Specification of Competency Standards
for the Information & Communications Technology Industry
Unit of Competency

Functional Area - Operations Management

Title	Develop Augmented Reality (AR) application
Code	107992L4
Description	This unit of competency applies to all Digital Media Technology (DMT) practitioners who are involved in the development of AR applications. Unlike VR which creates a totally artificial environment, AR is the integration of digital information with the user's environment in real time and uses the existing environment and overlays new information on top of it. This UoC is concerned with the abilities in AR application development using specified tools and facilities.
Level	4
Credit	3

Competency	Performance Requirements
	1. Knowledge for AR application development
	
	• Realize the philosophy and guidelines of the organisation towards AR application development
	• Master programming knowhow, concepts and techniques
	• Well versed in advanced computer vision skills, desktop, web or mobile programming
	• Possess good understanding about augmented reality and related techniques, such as:
	    o 3D modeling
	    o Rigging & animation
	    o Marker and markerless based tracking
	    o 3D rendering
	    o Intuitive UX/UI design
	    o Simultaneous localisation and mapping (SLAM) tracking etc.
	• Understand software related copyright, ethics and privacy issues
	• Possess the personal traits of a typical AR application developer, such as:
	    o Good understanding of image processing
	    o Good understanding of intuitive user interfaces
	    o Proficient computer vision techniques
	    o Keep abreast of new research in the field, etc.
	• Possess good understanding of Mixed Reality (MR) and related techniques, such as
	    o 3D sensor and scanning
	    o Optic devices, such as: Hololens
	    o Interaction of digital contents with real-time environment
	    o Keep abreast of new research in the related development of Cinematic Reality (CR)
	
	2. Develop Augmented Reality (AR) application:
	
	• Fully comprehend the key requirements for an AR system and apply them in the development process, including:
	    o Useful and highly interactive
	    o Realistic
	    o Captivating
	    o Immersive, etc.
	• Fully explore and exploit the technologies offered by those popular AR development tools, such as:
	    o Global positioning system to pinpoint a user's location
	    o Machine vision that gives a computer the ability to see
	    o Gesture recognition for mathematical interpretation of human motion by computing devices

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- o Object recognition, etc.
- Adopt the marker-based or location-based approaches for AR application development flexibly according to requirements and circumstances
- Perform routine tasks associated with major milestones in the AR application development life cycle, including:
  - o Research and usability engineering
  - o Prototyping
  - o Development
  - o Testing
  - o Deployment
  - o Technical support and maintenances
  - o Review and assess, etc.
- Perform the detailed AR application development tasks, which may include but not limited to the followings:
  - o Working with devices such as leap motion and high-end smartphones, tablets, television, smartglasses, etc.
  - o Add custom AR effects
  - o Create 2-D and 3-D models
  - o Programming and coding
  - o 3D depth sensing, body and hand tracking
  - o Content management
  - o Re-engineering the AR apps, etc.
- Make appropriate adjustments reiteratively to the AR application being developed until the desired outcomes are achieved
- Present the completed AR application to the game development team or supervisor for comment and approval

3. Exhibit professionalism

- Employ latest skills and technologies to AR application development
- Always perform AR application development according to requirements and expectations, and place the interests of potential users as the highest priority consideration

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<tr><td>Assessment Criteria</td><td>

The integrated outcome requirements of this UoC are the abilities to:

- Able to complete the AR application development tasks within the defined time and budget of the requirement specifications
- Able to grasp users' expectations towards the AR application in concern and produce outputs with appropriate contents and level to satisfy the users

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