and standards for products / services • Possess extensive knowledge of the organization Missions and Visions as well as the organization's overall business strategies • Critically understand the impact and importance of effective asset management strategies to an organisation • Possess extensive experience in applying asset depreciation schedule calculation methodologies such as straight line, decline depreciation, sum of the years, etc. • Possess extensive knowledge of asset and inventory management techniques, laws and regulatory compliances 6.2 Formulate asset management strategies Be able to: • Work with strategy planning team to understand the goal of asset management strategies in the organisation • Formulate procedure for identifying assets and full inventory of the organisation's assets e.g. determine the value of the assets, what their functions are, what services they provide, etc. • Review the organisation asset request, purchases and assignment procedures to determine if they are still inline with the current practices and effective. Revise the prioritising and allocation method, if necessary, such as investment on network infrastructure construction, new product and services, etc. • Review and define procedures to calculate the depreciation schedule of assets, risks and consequences of maintaining or not maintaining certain assets • Review the effectiveness of current implementation method of the asset management programme, and determine whether change to "policy based" or "performance based" is necessary • Formulate controls and monitoring procedures to monitor the impacts of the asset management programme	

	• Manage the asset management strategy documentation in preparation for presentation to stakeholders for approval and deployment 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among the organisation and all stakeholders • Always apply asset management to comply with regulatory requirements
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. work with colleagues to understand the objectives of formulating or revising the “asset management strategies” ii. define methods to perform full inventory of the organisation’s assets and categorise into appropriate value iii. formulate implementation programmes with controls that can monitor the effectiveness of these programmes iv. complete the documentation of the Asset Management Strategies in an unambiguous manner for presentation and approval
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Implement the approved strategies and policies	
2. Code	ITCSSG510A	
3. Range	This UoC concerns competencies associated with implementing the approved strategies and policies of an organisation.	
4. Level	5	
5. Credit	4	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area - Understand the existing laws and regulations that are relevant to the telecommunication industry - Exhibit extensive knowledge of the organisation's core values, mission, vision and objectives - Comprehend the organisation business strategies - Possess extensive knowledge of the organisation and business level policies - Extensively experienced in formulating plans to deploy the organisational strategies and policies - Extensively experienced with implementing monitoring procedures and analysing the effectiveness of organisational or business level strategies and policies - Experienced with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Implement the approved strategies and policies Be able to: - Lead or work with colleagues to comprehend the organisation's approved strategies and policies particularly the objectives and develop tactical plans on deploying of the strategies and policies - Identify the resources required to deploy the tactical plans, such as human, network infrastructures, equipment, monetary, etc - Coordinate the execution of the tactical plans (approved strategies and policies) by arranging appropriate resources to execute the tactical plans and to fulfil the goals and objectives as stated in each of the strategy and policy - Monitor the progress of each tactical plan by checking on milestone, resource usage, finance, time and materials - Review the progress of each tactical plan, identify any obstacles, change managements, cultural and organisational issues - Adjust resource allocation, schedule, finance, and materials to ensure the strategies and policies objectives are met - Regularly report the progress of the tactical plans (strategies or policies) to stakeholders and recommend enhancements of the plan schedules, if necessary, and seek approval on changes or updates of plans 6.3 Exhibit professionalism - Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors - Always strike a proper balance of interest among all stakeholders	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - formulate effective tactical plans to deploy the strategies and policies - formulate effective procedures and carry out monitoring and review of tactical plans to ensure the strategies and policies fulfils its objectives - continuously provide stakeholders with the progress on execution of the approved strategies or policies	
Remark		

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Review risk factors and manage risk mitigation plans	
2. Code	ITCSSG511A	
3. Range	There are many risks associated with operating a telecommunication business. Hence, these organisations will try their best to identify and mitigate or reduce risk which affects the business and the organisation. This UoC concerns competencies associated with reviewing known risks and manage mitigation plans in the context of risk management within an organisation.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess knowledge in the subject area • Aware of the organisation's mission and visions • Familiar with the organisation and business level strategies and policies • Possess extensive knowledge and experience of international risk management standards such as ISO 31000 and apply those management methodology or techniques in the organisation • Extensive knowledge of risks associated with telecommunication business and organisational, such as high investment of network infrastructure, dynamic changes of technology, customer demands and expectations, etc. • Possess extensive experience in formulating risk management plans to perform risk assessments and formulate risk mitigation plans • Possess extensive experience in performing risk analysis and ability to formulate mitigation plans • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Review risk factors and manage risk mitigation plans Be able to: • Form a risk management team with colleagues of various departments; such as business development, products and services, network operations, finance, quality control, etc. to identify various business risks associated with the organisation • Perform review and analyse the list of risks, and assign weighting and priorities to each risk • Apply risk management methodology and formulate mitigation plan for each risk. The plans need to be compliant with the organisation's strategies and policies as well as conforming to regulator requirements • Manage and execute the mitigation plans by implementing proper risk controls • Manage the progress of each mitigation plan and the effectiveness of the risk controls • Review the effectiveness of the controls and make adjustments/enhancements to the risk control and the plan when and if necessary • Report the progress of the mitigation plan to stakeholders on regular basis and seek endorsement from stakeholders on the result of the mitigation plans	

	6.3 Exhibit professionalism • Ensure the mitigation plans and procedures comply to regulatory requirements • Always strike a proper balance among the organisation and all stakeholders • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of UoC are the ability to: i. work with various departments and stakeholders to identify business risks of the organisation ii. analyse and formulate suitable risk mitigations plans to reduce risks iii. implement appropriate risk controls iv. implement suitable monitoring and reviews on effectiveness of the risk controls v. make adjustments to the controls or mitigation plan when necessary vi. provide status reports to stakeholders on regular basis, on the effectiveness of the risk mitigation plans
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Develop and implement crisis management plans	
2. Code	ITCSSG513A	
3. Range	The organisation's reputation and brand, as well as the trust and loyalty of stakeholders (customers and investors), are all critical factors in the background of crisis management. This UoC concerns preparing crisis management plan within an organisation. A successful crisis management plan incorporates organisational programmes such as emergency response (network saturation, broken network cable, customer complaint, etc.), disaster recovery, risk management, communications (press conferences, contact points, etc.) and business continuity, etc.	
4. Level	5	
5. Credit	4	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area • Handle crisis matter associated with a telecommunication organisation, such as network infrastructures failures, projects and people, etc. • Possess extensive knowledge of the organisation's business objectives and goals • Knowledgeable with the organisation's business area and strategies • Knowledgeable with the organisation's culture, practices and policies • Experienced in anticipating and identifying crisis within an organisation • Critically understand possible risks and threats to the organisation, personnel, and assets including information and intellectual • Possess extensive knowledge of the regulatory and legal requirements for a telecom organisation • Possess extensive knowledge on business continuity planning • Experienced in exploring and implementing insurance risk management • Proficient with commercial and general management skills such as business communication, people management, change management, negotiation and business operations 6.2 Develop and implement crisis management plan Be able to: • Work with colleagues and use various crisis management techniques to identify possible crisis and effects it has on the organisation. • For each possible crisis, determine how to recognise approaching symptoms • Determine the likely consequences and assess the risk of each eventuality • Formulate a risk strategy or procedure to prevent the crisis from occurring and dealing with the crisis, should it occur. Also formulate risk mitigation or insurance plans • Formulate business continuity plan that can bring the organisation/network/project/personnel back to normal operation • Identify responsible person(s) or team which are responsible for handling each crisis • Identify the best method to communicate the crisis handling procedures to internal and external stakeholders • Identify resources and training required for staff to	

