DATA ITEM DESCRIPTION

1. DID NUMBER: -V5.3
2. TITLE: SUPPORT System Specification
3. DESCRIPTION and intended use

The Support System Specification (SSSPEC) defines the validated set of requirements for the Support System.

The Contractor and the Commonwealth use the SSSPEC as the basis for common understanding of the requirements for the Support System.

1. INTER-RELATIONSHIPS

The SSSPEC is developed in accordance with the Approved Integrated Support Plan (ISP).

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

System Specification (SS) for each Mission System, as defined under the Contract;

Requirements Traceability Matrix (RTM); and

Verification Cross Reference Matrix (VCRM).

The SSSPEC also inter-relates with any support-related Australian Industry Activities (AIAs), particularly any support-related Defence-Required Australian Industry Capabilities (DRAICs), identified in Attachment F.

1. Applicable Documents

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

|  |  |
| --- | --- |
| 1. Nil. |  |

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’.

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. Section 1 – General

**Identification.** This paragraph shall contain a full identification of the Materiel System to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

**System overview.** This paragraph shall briefly state the purpose of the Support System. It shall describe the general nature of the Support System; summarise the history of the Mission System development, operation, and maintenance; summarise the history of the Support System development; identify the project sponsor, acquirer, user, developer, and support agencies; and identify current and planned operating sites.

**Document overview.** This paragraph shall summarise the purpose and contents of this document and describe any security or privacy considerations associated with its use.

* + 1. Section 2 – Applicable Documents

This section shall list the number, title, revision, and date of all documents referenced in the specification. The list of Applicable Documents shall be preceded by the following clause to ensure that the scope of application of the referenced documents is clear:

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

In order to avoid confusion in the possible conflict between the requirements of the specification and the documents referenced therein, the following statement should also be included:

**Order of precedence.** In the event of a conflict between the text of this specification and the references cited herein, the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

* + 1. Section 3 – Requirements
       1. General

This section shall be divided into the following paragraphs (ie, 3.1 – 3.19) to specify the system requirements, that is, those characteristics of the Support System that are conditions for its Acceptance.

The degree of detail to be provided shall be guided by the following rule: include those characteristics of the Support System that are conditions for Acceptance; defer to design descriptions those characteristics that the acquirer is willing to leave up to the developer.

If there are no requirements in a given paragraph in the specification, the paragraph shall so state. If a given requirement fits into more than one paragraph, it may be stated once and referenced from the other paragraphs.

Each requirement shall be stated in such a way that an objective verification method can be defined for it.

Each requirement shall identify one or more verification methods to be used to determine conformance with the SSSPEC (in the VCRM).

The SSSPEC shall incorporate the requirements and constraints that apply to the Support System (eg, performance, design, interoperability, reliability, support-related AIAs, and user personnel skill levels). This requirements section shall be written so that compliance with all requirements will ensure the suitability of the Support System for its intended purpose, and non-compliance with any requirement will indicate unsuitability for the intended purpose. Only requirements that are necessary, measurable, achievable, and verifiable shall be included.

Each requirement paragraph (and subparagraphs, where applicable) shall address only one requirement topic or area. Requirements shall be worded to provide a definitive and objective basis for acceptance or rejection.

Where applicable, the SSSPEC may include constraints on the solution that identify components of the solution that that are *not* permitted or *not* acceptable.

Notes and diagrams may be included in the SSSPEC to help to provide context for requirements or SSSPEC sections. Where used, diagrams should be incorporated near to the relevant section of text. Notes should be distinct from requirements and, therefore, should not be identified with the same unique identifiers as the requirements. Notes may be sequentially numbered.

* + - 1. 3.1 – Missions

This paragraph shall describe the missions of the Mission System to the extent that such missions affect design requirements for the Support System or relevant subsets of the Support System (eg, deployed Support System Components). This description shall include operational information such as tactics, Mission System roles, Mission System deployment, operating locations, and facilities that impact upon the Support System requirements. If this information is classified, it may be contained in a separate document and referenced in this paragraph.

* + - 1. 3.2 – System Boundaries and Context

This paragraph shall provide a context diagram for the Support System that uniquely identifies each interface so that the interface can be usefully referenced in the requirements. The details of these interfaces are defined in 3.19 – System Interface Requirements. Examples of specific Support System interfaces that shall be addressed by this paragraph include:

interfaces between the Support System and the Mission System;

command, control, and communications interfaces, including those interfaces both within and between the Commonwealth and support contractors, including, where applicable, the Contractor (Support) and Subcontractors (Support);

maintenance-pipeline and supply-chain interfaces, including those interfaces between the Commonwealth and support contractors, including potential support contractors and, where applicable, the Contractor (Support) and Subcontractors (Support);

engineering, design-management and configuration-management interfaces, including those interfaces between the Commonwealth and support contractors, including, where applicable, the Contractor (Support) and Subcontractors (Support);

organisational, process, and information-system interfaces between the Support System Constituent Capabilities;

interfaces between support-related DRAICs and other elements of the Support System; and

data and information flows between the Commonwealth and support contractors, including, where applicable, the Contractor (Support) and Subcontractors (Support).

* + - 1. 3.3 – Required States and Modes

If either the Mission System or the Support System is required to operate in more than one state or mode having requirements distinct from other states or modes, this paragraph shall identify and define each state and mode. Mission System states and modes need only be included to the extent that these states and modes have implications for the Support System. Examples of states and modes include: idle, ready, active, post-use analysis, training, degraded, emergency, backup, deployed, contingency, and peacetime. The distinction between states and modes is arbitrary. A system may be described in terms of states only, modes only, states within modes, modes within states, or any other scheme that is useful.

