



Australian Government

Assessment Requirements for MEM29012 Access and use a digital twin for operational purposes

Release: 1

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Modification History

Release 1. New unit.

Performance Evidence

There must be evidence the candidate has demonstrated the ability to:

- follow cyber security protocols for accessing a digital twin
- access digital twin dashboard, functional layers and test modes on at least two occasions
- use digital twin to access current or historical component or equipment condition monitoring-related data
- use a digital twin for predictive analysis of manufacturing scenario
- map and fault-find data pathways to and from sensors linked to physical objects and a digital twin.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- typical uses of digital twins in manufacturing and engineering including:
 - prototype analysis
 - condition monitoring
 - lifecycle analysis
 - predictive modelling of scenarios, products or processes
 - live monitoring of equipment and processes
 - supply chain visualisation
 - advanced analytics
- sources of data for digital twins including:
 - design specifications
 - production, maintenance and quality reports
 - business data including customer feedback
 - sensors
 - real time and historical SCADA and IIoT data
- types and scope of digital twins including:
 - prototype digital twins created to model a product or process before it is created
 - component digital twins

- machine, process or system level digital twins allowing interactions to be visualised and scenarios modelled
- two-way communication processes and protocols between digital twins and physical objects and processes
- processes for checking and harmonising digital twin data with other physical sources of data in the workplace including data generated from SCADA and IIoT systems and devices
- cyber security protocols associated with digital twins
- advantages of using a digital twin for data and modelling over physical assets including:
 - safety
 - potential longer life
 - lower operating cost
 - ability of a digital twin to visualise processes and provide information transparency in situations where obtaining data from the physical object or process is:
 - too dangerous
 - too costly
 - not possible without shutting down the equipment or process
 - unlikely to give the same degree of detail or accuracy as the digital twin
- situations where use or creation of a digital twin may be inappropriate:
 - a sufficient or regular flow of data to support the digital twin is not available
 - the physical object or process is not sufficiently complex to support a digital twin
 - the cost of creating and maintaining the digital twin is not worth the return.
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Assessment Conditions

- Assessors must:
 - have vocational competency in accessing and using a digital twin for operational purposes at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- There must be access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>