



Australian Government

**MEM234036A Apply configuration
management procedures in engineering
project management**

Release: 1

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Modification History

Release 1 (MEM05v9)

Unit Descriptor

This unit of competency covers the skills and knowledge required to apply configuration management as a formal control mechanism that may be used in conjunction with the systems engineering process during initial design and during modification development. The outputs are configuration documentation that may be used to control the design baseline throughout the life of a product or for data input to logistics management plans where integrated logistics support (ILS) is the overarching through-life management system.

Application of the Unit

This unit applies to engineering or related projects or operations across all forms of manufacturing and engineering. It is suitable for people with system design, installation, commissioning and project or operational management responsibilities who are required to apply configuration management (CM) procedures during system design and/or during the life cycle of a product. The procedures are used as the control mechanism during the application of the systems engineering design processes which may be used in the design of complex hardware and software products, both for initial design and then as an iterative process as the need for modifications are identified throughout the life cycle of the product. The outputs of the CM process are configuration documentation that can be used for through-life management or for input of data to logistic management plans where ILS is mandated as the through-life management system.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEM23003A	Operate and program computers and/or controllers in engineering situations
MEM234028A	Produce and manage technical documentation
MEM234029A	Produce and manage technical publications

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element.

Elements and Performance Criteria

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| 1 | Plan CM activities | 1.1 | Identify the context and environment in which CM is to be applied |
| | | 1.2 | Identify any contractual requirements and specifications for the application of CM procedures to through-life management of product configuration, including the relationship with logistics management systems, such as ILS |
| | | 1.3 | Document the required CM activities |
| 2 | Develop CM plan | 2.1 | Describe how CM is to be accomplished |
| | | 2.2 | Specify how consistency between the product definition, configuration and the configuration management records is to be achieved and maintained throughout the applicable phases of the product's life cycle |
| | | 2.3 | Identify and specify performance indicators for assessing the effectiveness of the plan in terms of implementation and performance of the CM discipline |
| 3 | Specify and set up CM documentation | 3.1 | Identify records required to effectively implement CM within the identified product context and environment and CM plan |
| | | 3.2 | Select documentation media and develop documentation templates |
| | | 3.3 | Specify a document version control system |

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| 4 | Establish and control CM baseline | 4.1 | Establish product CM baseline in relation to the systems engineering or other design process |
| | | 4.2 | Revise CM baseline at applicable stages of product development, production and engineering changes in accordance with the CM plan |
| | | 4.3 | Establish and review documentation baselines in line with the requirements of the CM plan and with changes in the product CM baseline |
| 5 | Implement CM processes | 5.1 | Develop and deliver training to responsible individuals covering roles and responsibilities and the procedures for implementing CM processes as defined in the CM plan |
| | | 5.2 | Measure performance against the performance indicators in the CM plan and assess measurements/trends to identify possible process improvements |
| 6 | Perform configuration status accounting | 6.1 | Develop and populate a database with information relating to the configuration of products classified as configuration items (CIs) |
| | | 6.2 | Develop and promulgate procedures to update and validate the database whenever there is a configuration change throughout product life cycle |
| | | 6.3 | Disseminate data in accordance with the CM plan and standard enterprise procedures |
| 7 | Participate in configuration audits | 7.1 | Participate in configuration audits where required by the applicable CM standard and the CM plan |
| | | 7.2 | Initiate action to correct deficiencies identified during audits |

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- identifying CM requirements for a product, including listing CIs
- applying CM processes to the data produced through systems engineering
- establishing CM baselines during product design and development
- developing a CM plan
- training organisation staff in CM plan implementation
- developing CM documentation and related access, version control and security protocols
- implementing and reviewing CM for a product
- developing and applying CM status accounting and maintain baseline records
- participating in configuration audits and initiate action to resolve deficiencies
- inputting CM data to logistic support plans, where applicable

Required knowledge

Required knowledge includes:

- the use and application of CM in through-life management of product configuration
- CM standards and procedures
- relationship between CM and systems engineering during initial design and production
- iteration of the CM and systems engineering interface throughout the product life cycle during modification development and configuration baseline revision
- relationship between CM and logistic support requirements, such as providing data and updates for ILS plans throughout the product life cycle

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> • determine the scope of the CM task and identify items for CM (CIs) • compile CM documentation from systems engineering data • establish and review configuration baselines during product development and production • develop CM plans • implement CM plans • review CM performance • establish and maintain CM status accounting databases and procedures • participate in CM audits and manage the remedy of deficiencies.
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is, the candidate is not in productive work, then a simulated working environment must be used where the range of conditions reflects realistic workplace situations. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
<p>Method of assessment</p>	<ul style="list-style-type: none"> • Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge.

	<ul style="list-style-type: none">• Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and application.• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.• Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.• Assessment may be in conjunction with assessment of other units of competency where required.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

CM context and environment	CM context and environment may include: <ul style="list-style-type: none">• the nature of the products, such as hardware and/or software, complete systems and system components or subsystems• whether or not CM must extend to subcontractors and/or vendors• specific CM value adding functions and level of emphasis• contractual CM requirements, including specification of a CM standard to be applied
Relationship with logistic management systems	Data from CM documentation may be used in logistic management system activities, such as: <ul style="list-style-type: none">• reliability and maintainability engineering• maintenance planning• life cycle costing• spares support requirements• technical data and publications• support and test equipment identification• determining facilities requirements• determining personnel training requirements
CM plan	The contents of CM plans may include topics such as: <ul style="list-style-type: none">• brief description of system or top level CI and of the lower level CIs covered by the plan• list of reference documents (e.g. specifications, standards and manuals)• CM organisation and responsibilities• CM phasing and milestones• data management• configuration identification, including selection of CIs, baseline establishment, and configuration identifiers for hardware and for software• interface management• performance indicators• configuration control procedures• configuration status accounting procedures

	<ul style="list-style-type: none">• configuration audit procedures• subcontractor/vendor control procedures
Systems engineering interface	Systems engineering processes result in the output of technical information that is controlled through the CM process. Through the service life of the product the CM process identifies the need for modifications and the systems engineering process is used to design and develop the modifications which then result in changes to the CM baseline and documentation which may then also feed into logistic support plan updates
CM standards and references	CM standards and references include: <ul style="list-style-type: none">• EIA-649-A 2004 National Consensus Standard for Configuration Management• GEIA Standard 836-2002 Configuration Management Data Exchange and Interoperability• IEEE Standard 828-1998 IEEE Standard for Software Configuration Management Plans• MIL-STD-973 Configuration Management• STANAG 4159 NATO Materiel Configuration Management Policy and Procedures for Multinational Joint Projects• STANAG 4427 Introduction of Allied Configuration Management Publications• IEEE Standard 1042-1987 IEEE Guide to Software Configuration Management• MIL-HDBK-61A Configuration Management Guidance• 10007 Quality management – Guidelines for configuration management• GEIA-HB-649 Implementation Guide for Configuration Management• EIA-836 Consensus Standard for Configuration Management Data Exchange and Interoperability• ANSI/EIA-632-1998 Processes for Engineering a System

Unit Sector(s)

Competency field

Unit sector Engineering science

Custom Content Section

Not applicable.