



Australian Government

MEAENG0004 Apply systems engineering procedures to airworthiness engineering design project management

Release: 1

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Modification History

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Range of Conditions removed, and relevant information moved to Assessment Requirements. Assessment Requirements clarified. Supersedes and is equivalent to MEA730 Apply systems engineering procedures to airworthiness engineering design project management.

Application

This unit describes the skills and knowledge required to use systems engineering procedures to set up management procedures for engineering design projects involving the design of complex systems that require the integration of subsystems and components by a multi-discipline engineering team. The management processes may relate to all design stages and may include the development of systems software. In the production and life-cycle management stages, systems engineering design stage output data may be used in the application of configuration management (CM) procedures and to support the application of integrated logistic support (ILS; covered by MEACOM0023 Perform aviation maintenance-related integrated logistic support management activities) where justified by system size and complexity or where required by contract.

Work may be done by an individual working alone or as part of a team.

The unit is used in workplaces that operate under the airworthiness regulatory systems of the Civil Aviation Safety Authority (CASA) and the Defence Aviation Safety Authority (DASA).

Any other relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MEACOM0022 Use computers in aviation maintenance-related integrated logistic support activities

MEACOM0041 Write aviation technical publications

Competency Field

Airworthiness engineering management

Elements and Performance Criteria

Elements	Performance Criteria
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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Analyse and document system requirements	1.1 Identify and document customer or contractual system requirements including inputs and relevant regulatory requirements 1.2 Set up a system engineering team and allocate responsibilities 1.3 Analyse system requirements and define functional requirements and design constraints
2. Perform functional analysis and allocation	2.1 Decompose system functions to lower-level functions applicable to system design 2.2 Allocate design constraints to all functional levels 2.3 Define and refine internal and external functional interfaces 2.4 Define, refine and integrate functional architecture 2.5 Review functional analysis outcomes against requirements and revise where necessary 2.6 Develop and document the functional baseline
3. Manage preliminary design activities	3.1 Coordinate the development of performance specifications for the system and components 3.2 Define alternatives for system concepts, components and system elements 3.3 Select preferred product and process solutions 3.4 Define and refine internal and external physical interfaces 3.5 Define and refine system software requirements 3.6 Develop and document the allocated baseline
4. Manage the detail design activities	4.1 Coordinate the development of item, process and material specifications 4.2 Coordinate the development of software specifications 4.3 Coordinate the development of engineering drawings and associated material/component/hardware lists 4.4 Coordinate the development of item performance specifications 4.5 Determine product review and design verification procedures 4.6 Develop and document the product baseline
5. Provide oversight of production and delivery	5.1 Apply product review and verification procedures and initiate action to remedy design or production deficiencies 5.2 Ensure that all relevant regulatory requirements are being met

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
6. Provide for life-cycle management of the system, components and software	6.1 Where there is a contractual requirement for application of CM, provide the technical data package and define the configuration items and baselines 6.2 Where there is a contractual requirement for ILS, provide the technical data package and data required for the development of the relevant ILS plans 6.3 Where there are no contractual requirements regarding life-cycle management, deliver the technical data package and develop procedures for the management of the configuration of the system, system components and software that meet relevant regulatory requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

- Reading skills to interpret complex information.
- Writing and oral communication skills to document requirements including specifications and provide review feedback and information.
- Numeracy skills to calculate resourcing requirements, write specifications, and to write and interpret highly technical information.

Other foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEA730 Apply systems engineering procedures to airworthiness engineering design project management.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEAENG0004 Apply systems engineering procedures to airworthiness engineering design project management

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Performance Evidence

There must be evidence the candidate has completed all the tasks outlined in the elements and performance criteria of this unit and demonstrated the ability to apply systems engineering procedures to the management of at least one airworthiness engineering design project by developing and implementing procedures for identification of systems engineering process inputs during oversight of production and delivery.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the systems engineering process and management procedures, including the following airworthiness regulations:
 - AAP7001.053 Technical Airworthiness Management Manual
 - Civil Aviation Safety Regulations (CASRs) and related documentation/publications
- how to set up and manage the activities of a systems engineering design team
- development of specifications and standards
- identification of applicable published specifications and standards including:
 - System Engineering Fundamentals (Department of Defence Systems Management College)
 - NASA Systems Engineering Handbook NASA/SP-2007-6105 Rev1
 - System Engineering Plan: ATST Project Documentation Document SPEC-0064 Revision A
 - 7th Annual Conference on Systems Engineering Research 2009 (CSER 2009), Systems Thinking or Systems Engineering
- how to set up and manage a systems analysis and control database
- the range of technical data packages, including:
 - engineering drawings and associated lists
 - technical manuals
 - manufacturing part programs
 - verification provisions

- spares provisioning lists
- specifications developed for the system and system components
- specifications and standards from international and national bodies (government and non-government)
- relevant regulatory standards and requirements
- how to use process outputs to set up CM and ILS systems for through-life management
- how to develop and document an applicable life-cycle management system where CM or ILS is not prescribed or is inappropriate
- ethical considerations in systems engineering.
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Assessment Conditions

Skills must have been demonstrated under routine supervision in the workplace or in a simulated environment that reflects workplace conditions and contingencies encountered in applying systems engineering procedures to airworthiness engineering design project management. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including workplace procedures, manufacturing specifications, codes, standards, manuals, and reference materials.

Evidence of tasks demonstrating competency must be recorded in a log of industrial experience and achievement.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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