	be prepared for the crisis • Manage the documentation of the plan for presentation to senior management for approval and adoption of the implementation of the crisis plan • The plan should include simulation of crisis in order to test the effectiveness of the plan and review procedures that can modify the plan to be most effective for the organisation 6.3 Exhibit professionalism • Always develop products and services strategies to take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of UoC are the ability to: i. work with colleagues using various methodologies and techniques to identify possible crisis and the risks that the organisation may have ii. formulate techniques or guidelines that can determine the approaching or existence of crisis iii. formulate mitigating procedures to handle each crisis which can minimise the effect it has on the organisation/customer/staff/partner iv. formulate suitable training and drilling plans to prepare staff to handle crisis in the most effective manner v. document the crisis handling plan and seek approval from senior management
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Develop business plans
2. Code	ITCSSG514A
3. Range	This UoC concerns developing the organisation's business plans to exemplify business model and enable business areas to operate smoothly
4. Level	5
5. Credit	4
6. Competency	<u>Performance Requirement</u> 6.1 Possess knowledge in the subject area • Critically understand the importance of having a business plan to implement and fulfil the objectives of the business model in an telecommunication operator or services company • Extensive knowledge of the organisation's business objectives and goals to which the business plan is to be aligned with • Possess extensive knowledge of the telecommunication industry trends technologies • Possess experience in developing business plans • Possess experience in defining metrics to measure results and performance of business plans • Proficient with commercial and management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Develop business plans Be able to: • Lead a team or work with colleagues to review the business model of organisation and prioritise the objectives and goals • Develop plans for each of the business activities, such as: • Network infrastructure construction and deployment • Procurement • Network operations and support • Software development and maintenance • Customer services and support • Partnership services (IDD, inter-operators, etc.) • Customer Relations Management • Network product development • Products and services adaptation • Formulate deployment and implementation details for the plan • Define metrics to measure the outcome of the plan • Manage the documentation of the plan in accordance with the organisation standards • Present the plan to colleagues or departments and verify that the plan is acceptable and applicable to the organisation business needs 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - Develop business plans for an organisation in line with the business model of the organisation and covers all business areas effectively - Design implementation and measurement metrics that can determine the effectiveness of the plans - Present the business plans effectively to appropriate business units to convince the plausibility of the plans
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Develop services quality assurance mechanism	
2. Code	ITCSSG515A	
3. Range	This UoC concerns development of the organisation's services quality assurance mechanism. Services can be for internal or external customers.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of quality management standards like ISO 9001 and quality frameworks and practices • Critically understand the importance of team work and achieve the organisation's quality plan • Participate in activities which concern organisation and project level quality assurance • Possess experience with the organisation's mission and vision with respect to quality • Comprehend business intelligence of the telecommunication industry • Possess experience in managing documents and communicate the quality policies effectively 6.2 Develop services quality assurance mechanism Be able to: • Lead a team or participate as a quality team member to study/review the products/services, quality standards and objectives of the organisation, e.g. customer services handling, service level of network performance, network operations support, etc. • Apply the knowledge of study/review of the organisation quality objectives and define quality assurance activities, such as: • All work is carried out consistently to a defined standard • Customers' requirements have been fully understood and met • Only services that meet the organisation's quality assurance standards are used • Quality assurance procedures are based upon, and comply with, the following requirements: ISO 9001:2000 Standard – the quality system – a quality assurance model for designing, developing, manufacturing, installing and servicing • Develop the quality procedures based on the quality assurance objectives • Define controls that can monitor and measure the effectiveness of the quality assurance procedures • Manage the documentation of the quality assurance procedures and controls in accordance with the recognised international and organisation standards • Present the quality assurance procedures with appropriate recommendations to stakeholders for endorsement and implementation	

	6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. work with colleagues to understand the quality requirements of the organisation and for the services that it offers ii. formulate coherent quality assurance procedure that meets the quality requirements of the organisation iii. deliver the determined monitoring procedures which can effectively monitor the quality assurance procedure iv. effectively present the quality assurance procedures and seek endorsement from stakeholders prior to implementation
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Adopt and adapt international standards concerning appropriate information security	
2. Code	ITCSSG516A	
3. Range	For telecommunication operators or service providers there are many international standards affecting their business. This UoC concerns adopting and adapting international standards related to information security which includes data, privacy, Intellectual Property (IP), etc.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Possess extensive knowledge of the organisation's security policies and procedures • Possess extensive knowledge of the existing international standards for information security such as ISO 17799, ITIL, etc. • Possess extensive knowledge of telecom related laws, in IP (Intellectual Property) and copyright laws • Possess experience in applying local and international laws and standards to an organisation • Possess extensive experience in applying information security frameworks to steer and maintain security practices that are enforced within an organisation • Possess experience in architecture and manage the deployment of information security within business areas of an organisation which includes recruitment, personnel induction, training, implementation, defining metrics and monitoring, etc. 6.2 Adopt and adapt international standards concerning appropriate information security Be able to: • Work with business units to analyse the information security needs of the organisation • Formulate the plans and activities required in managing information security within the organisation in accordance with adopted international laws, standards and security frameworks • Define and develop metrics that can measure effectiveness of the implemented security plan • Document the plans and implementation details, together with reporting structure when security breach is identified • Seek endorsement from stakeholders, including security officers, business unit heads, etc • Communicate information security procedures and standards to staff, partners, vendors and customers to ensure proper adoption • Implement appropriate tools, if any, in the most effective and efficient manner to monitor and manage information security in an organisation 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders	

