DATA ITEM DESCRIPTION

1. DID NUMBER: -
2. TITLE: Systems Engineering Management Plan
3. DESCRIPTION and intended use

The Systems Engineering Management Plan (SEMP) describes the Contractor’s strategy, plans, methodologies and processes for the management of a fully integrated engineering program in accordance with the Contract. The SEMP describes the relationships between concurrent activities as well as between sequential activities to demonstrate that a fully integrated engineering program has been achieved.

The Contractor uses the SEMP to provide the primary direction and guidance to the technical team responsible for conducting the scope of work.

The Commonwealth uses the SEMP as a benchmark against which Contractor performance and changes in risk can be evaluated.

1. INTER-RELATIONSHIPS

The SEMP shall be consistent with, and subordinate to, the Project Management Plan (PMP).

The SEMP shall be the single planning and controlling document for all engineering program activities and related efforts, and shall have authority over, and give direction to, any subordinate engineering plans.

The SEMP inter-relates with the following data items, where these data items are required under the Contract:

Integrated Support Plan (ISP);

Configuration Management Plan (CMP);

Verification and Validation Plan (V&VP); and

Quality Plan (QP).

1. Applicable Documents

The following documents form a part of this DID to the extent specified herein:

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| --- | --- |
| 1. ANSI/EIA-632-2003 | 1. Processes for Engineering an System |
| 1. AS/NZS ISO/IEC/IEE 12207:2019 | 1. *Systems and Software Engineering - Software life cycle processes* |
|  | 1. The specialty engineering standards identified in the SOW (eg, in relation to system safety, system security and Electromagnetic Environmental Effects (E3)) |

1. Preparation Instructions
   1. Generic Format and Content

The data item shall comply with the general format, content and preparation instructions contained in the CDRL clause entitled ‘General Requirements for Data Items’.

When the Contract has specified delivery of another data item that contains aspects of the required information, the SEMP should summarise these aspects and refer to the other data item.

The data item shall include a traceability matrix that defines how each specific content requirement, as contained in this DID, is addressed by sections within the data item.

* 1. Specific Content
     1. Technical Plan Summary

The SEMP shall describe the objectives, scope, constraints, and assumptions associated with the Contractor’s systems engineering program.

Risks associated with the Contractor’s systems engineering program, including risks associated with the development and implementation of the required products shall be documented in the Risk Register; however, the SEMP shall describe the risk-management strategies associated with any global risks related to the systems engineering program.

The SEMP shall define its relationship to other planning documentation, including subordinate engineering plans and key non-technical plans such as the PMP.

The SEMP shall define the scope and purpose of subordinate engineering plans, including the interrelationships between subordinate plans.

* + 1. Systems Engineering Key Activities

The SEMP shall describe the Contract technical objectives, with reference to the proposed solution and with particular emphasis on the technical products to be delivered and the extent of development required for them.

The SEMP shall identify the key engineering elements and events of the Contract, including the key events in the lifecycle of each product in the design hierarchy, the interrelationships between them, and those significant engineering events within the Contract schedule.

* + 1. Engineering Management

The SEMP shall define the engineering organisation for the Contract, including the key engineering positions and the partitioning of engineering effort between the various Contractor and Subcontractor organisations.

The SEMP shall describe how technical effort will be coordinated to meet cost, schedule and performance objectives.

The SEMP shall summarise planned personnel needs, applicable to the various phases of the Contract, by discipline and level of expertise.

* + 1. Subcontractor Management

The SEMP shall define how all work conducted by Subcontractors shall be scoped, managed and monitored to ensure that the Contract objectives are met.

The SEMP shall define how and at what stages, Subcontractor documentation will be developed, controlled and integrated into the overall Contract documentation.

The SEMP shall describe the systems engineering role in selection and control of Subcontractors.

* + 1. Contract Work Breakdown Structure

The SEMP shall describe the role of systems engineering in the development and implementation of a product-based Contract Work Breakdown Structure (CWBS) including its relationship to the specification tree.