7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. identify the information security standards and laws particular to CIS industry and the needs of the organisation ii. work with colleagues in order to create an Information Security deployment plan to adapt and adopt the appropriate international standards and laws, so as to correspond with the organisation's security policies iii. effectively present the security plan to stakeholders and seek endorsement iv. orchestrate the implementation and management of the information security procedures effectively within the organisation
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Manage compliance with relevant laws and regulatory requirements	
2. Code	ITCSSG517A	
3. Range	This UoC concerns complying with relevant laws and regulatory requirements related to CIS organisations	
4. Level	5	
5. Credit	3	
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area • Critically knowledgeable of the existing laws and regulations that are relevant to the telecommunication industry • Possess experience of applying the local and international telecommunication laws and regulations to benefit the organisation • Comprehensively updated with new regulatory developments and maintain good contacts with local regulatory development organisations like OFTA • Possess extensive experience with applying relevant regulatory laws requirements to an organisation's governance framework • Possess extensive experience with managing documentation and communicating the laws and requirements to operating units of the organisation • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Manage compliance with relevant laws and regulatory requirements Be able to: • Steer a team to familiarise with local and international telecommunication laws and regulatory requirements and analyse the legal implications related to projects and operations of the organisation • Determine the level of compliance which projects and operations are inline with the laws and requirements. • Identify and recommend appropriate actions to comply with the relevant laws and regulations by the organisation • Define mechanisms that can monitor the execution and results of the compliance process • Manage the documentation of the compliance procedure to be inline with regulatory requirements and conform to international as well as organisation standards • Regularly review the compliance process and procedures, and report to stakeholders 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance in the interest of the organisation and all stakeholders	
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - identify the local and international telecommunication laws that affect the organisation's business - assess, develop and implement the compliance procedures into the organisation's operation - present the compliance procedure to stakeholders and acquire endorsement	
Remark		

Functional Area: Strategic / General Management (Planning & Implementation)

Functional Area: Strategic / General Management (Planning & Implementation)							
1. Title	Maximise support to regulatory environment						
2. Code	ITCSSG518A						
3. Range	Telecom regulator has a crucial effect on a telecom organisation operation and policies as it dictates the course the industry takes and ensures fair competition within the industry. Ultimately, operator must develop strategies and plans in order to comply with regulatory requirements and take a more active role in shaping future regulatory policies. This UoC applies to provide support to regulatory environment. Support means building effective communication channel with the regulatory body, submitting required reports, participating advisory committees, etc. Regulatory environment includes legislation, regulation, licensing, notices, orders, etc.						
4. Level	5						
5. Credit	3						
6. Competency	<table><tr><td colspan="2"><u>Performance Requirement</u></td></tr><tr><td>6.1 Possess the knowledge in the subject area</td><td> • Knowledgeable of the organisation’s business needs and strategies • Possess strong communication skills and be able to articulate in written and spoken words • Knowledgeable of telecom service providers, carriers and vendors business activities • Actively participate in industry’s working committees • Extensively knowledgeable of telecom regulations and policies • Possess knowledge of basic local telecommunication laws • Competent in implementing compliance with regulatory policies, notices and orders • Possess experience in analysing impacts, challenges and opportunities which could result from regulatory environment and communicate it to the appropriate business units • Possess good analytical, organisational, and time management skills with aptitude for details and accuracy </td></tr><tr><td>6.2 Maximise support to regulatory environment</td><td> Be able to: • Identify the organisation’s strategies, policies and standard procedures for providing support to regulatory environment • Identify official channels of communication with the regulatory body and understand standard protocols between operators and regulatory body • Establish good supportive relationship with the regulatory body by: • proactively participating in advisory committees • recognising and supporting effective policies • complying with regulations, etc. • Identify required resources and budget to work with regulatory environment in terms of monetary, staff, skills, equipment, etc. • Analyse regulatory items to determine beneficiaries, risk to the organisation and make suitable recommendation. For complex regulatory items, separate dedicated teams may be required to perform the study, such as technology licensing (3G, 4G, etc.) • Formulate reports at regular intervals or ad-hoc </td></tr></table>	<u>Performance Requirement</u>		6.1 Possess the knowledge in the subject area	• Knowledgeable of the organisation’s business needs and strategies • Possess strong communication skills and be able to articulate in written and spoken words • Knowledgeable of telecom service providers, carriers and vendors business activities • Actively participate in industry’s working committees • Extensively knowledgeable of telecom regulations and policies • Possess knowledge of basic local telecommunication laws • Competent in implementing compliance with regulatory policies, notices and orders • Possess experience in analysing impacts, challenges and opportunities which could result from regulatory environment and communicate it to the appropriate business units • Possess good analytical, organisational, and time management skills with aptitude for details and accuracy	6.2 Maximise support to regulatory environment	Be able to: • Identify the organisation’s strategies, policies and standard procedures for providing support to regulatory environment • Identify official channels of communication with the regulatory body and understand standard protocols between operators and regulatory body • Establish good supportive relationship with the regulatory body by: • proactively participating in advisory committees • recognising and supporting effective policies • complying with regulations, etc. • Identify required resources and budget to work with regulatory environment in terms of monetary, staff, skills, equipment, etc. • Analyse regulatory items to determine beneficiaries, risk to the organisation and make suitable recommendation. For complex regulatory items, separate dedicated teams may be required to perform the study, such as technology licensing (3G, 4G, etc.) • Formulate reports at regular intervals or ad-hoc
<u>Performance Requirement</u>							
6.1 Possess the knowledge in the subject area	• Knowledgeable of the organisation’s business needs and strategies • Possess strong communication skills and be able to articulate in written and spoken words • Knowledgeable of telecom service providers, carriers and vendors business activities • Actively participate in industry’s working committees • Extensively knowledgeable of telecom regulations and policies • Possess knowledge of basic local telecommunication laws • Competent in implementing compliance with regulatory policies, notices and orders • Possess experience in analysing impacts, challenges and opportunities which could result from regulatory environment and communicate it to the appropriate business units • Possess good analytical, organisational, and time management skills with aptitude for details and accuracy						
6.2 Maximise support to regulatory environment	Be able to: • Identify the organisation’s strategies, policies and standard procedures for providing support to regulatory environment • Identify official channels of communication with the regulatory body and understand standard protocols between operators and regulatory body • Establish good supportive relationship with the regulatory body by: • proactively participating in advisory committees • recognising and supporting effective policies • complying with regulations, etc. • Identify required resources and budget to work with regulatory environment in terms of monetary, staff, skills, equipment, etc. • Analyse regulatory items to determine beneficiaries, risk to the organisation and make suitable recommendation. For complex regulatory items, separate dedicated teams may be required to perform the study, such as technology licensing (3G, 4G, etc.) • Formulate reports at regular intervals or ad-hoc						

	basis on specific regulatory items to senior managers and other departments in order to keep them abreast with regulatory requirements and business opportunities 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: - understand the organisation's commitment to support regulatory environment - identify and build good channels of communication and relationships with the regulatory body - derive support to regulatory environments which are beneficial to the organisation - keep the organisation aware of regulatory environment changes and identify risks to the organisation - provide appropriate reports and presentations, when necessary, to stakeholders of the organisation
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Develop business consolidation plans	
2. Code	ITCSSG519A	
3. Range	As modern telecommunication industry is changing from traditional voice to “unified telecommunication” which includes voice, data and digital media, telecom business strategies are also evolving to adapt with such changing environment. This UoC concerns developing business consolidation plans. Business consolidation (to form a new entity), in this context, can be regarded the same as business merging (normally one of the original entities remains).	
4. Level	5	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the organisation’s business objectives, goals, and responsibilities to stakeholders, including investors, customers, staff, public, etc. • Fully in tune with the current and upcoming trends and technologies of the telecommunication industry • Knowledgeable of competitors’ business plans and activities • Comprehensive knowledge of the national and international telecommunication regulations and policies • Master local business and merger laws • Possess extensive experience in analysing business factors to identify organisation’s business strength, weaknesses, risks and formulate business plans that cohere to the organisation’s business strategies • Experienced with different “Exit Strategies” (e.g. go public, merge, sell, etc.) • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Develop business consolidation plans Be able to: • Assemble and steer a M&A (Merger and Acquisition) team to develop the business consolidation/merger plan. The team is entrusted with steering the merger process • Identify the objectives and goals of the business consolidation/merger, such as entrant to new market, organisation expansion, acquire new technology or provide new products to customers (3G license), etc. • Formulate detailed business profile of the consolidating organisations to determine matched or mismatched business areas, such as network infrastructure assets, technologies, its businesses, operation support systems, personnel, stakeholders, SEC filings, etc. • Identify and rank consolidation/merger conditions which stakeholders consider as criteria for approving the consolidation/merger • Critically evaluate the financial/business targets and identify/recommend business reforms and new business opportunities that can meet the goal	

	• Anticipate and recommend actions to avoid possible obstacles in the business consolidation process, such as legal or regulatory approval, integration of main businesses (products, network infrastructures, etc.), acceptance from stakeholders, corporate culture, etc. • Define personnel integration plan which includes merging from board personnel to business units. Attrition and training plans will also be required. Determine the necessary documents or procedures to satisfy the regulatory and legal requirements • Analyse and formulate suitable actions to develop products/services to retain customer confidence • Formulate timeline for the consolidation activities, including when, what, where the business consolidation/merger takes place • Define monitoring procedures that can measure the consolidation/merging progress • Manage the documentation of the merger plan and work with senior management/board of both organisations to refine the plan until it is finalised and accepted 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance among all stakeholders • Represent and maintain the interest of the merged organisations at highest priority
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: - effectively devise a business consolidation/merger plan that can steers the business to meet its goal - effectively steer the merger team to identify, devise, anticipate the necessary activities of the consolidation/merger process - define suitable monitoring controls that can track the progress of the consolidation plan/activities - liaise effectively with necessary parties to develop and refine the plan so that it can be accepted by the board/senior management
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Implement outsourcing plans	
2. Code	ITCSSG520A	
3. Range	In the competitive environment, new network technology (e.g. NGN) emerges with higher cost and demand of more specialised staff. Facing such challenges, telecom operators are forced to consider outsourcing some of the operations to enable its business to operate with greater flexibility, allow time to market for new services, reduce staff cost, and help deliver profit growth for shareholders. This UoC applies to the implementation of outsourcing plans. Outsourced operations/functions/projects include network integration, network maintenance and support, network operation, billing functions, CRM, etc.	
4. Level	5	
5. Credit	3	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Fully comprehend the organisation's business needs and strategies • Possess extensive knowledge of the organisation's outsourcing strategies and plans • In tune with current trends of the global economic development and the trends of telecom industry • Knowledgeable of the product and service life cycle • Possess extensive knowledge of services provisioning and ITSM (Information Technology Service Management) principles • Possess extensive knowledge of the principles and methodologies of outsourcing and "Cloud services" • Proficient with people management and negotiation skills • Possess extensive knowledge of regulatory requirements and Trade Union laws associated with outsourcing services • Proficient with project management techniques and use of tools for analysis, monitoring and reporting, etc. 6.2 Implement outsourcing plans Be able to: • Work with colleagues ("Strategic Sourcing Committee") to determine the goals and objectives of outsourced operations/areas/functions/projects. It needs to take into account of business units' requirements, effects on staff relationship, etc. • Determine the outsourcing model required e.g. outsourcing the organisation's operation; outsourcing staff and facilities, or staff only; outsourcing to local companies or overseas companies, etc. • Determine SLR (Service level Requirements) and the scope of outsourcing requirements, such as network performance, downtime, support response time, duration, etc. • Create vendor selection criteria based on SLR including risks of vendor sustainability • Create SLA (Service Level Agreement) or contract with the outsourcing provider. This includes service requirement description, service level breakdowns (activities, service window, supports, personnel, reports, etc.), profile of involved parties, judicial and financial aspects, etc.	

	• Manage colleagues and service providers to formulate a transition plan, which should include network integration if network infrastructure service is outsourced. The plan should include service provider's staff responsibilities, and how to certify that the outsourced staff is qualified to take up the service operation • Formulate transition of daily operation plan. This includes operation plan which determines what activities will go into effect once the transfer is completed, including fees, contracts, and responsibilities, reporting needs, quality measurements, penalties, etc. • Formulate and implement monitoring controls to determine the effectiveness of the outsourced services. The controls should include methods of collecting statistics such as: ➢ Customer satisfactory survey ➢ Logs from network equipment or systems ➢ Number of lines dropped ➢ Number of lines failed ➢ Number of bad calls • Formulate review procedures and recommend review periods. The review procedures should include review of supplier SLA performance, people's ability and risks, technologies used which impact the service delivery, etc • Manage the packaging of the necessary documents (SLR, SLA, contracts, transition plan, etc.) related to the implementation process for filing and signoff by appropriate person
	6.3 Exhibit professionalism • Always maintain a proper balance of interests between the company and the service providers
7. Assessment Criteria	The integrated outcome requirements of this UoC are the abilities to: i. coordinate effectively with colleagues and service providers to implement the outsourcing plan ii. identify the services required to be outsourced iii. formulate service providers selection procedures and policies that can select the most suitable outsourced service providers for the required service iv. formulate an effective transition plan which can smoothly transfer the in-house services to the outsourced services providers v. collect all the required documents associated with the outsourced service plan for filing and sign-off
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Establish and implement information management and control policy
2. Code	111216L6
3. Range	Establish and implement policy to manage and control information security and privacy of an organisation. This UoC concerns competencies for collecting, collating, assessing, distributing and disseminating information within the organisation.
4. Level	6
5. Credit	3
6. Competency	Performance Requirements 6.1 Possess knowledge in the subject area ● Understand the organisation obligations in data security to its related parties, such as employees, customers, partners, government etc. ● Aware of the vulnerability of the information storage systems and the storage media used by the organisation ● Aware of the latest development of the information management and security field ● Understand which information needs to be protected ● Aware and know the laws associated with information management and control 6.2 Establish information management and control policy ● Understand the needs of the organisation in using and sharing information ● Be able to comprehend the standards, guidelines and procedures published by professional bodies in the trade and extract the sections relevant to organisational operation as references ● Identify the storage systems and the storage media used by the organisation and their associated vulnerability ● Formulate information management and control policy ● Specified the handling of raw data and information ● Define ways to discard information safely ● Identify systems that is required to be implemented and adopted for the policy ● Ensure the policy could maintain confidentiality, integrity, and reliability throughout the stages to comply with administrative, audit and legal requirements ● Develop methods and procedures in auditing the handling of information in the organisation ● Ensure the policy are reviewed periodically