* + 1. Systems Engineering Process

The SEMP shall define the tailored application of the Contractor’s Systems Engineering process to the activities of the Contract, including:

the major products and/or increments to be delivered;

the major outcomes to be achieved;

the major Systems Engineering tools that will be used for the Contract, and identification of requirements for Configuration Management and control of the tool data;

the integration of Software engineering activities with the systems engineering activities; and

the program and integration of the effort of specialty disciplines including reliability, maintainability and testability, survivability, Electromagnetic Environment Effects, Human Engineering, Materiel Safety, system security, Supportability and transportability.

* + 1. Engineering Documentation

The SEMP shall describe the methods for documentation and control of engineering and technical information, including expected specifications and Configuration Baselines.

The SEMP shall describe implementation, accessibility, and maintenance of the Engineering Information System.

The SEMP shall identify the critical information and its sources needed to accomplish the objectives of the systems engineering process.

* + 1. Requirements Analysis

The SEMP shall describe the methods and tools for analysis and validation of system requirements, including consideration or determination of:

missions and operational environment;

functional and performance requirements for development, manufacturing, verification, deployment, operations, support, training, and disposal; and

constraints, including specialty engineering areas.

* + 1. Logical Solution Representations

The SEMP shall describe the methods and tools used to develop Logical Solution Representations of the system behaviour and structure.

Note: As described in EIA-632, Logical Solution Representations include Functional Flow Block Diagrams, Structured Analysis models, Use Case models, etc.

The SEMP shall describe how these Logical Solution Representations are traced from the system requirements and how they trace to the proposed solution of people, products and processes.

The SEMP shall describe the role of these Logical Solution Representations in the systems engineering process, the maturity of the Logical Solution Representations at each phase and increment and the proposed interaction with the Commonwealth in validating the Logical Solution Representations.

* + 1. Synthesis

The SEMP shall describe the approach, methods, procedures, and tools to synthesise the design solution, including:

the selected strategies governing the use of Commercial-Off-The-Shelf, non-developmental items, open systems architecture and re-use technologies;

the approach to be employed to select parts and materials to meet system requirements and to manage standardisation and obsolescence;

the approach to be employed in identifying Long Lead Time Items (ie, needed for development) and resources that affect the critical path of the Contract; and

the criteria for assessing and transitioning technologies, including technologies from technology development and demonstration programs.

* + 1. Implementation and System Integration

The SEMP shall describe the approach for technology verification, process proofing, manufacturing of engineering test articles, test and evaluation, adaptation and re-use of Software.

The SEMP shall describe the approach for the integration and assembly of the system.

* + 1. Verification and Validation Planning

The SEMP shall describe the Contract Verification and Validation (V&V) strategy.

* + 1. Systems Analysis and Control

The SEMP shall describe the approach, methods, procedures, and tools to be used for systems analysis and control, including:

the approach to establish and maintain requirements traceability between systems products and design data including the use of any specific tools;

the approach for establishing, maintaining, and reporting results of Technical Performance Measures that are responsive to requirements and technical parameters identified in the Contract;

the methods to conduct trade studies, any pre-planned trade studies and necessary source data;

the expected use of any system performance models, in particular those that may be used as part of the Acceptance V&V;

a description of the system and cost effectiveness analysis effort and its role as an integral part of the systems engineering process; and

the integration of Mission System and Support System development, including the relationship between the engineering and integrated logistics support activities.

* + 1. Technical Risk Management

The SEMP shall describe the risk management program and identify any special consideration of risks as part of the engineering program (eg, prototyping and model development).

* + 1. Configuration Management

The SEMP shall describe the approach planned to establish and maintain Configuration Control of identified system products and processes.

The SEMP shall include a description of the approach planned to establish and maintain control of external and internal interfaces, including the conduct of Interface Control Working Groups (ICWGs).

* + 1. System Reviews

The SEMP shall describe the approach planned to establish and conduct engineering related System Reviews (ie, Mandated System Reviews and Internal System Reviews) necessary for the effective conduct of the engineering program.

The SEMP shall describe the objectives for each review and the relationship of each review to other engineering program activities.

* + 1. Traceability to EIA-632

The SEMP shall define, in a traceability matrix from each requirement to section(s) within the SEMP, how each requirement of EIA-632 is addressed from the perspective of the Contractor as a supplier to the Commonwealth and as an acquirer of goods and services from Subcontractors.

Where the Contractor proposes tailoring an EIA-632 requirement for the Contract, the matrix shall identify the tailoring and its justification.