	● Establish systems to record any mishandling of information incident 6.3 Implement information management and control policy ● Purchase and implement the required system for information management and control policy adaptation ● Provide workshop to staff such that they understand: ■ the importance and needs of the information management and control policy ■ the procedure of how to handle information ■ the consequences of mishandling of information ● Conduct periodic audits to ensure the policy is followed ● Ensure all findings and incidents are recorded 6.4 Exhibit professionalism ● Be able to establish the required policy in accordance with the organisation's guidelines as well as any (local and international) laws and regulatory requirements, if applicable
7. Assessment Criteria	The integrated outcome requirements of this UoCs are the abilities to : ● Establish and implement information management and control policy that is in accordance with the organisation's guidelines as well as any (local and international) laws and regulatory requirements ● Ensure associated parties understand the importance and the need of information management and control policy and the potential consequences of mishandling of information
8. Remark	This UoC replaced the following UoCs: 1. ITWSM611A "Set policy to control data security and privacy" 2. ITWSM506A "Collect and distribute disseminate information" 3. 108022L5 "Manage information strategy to facilitate product development and marketing"

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate business model
2. Code	ITCSSG603A
3. Range	This UoC concerns formulating business models to fit the mission and vision of a telecommunication operating/service company.
4. Level	6
5. Credit	4
6. Competency	Performance Requirement 6.1 Possess the knowledge in the subject area • Exhibit extensive knowledge of the organisation's core values, mission, vision and objectives • Comprehend the organisation business strategies • Extensively experienced in analysing an organisation business strengths and weaknesses • Posses extensive knowledge of network and telecommunication technologies and trends • Critically understand the importance of adopting good business models in an telecommunication operator or services company • Extensively experienced in applying competitive analysis methodologies and techniques in formulation of business models • Experienced in developing business plans • Experienced with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Formulate business model Be able to: • Steer a team to identify the information needed for formulation of business model. This may be statistics, reports, policies, procedures, discussions with business stakeholders, etc. • Define required core capabilities (or weaknesses), capacities, and competencies of the organisation in relation to the business strategy • Define activities required to implement the business strategy • Manage the formulation of business model plans based on the WHO, WHAT and HOW framework. ➢ WHO's your customer? ➢ WHAT are you offering your customer? ➢ HOW are you doing this? • Manage the presentation of the business model plans to stakeholders with supporting data for implementation and deployment. Stakeholder includes senior managers, board, customers, investors, etc. 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance of interest among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. identify business strategy and core competencies of the organisation ii. formulate the business model based on WHO, WHAT and HOW framework iii. effectively present the business model and seek approval from stakeholders for deployment
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate relevant tactical plans based on approved strategies and policies	
2. Code	ITCSSG604A	
3. Range	This UoC concerns formulating relevant tactical plans for an organisation based on the approved strategies and policies for managing their implementation.	
4. Level	6	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Exhibit extensive knowledge of the organisation's core values, mission, vision and objectives • Fully understand the organisation's business strategies • Fully abreast with CIS trends, technologies, and market developments • Extensive project management ability, particularly in the area of analysing business statistics and reports • Extensively experienced with defining tactical plan objectives and standards • Extensively experienced with defining metrics to measure results and performance of tactical plans • Extensively experienced with project management tools and techniques in documenting and presenting the tactical plans to facilitate easy communication of the plan • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Formulate relevant tactical plans based on approved strategies and policies Be able to: • Steer a tactical planning team to determine business strategies, objectives and desired results of the tactical plans • Define tactical projects that will affect the result of the plan and the organisation mission statements • Manage and define the elements for each individual tactical plan and convert each individual plan into project items and state clearly the project details such as: ➤ Objectives ➤ Background ➤ References ➤ Deliverables ➤ Dependencies and impacts ➤ Stakeholders to be involved ➤ Role and responsibilities ➤ Timelines ➤ Resources ➤ Means of assessment for success ➤ Use of results • Steer the adoption of the tactical plan with details of projects and indicate how the plan is to be implemented. • Define monitoring and review schedule to evaluate the feasibility and success factor of the plan.	

	6.3 Exhibit professionalism • The formulation of the tactical plan should take into consideration people and telecom/IT industry growth/trends – local & regional, in addition to organisation's requirement. • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. manage the formulation of appropriate tactical plans for an organisation according to its vision and mission statements as well as goals; and the plans must be documented to the organisation standards ii. manage the development of concise tactical project plans to achieve the goals iii. provide a detailed connection between tactical projects and project management
Remark	

Functional Area: Strategic / General Management (Strategising & Formulation)

1. Title	Formulate corporate governance policies	
2. Code	ITCSSG605A	
3. Range	Investor confidence is critical to a company. The company has to demonstrate that it is committed to strong governance practices which not only comply with regulatory requirements, but also support the effective oversight of the company for the benefits of stockholders. This UoC concerns formulating corporate governance (CG) policies.	
4. Level	6	
5. Credit	5	
6. Competency		<u>Performance Requirement</u> 6.1 Formulate corporate governance policies • Critically aware of the importance of a good business plan which fulfil the objectives of the organisation's business model • Fully in tune with the organisation's business objectives and goals to which the business plan is to be aligned with • Possess extensive experience with formulating CG policies • Possess extensive knowledge of the national and international telecommunication regulations and policies • Posses extensive knowledge of corporate governance standards such as ISO 38500, IT governance standards such as ISO 27001 and IT Service Management methodologies, frameworks and best practices in areas relating to corporate governance • Possess extensive experience in formulating corporate governance planning 6.2 Formulate corporate governance policies Be able to: • Establish and steer a team to formulate the organisation's Corporate Governance policies • Define the objectives, goals and reasons for forming corporate governance (such as compliance to regulatory requirements, better relationship with stakeholders, transparency, corporate image building, restructuring of organisation, etc.). These goals will contribute to the formulation of the "Corporate Governance Statement" • Determine the optimal board structure model to apply to the organisation; "Traditional model" or "One tier management model" or "Dual-board model" • Develop procedures for formation of "Nominating & Governance Committee" which defines how to form the board of directors and their responsibilities • Develop or adopt standard Corporate Governance framework, guidelines, policies or procedures on the roles of corporate governance (see UoC - ITCSSG607A) • Formulate the organisation CG statement to be publicised • Formulate training plan on corporate governance for the board and management to be included in the CG policies

	• Determine timeline and schedules for the implementation of the CG policies • Formulate and define monitoring controls that can determine the effectiveness of implemented CG • Formulate the review mechanism and specify/define the review period of the CG policies • Manage the drafting of the Corporate Governance policies in accordance with regulatory/industry and the organisation standards • Work with the board to finalise the CG policies 6.3 Exhibit professionalism • All documents produced follow the regulatory/international/organisation required formats and standards • All communications are performed at the right level to avoid miscommunication
7. Assessment Criteria	The integrated outcome requirements of UoC are the ability to: i. effectively drive a team to formulate the Corporate Governance Policies ii. identify the objectives of the CG policies iii. determine the necessary components and activities that can satisfy the objectives of CG in the organisation iv. effectively formulate the organisation CG statements that can be accepted by the board/investors of the organisation v. effectively identify and recommend a most suitable board structure to govern the organisation vi. formulate a draft of the CG policies and work with board members to finalise the policies
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Develop and deploy corporate governance framework	
2. Code	ITCSSG607A	
3. Range	Good governance should be embedded into the corporate culture of the organisation and applied with a transparent framework of legislative requirements, governance principles and management processes. This UoC concerns developing and deploying Corporate Governance (CG) framework.	
4. Level	6	
5. Credit	5	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area • Critically understand the importance of having a business plan to implement and fulfil the objectives of the organisation's business model • Possess extensive knowledge of the organisation's business objectives • Knowledgeable with current and upcoming telecommunication industry trends and technologies • Possess extensive knowledge of national and international telecommunication regulations and policies • Posses extensive knowledge of corporate governance standards such as ISO 38500, also IT governance standards such as ISO 27001 and IT Service Management methodologies, frameworks and best practices in areas relating to corporate governance • Possess extensive experience in developing corporate governance plans, development and deployment of CG frameworks • Proficient with commercial & management skills such as management of business finance, communication, people, change, negotiation and business operations 6.2 Develop and deploy corporate governance framework Be able to: • Steer a team to develop and deploy the organisation's Corporate Governance framework. This will require working closely with board members/directors, senior managers and other stakeholders. • Drive the research on similar CG frameworks as a basis for developing the organisation's own framework • Clarify the objectives for development of the CG framework, such as promoting transparent and efficient markets, maintaining consistency with the rule of law and clearly articulating the division of responsibilities among different supervisory, regulatory and enforcement authorities • Define the rights of shareholders and key ownership function, such as the rights to vote, transfer of shares, etc. • Define roles of stakeholders, such as the degree of employee's participation, method of communication, creditor's right, etc.	

	• Research on an optimal timeline for disclosure of material matters regarding the corporation, including the financial and operating results, performance, ownership, remuneration policies and governance of the organisation • Define the board of directors, their responsibilities and accountabilities including strategy formulation, risk policies formulation, setting performance objectives, implementing and monitoring corporate performance, overseeing capital expenditure and acquisitions and monitoring governance effectiveness, etc. • Review regulatory requirements, compliances and social responsibilities (including “green” network equipment, recyclable handsets, etc.) • Review and formulate necessary committees, such as audit committee, finance committee, supervisory board committee, compliance committee, executive management team, etc. • Work with audit committee to formulate programmes/controls that can collect information for monitoring, reviewing and amending the CG framework, if necessary • Manage the drafting of the Corporate Governance framework in accordance with the international and organisation’s standards • Work with the board to finalise and manage the deployment of the CG framework 6.3 Exhibit professionalism • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance of interest between the organisation and all stakeholders
7. Assessment Criteria	The integrated outcome requirements of this UoC are the ability to: i. effectively drive a team, working with stakeholders to develop the organisation’s Corporate Governance framework ii. develop the framework to include necessary components for effective governance of the organisation iii. define an effective “change control” procedure which can review and enhance the CG framework iv. finalise the framework that can satisfy shareholders, meet regulatory requirements and can be deployed seamlessly as day to day governance of the organisation
Remark	

Functional Area: Strategic / General Management (Planning & Implementation)

1. Title	Identify and develop “killer app” products	
2. Code	ITCSSG608A	
3. Range	Telecom operator (wireless and wireline) are continuously having the need to identify “killer applications” - products that can give them the edge over their competitors. This UoC concerns identifying the “killer app” products. A killer app is normally associated with a piece of software which is exceptionally useful and exciting. From a telecom operator’s point of view it’s more on having an extra special product (software or combination of software and hardware) that can generate extra benefits to the organisation such as Voice Over WiMax, Paperless Map with GPS, broadband, multi-play, social network on mobile (Tweeter, YouTube, Facebook, etc.).	
4. Level	5	
5. Credit	4	
6. Competency	<u>Performance Requirement</u> 6.1 Possess the knowledge in the subject area - Extensively experienced in applying technologies in a telecommunication operator or services organisation - Possess in-depth knowledge of current and upcoming telecommunication industry trends and technologies - Possess knowledge in competitors’ technology plans and activities - Possess comprehensive knowledge in national and international telecommunication regulations and policies - Experienced in formulating technology plans that cohere to the organisation’s business strategies - Possess extensive knowledge of software development and methodologies - Possess extensive experience in applying customer survey methodologies and techniques - Possess the ability to communicate technological ideas effectively with different levels of users and stakeholders 6.2 Identify and develop “killer App” products Be able to: - Lead technology experts, products and services colleagues or other planning teams to assemble the “killer App” team. This team comprises of highly creative and innovative members with the sole objective to define or develop “killer app”. Various methods will be used to conceive “killer apps” such as brainstorming, interview with customers, etc. - Transform “killer app” ideas/concepts to technical specification with estimation of costs, benefits and life span - Define evaluation criteria of “killer app”, such as “usable”, “simple”, “affordable” (to develop and customers can pay), “developable and maintainable”, “upgradable”, and most important “marketable” - Develop and document the procedures and guidelines on how to perform the identification process - Coordinate with customers or users to assess “killer app”. A suitable feedback methodology must be implemented (e.g. survey, interview, online forum, etc.)	

	6.3 Exhibit professionalism • Formulate a report, on each “killer app”, which comprises of technical descriptions, estimation of development cost, benefits, evaluation criteria, and users or customer acceptance level • Review the report with senior managers to gain their support and approval for the marketing of the “killer app” products • Be aware of Intellectual Property (IP) rights and ensure developed products comply to the IP regulations • Always take into consideration and strike a proper balance among all related technological, political, social, environmental and legal factors • Always strike a proper balance of interest among all stakeholders
7. Assessment Criteria	The integrated outcome requirements of UoC are the abilities to: i. drive a team of technologists to identify “killer app” that can generate business for the organisation in the near future ii. formulate suitable measurement criteria that can classify a concept/idea/software/hardware as “killer app” iii. coordinate effectively with external users or customers to assess acceptance and marketability level of a “killer app” and implement an appropriate user feedback system to collect statistics for reviews iv. document “killer app” identification report and present it to senior managers for development approval
Remark	

新舊能力單元對照表

Specification of Competency Standards (Version 2) 能力標準說明(第二版)					Specification of Competency Standards (Version 1) 能力標準說明(第一版)			
Specification of Competency Standards (SCS) 能力標準說明	Functional Area 職能範疇	UoC Code 能力單元編號	UoC Title	能力單元名稱	UoC Code 能力單元編號	UoC Title	能力單元名稱	Remarks
Communications and Information Services 通訊與訊息服務	Network Infrastructure and Operation 網絡基建及營運	111429L4	Implementing monitoring equipment to monitor infrastructure failure and security breaches	實施設備監控，以監控基建故障和安全性漏洞	ITCSNO431A	Implementing monitoring equipment to monitor infrastructure failure and security breaches	實施監控設備，以監控基建故障和安全性漏洞	Replacement of UoC 取代能力單元
		111430L4	Develop a plan to monitor network infrastructure performance	管理網絡基礎設施性能	108058L3 ITCSNO418A	Monitor performance of digital media infrastructure Analysing performance reports	監控數碼媒體基建性能 分析效能報告	Replacement of UoC 取代能力單元
		111106L3	Perform installation, configuration and testing of network equipment and devices	進行網絡設備的安裝，配置和測試	ITCSNO306A	Perform installation, configuration and testing of network equipment	進行網絡設備的安裝，配置和測試	Replacement of UoC 取代能力單元
		111107L4	Perform network testing	進行網絡測試	ITCSNO424A	Perform network testing	進行網絡測試	Replacement of UoC 取代能力單元
Digital Media Technology 數碼媒體科技	DMT Architecture 數碼媒體科技架構	111108L6	Develop digital content delivery network strategy	開發數碼內容傳遞網絡策略	108052L6	Develop content delivery network strategy for digital media business	為數碼媒體業務開發內容傳遞網絡策略	Replacement of UoC 取代能力單元
	Marketing Management 營銷管理	111109L7	Formulate digital marketing strategy	制定數碼營銷策略	107914L7	Formulate digital marketing strategy	制定數碼營銷策略	Replacement of UoC 取代能力單元
		111110L6	Formulate digital marketing strategy for Mainland China	制定在中國內地使用的數碼營銷策略	108027L6	Formulate digital marketing strategy for Mainland China	制定在中國內地使用的數碼營銷策略	Replacement of UoC 取代能力單元
	Operational Management 營運管理	111115L4	Create motion graphics	創作動態圖形	107944L4	Create motion graphics	創作動態圖形	Replacement of UoC 取代能力單元
		111119L3	Prepare for live video and audio capture	準備實時視頻和音頻擷取	107970L3	Prepare for digital video capture	準備數碼視訊擷取	Replacement of UoC 取代能力單元
Operation and Support 營運與支援	System & Hardware 系統與硬件支援	111122L2	Record problem/fault reports	記錄問題/錯誤報告	ITCSNO207A	Record problem/fault reports	記錄問題/錯誤報告	Replacement of UoC 取代能力單元
Software Products and Software Services 軟件產品及軟件服務	Architecture 軟件架構	111123L6	Define data governance policies and architecture principles	訂定資料管理政策和架構原則	ITSWAR608A	Define data manage policies and architecture principles	訂定資料管理政策和架構原則	Replacement of UoC 取代能力單元
		111124L6	Develop application integration architecture	發展應用系統綜合架構模式	ITSWAR617A ITSWAR618A	Recommend application integration architecture models Develop application integration architecture resources	推薦應用系統綜合架構模式 發展應用系統綜合架構模式的資源	Replacement of UoC 取代能力單元

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Specification of Competency Standards (SCS) 能力標準說明	Functional Area 職能範疇	UoC Code 能力單元編號	UoC Title	能力單元名稱	UoC Code 能力單元編號	UoC Title	能力單元名稱	Remarks
Software Products and Software Services 軟件產品及軟件服務	Architecture 軟件架構	111125L6	Review, design and re-engineer business processes to form a new business architecture	檢討、設計及重整業務程序以建立新的商業架構	ITSWAR607A	Review, design and re-engineer business processes to form a new business architecture	檢討、設計及重整業務程序以建立新的商業架構	Replacement of UoC 取代能力單元
		111126L6	Determine technology mix for the design and development of embedded software systems	確定嵌入式軟件系統的設計和發展的技術組合	ITSWAR620A	Determine technology mix for the design and development of embedded software systems	確定嵌入式軟件系統的設計和發展的技術組合	Replacement of UoC 取代能力單元
		111127L5	Define metrics to ensure that a technology architecture meets the business goals	訂定度量指標，確保技術架構符合企業目標	ITSWAR508A	Define metrics to ensure that a technology architecture meets the business goals	訂定度量指標，確保技術架構符合企業目標	Replacement of UoC 取代能力單元
		111129L5	Model technology architecture	塑造技術架構	ITSWAR507A	Model technology architecture	塑造技術架構	Replacement of UoC 取代能力單元
	Data Science 數據科學	111138L6	Define and establish the data architectures	訂定和建立資料架構	ITSWAR610A	Define and establish a data architectures	訂定和建立資料架構	Replacement of UoC 取代能力單元
		111139L6	Check usability of a target data architecture	檢查目標資料架構的實用性	ITSWAR612A	Check usability of a target data architecture	檢查目標資料架構的實用性	Replacement of UoC 取代能力單元
	Design, Development & Maintenance 設計、開發與維護	111155L6	Define a system migration plan	訂定系統遷移計劃	ITSWDM611A	Define a software deployment / migration plan	訂定軟件部署/遷移計劃	Replacement of UoC 取代能力單元
		111157L6	Perform risk assessment on system migration	執行系統遷移的風險評估	ITSWDM610A	Perform risk assessment on software deployment and migration	執行軟件部署和遷移的風險評估	Replacement of UoC 取代能力單元
		111159L4	Verify and validate that the deployed / migrated software and the existing software are functioning properly	核實和確認部署/遷移的軟件和現有的軟件的正常運作	ITSWDM405A	Verify and validate that the deployed/migrated software and the existing software are functioning properly in the context of deploying and migrating software	核實和確認部署/遷移的軟件和現有的軟件的正常運作	Replacement of UoC 取代能力單元
		111160L4	Perform system testing against user, technical and hosting requirements	針對用戶、技術和託管要求執行系統測試	ITSWDM401A	Perform testing activities to facilitate different levels of testing	執行測試活動，促進不同程度的測試	Replacement of UoC 取代能力單元
	Generic Skills 通用技能	111161L5	Acquire and protect the copyrights and IP rights related to IT	獲取和保修與資訊科技有關的版權和知識產權	ITSWG523A	Acquire and protect the copyrights and IP rights related to IT	獲取和保修與資訊科技有關的版權和知識產權	Replacement of UoC 取代能力單元

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Software Products and Software Services 軟件產品及軟件服務	Information Security 資訊保安	111164L6	Develop information security standard, policies and guidelines for the organization	為企業制訂網絡安全標準、政策和準則	ITCSPL606A	Establish security policy for the products / services	為產品/服務建立保密政策	Replacement of UoC 取代能力單元
		111165L6	Develop response and recovery plans	制訂應變和復原計劃	ITSWIS614A	Develop response and recovery plans	制訂應變和復原計劃	Replacement of UoC 取代能力單元
		111166L6	Review key controls metrics regularly to fulfill the security standard	定期檢討關鍵績效指標以達到保安標準	ITSWIS609A	Establish metrics to manage information security governance framework	設立處理資訊保安管治架構的度量指標	Replacement of UoC 取代能力單元
		111170L5	Develop procedures to implement incident response plan	制定程序以實施事件應對計劃	ITSWIS614A	Develop response and recovery plans	制訂應變和復原計劃	Replacement of UoC 取代能力單元
		111171L5	Develop procedures to maintain and comply with the information security standard and policies of the organisation	制定程序以維護和遵守企業的網絡安全標準和政策	ITSWIS506A	Develop information security practices and procedures	制訂資訊保安慣例和常規	Replacement of UoC 取代能力單元
		111174L5	Identify the potential security threats to the organisation	確定和評估企業的潛在保安風險	ITSWIS605A	Identify the potential security threats to the company	確定和評估風險	Replacement of UoC 取代能力單元
		111175L5	Manage the execution of response and recovery plans	處理應變和復原計劃的執行	ITSWIS511A	Manage the execution of response and recovery plans	處理應變和復原計劃的執行	Replacement of UoC 取代能力單元
		111176L5	Perform network security assessment for the organization	為企業進行網絡安全評估	ITCSNO530A	Define network infrastructure access policies	釐定網絡基建的接入政策	Replacement of UoC 取代能力單元
		111177L5	Prepare and deliver information system security audit report	準備和提交資訊系統保安審計報告	ITSWIS514A	Prepare and deliver information system security audit report	準備和提交資訊系統保安審計報告	Replacement of UoC 取代能力單元
		111178L5	Prepare documentation to report the security testing and findings	準備安全測試和結果報告	ITSWIS512A	Establish procedures documenting security incident	建立記錄保安事件的程序	Replacement of UoC 取代能力單元
		111179L5	Propose appropriate countermeasures to prevent security attacks	提出適當的對策以防止安全攻擊	ITSWIS525A	Minimize information security risks	減低資訊保安風險	Replacement of UoC 取代能力單元

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Software Products and Software Services 軟件產品及軟件服務	Project Management 項目管理	111197L5	Conduct solicitation planning	實施徵集計劃	ITSWPM521A	Conduct solicitation planning	實施徵集計劃	Replacement of UoC 取代能力單元
		111198L5	Conduct project closure with respect to time	處理與時間有關的項目結束	ITSWPM505A	Conduct project closure with respect to time	處理與時間有關的項目結束	Replacement of UoC 取代能力單元
		111199L4	Analyze the available solutions from IT service providers	分析資訊科技服務提供商的解決方案	ITSWPM523A	Conduct source selection and/or contract development	進行外發的來源挑選和/或合同發展	Replacement of UoC 取代能力單元
		111200L4	Prepare system operation documentation	編制系統操作文檔	ITSWPM403A	Establish project communications documentation requirements	制定項目通訊的檔案編制要求	Replacement of UoC 取代能力單元
	Strategic Management 策略管理	111201L6	Formulate business strategies and policies	制定業務策略及政策	ITSWSM602A	Formulate business strategies and policies	制定業務策略及政策	Replacement of UoC 取代能力單元
		111202L6	Identify and evaluate information technologies that support the objectives of an organisation	辨識及評估支援企業的目標的資訊科技	ITSWSM612A	Identify and evaluate information technologies that support the objectives of an organisation	辨識及評估支援組織的目標的資訊科技	Replacement of UoC 取代能力單元
		111203L6	Maintain the portfolio management with different stakeholders	維護與不同持份者的投資組合管理	ITSWG618A	Manage and maintain the portfolio and relationship with business partners	處理和保持與商務夥伴的投資組合和關係	Replacement of UoC 取代能力單元
		111205L6	Review and comply with organisational policies and procedures, relevant laws and regulatory requirements	檢討及遵從企業的政策和程序、相關法律和監管要求	ITSWG624A ITSWG602A	Comply with relevant laws and regulatory requirements Comply with organisational policies and procedures, relevant laws and regulatory requirements	遵照有關的法律和管理要求 遵從機構的政策和程序、相關法律和監管要求	Replacement of UoC 取代能力單元
		111206L6	Set policy to control data security and privacy	制定政策管理資料保安及私隱	ITWSM611A	Set policy to control data security and privacy	制定政策管理資料保安及私隱	Replacement of UoC 取代能力單元
		111209L5	Establish a business continuity planning strategy	建立商業延續計劃的策略	ITSWIS519A	Establish a business continuity planning strategy	建立商業延續計劃的策略	Replacement of UoC 取代能力單元
		111210L5	Formulate IT plan	擬定資訊科技計劃	ITWSM503A	Formulate IT plan	擬定資訊科技計劃	Replacement of UoC 取代能力單元

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Software Products and Software Services 軟件產品及軟件服務	Strategic Management 策略管理	111212L6	Formulate global and local business strategies	制定全球和本地的業務策略	108015L7 ITCSSG503A ITCSSG602A	Formulate global and local business strategy Formulate global and local marketing strategies Define business strategies and policies	制定全球和本地的業務策略 制定全球及地區市場策略 釐定業務策略和政策	Replacement of UoC 取代能力單元
		111213L6	Formulate strategies on business relation management	制定業務關係管理策略	ITSWG5618A ITCSSG508A ITCSSG521A	Manage and maintain the portfolio and relationship with business partners Formulate partner/supplier relationship strategies Manage and maintain the portfolio and relationship with business partners	處理和保持與商務夥伴的投資組合和關係 制定合作夥伴/供應商關係之策略 管理和維繫與業務合作夥伴之間的關係和組合	Replacement of UoC 取代能力單元
		111214L6	Formulate human resource strategy	制定人力資源策略	108021L5 ITCSSG606A	Formulate human resource strategy Formulate human resource strategies	制定人力資源策略 制定人力資源策略	Replacement of UoC 取代能力單元
		111215L6	Formulate vision and mission statements	制定願景和使命聲明	ITWSM601A ITCSSG601A	Formulate vision and mission statements Formulate vision and mission statements	制定遠景及使命聲明 制定願景和使命的聲明	Replacement of UoC 取代能力單元
		111216L6	Establish and implement information management and control policy	建立和實施資訊管理和保安政策	ITWSM611A ITWSM506A 108022L5	Set policy to control data security and privacy Collect and distribute disseminate information Manage information strategy to facilitate product development and marketing	制定政策管理資料保安及私隱 搜集及分發資訊 管理資訊策略以促進產品開發和市場營銷	Replacement of UoC 取代能力單元
		111217L5	Manage marketing and public relation plans	管理營銷和公關計劃	ITWSM508A ITCSSG403A	Manage product/services brand through the use of IT Implement Public Relation Plans	利用資訊科技管理產品/服務品牌 實施公關計劃	Replacement of UoC 取代能力單元
		111218L5	Establish contingency and risk mitigation plans	建立應急和風險緩解策略	ITSWG5609A ITCSSG501A ITCSSG512A	Develop business continuity plans and disaster recovery plans related to IT Formulate risk mitigation strategies and plans Develop business continuity and disaster recovery plans	確定和評估與資訊科技有關的風險因素 制定風險緩解策略和計劃 發展業務連續性和災難恢復計劃	Replacement of UoC 取代能力單元