Each state or mode definition shall support the assignment and definition of functions in the SSSPEC. These definitions should be used to identify the states and modes to be supported by the Support System or its relevant subsets. A table or other method may be used to show the correlation of states and/or modes to requirements or groups of requirements either directly in this paragraph or in an annex referenced from this paragraph. Alternatively, each requirement may be directly annotated with the applicable state / mode information.

Only states and modes that support the definition of requirements in the SSSPEC shall be defined. Where no states or modes are required, this paragraph shall so state, without the need to create artificial distinctions.

This paragraph shall define the possible transitions between states and modes in terms of the conditions causing the change in state or mode, and any actions required to move the Support System or relevant subset into the next state or mode. Applicable notation, such as state transition diagrams or similar, should be used to show the relationships between associated states and modes, transitions, and actions.

This paragraph shall state which states and modes may be concurrent and which are mutually exclusive.

* + - 1. 3.4 – Support System Capability Requirements

This paragraph shall define the capabilities of the Support System. The paragraph shall be divided into subparagraphs to itemise the requirements associated with each of the capabilities. A ‘capability’ is defined as a group of related requirements. The word ‘capability’ may be replaced with ‘function’, ‘subject’, ‘object’, or other term useful for presenting the requirements.

(System Capability). Each subparagraph shall identify a required capability for the Support System and shall itemise the system requirements associated with the capability in measurable terms. The requirements shall specify the required behaviour of the Support System and shall include applicable parameters, such as response times, throughput times, other timing constraints, sequencing, accuracy, capacities (how much/how many), priorities, continuous operation requirements, and allowable deviations based on operating conditions. Where applicable, the requirements shall also address required behaviour under unexpected, unallowed, or ‘out of bounds’ conditions, including error handling, and any provisions to be incorporated into the Support System to provide continuity of operations in the event of emergencies.

Support capabilities should be addressed in functional terms to align with the Support System Constituent Capabilities (ie, Perform Operating Support, Perform Engineering, Perform Maintenance, Perform Supply, and Perform Training). The support capabilities shall include the support functions and associated performance requirements for the Support System and relevant subsets (eg, specific Support System Components). Included as part of these support capabilities shall be such aspects as support-related DRAICs, calibration requirements, software support, and data-management requirements, as applicable to the specific Support System.

* + - 1. 3.5 – Availability

This paragraph shall specify the applicable availability requirements to define the extent to which the Support System or relevant subsets are able to perform a specified mission or function, when the mission or function is called for at an unknown (random) point in time. If quantitative requirements for both reliability and maintainability are specified, availability requirements may not be applicable, depending upon such aspects as duty cycle(s) and the specific availability, reliability and maintainability measures chosen. If not addressed elsewhere, this paragraph shall also address the required performance of the Support System to enable the availability requirements of the Mission System and of the specified subsets of the Support System to be met.

* + - 1. 3.6 – Reliability

This paragraph shall specify the applicable reliability requirements numerically (with confidence levels, if appropriate) for specified subsets of the Support System under the applicable support environments (eg, for those Support System Components that are critical to the Support System achieving its performance requirements). Initially, reliability may be stated as a goal along with a lower minimum acceptable requirement.

* + - 1. 3.7 – Maintainability

This paragraph shall specify the applicable maintainability requirements numerically (in such terms as Mean-Time-To-Repair and Maximum-Time-To-Repair or maintenance-man-hours-per-flight or maintenance-man-hours-per-operating hour) for specified subsets of the Support System under the applicable support environments (eg, for those Support System Components that are critical for the Support System achieving its performance requirements). Initially, maintainability for Support System Components may be stated as a goal along with a higher maximum acceptable requirement. If not addressed elsewhere, this paragraph shall also address the required performance of the Support System to enable the maintainability requirements of the Mission System and the specified subsets of the Support System to be met.

* + - 1. 3.8 – Deployability

This paragraph shall specify the applicable deployability requirements for the relevant subsets of the Support System (eg, Support System Components) that need to be deployed, with reference to the Mission System deployability requirements, where necessary, to provide context. For example, it should address timing requirements for preparation, set up and pull-down of deployed support capabilities under the applicable environmental conditions; packaging requirements; constraints on deployment footprint; and requirements associated with the support arrangements when deployed.

* + - 1. 3.9 – Transportability

This paragraph shall specify the applicable requirements for transportability of relevant subsets of the Support System (eg, Spares and Support System Components) to permit employment and logistic support. For example, it might specify that the equipment be designed / selected so that, with its packing for transport, each package would be no greater than \_\_\_\_ (volume units) and no more than \_\_\_\_ (length units) high, \_\_\_\_ (length units) wide, and \_\_\_\_ (length units) deep. Where the Mission System needs to be transported, it shall identify the Support System requirements to enable the Mission System transportation requirements to be met. It shall also identify all significant components of the Mission System and the Support System that need to be transported, but due to operational characteristics, will be unsuitable for normal transportation methods (eg, oversize, hazardous, or delicate items).

* + - 1. 3.10 – Environmental Conditions

This paragraph shall specify the applicable environments that each relevant subset of the Support System is expected to experience in shipment, storage, maintenance, and use. Where applicable, it shall specify whether the relevant subsets will be required to survive, withstand, or be protected against, specified environmental conditions. Subparagraphs shall be included as necessary to cover environmental conditions such as climate, shock, vibration, noise, electromagnetic conditions, noxious gases, chemical agents, biological agents, and nuclear weapons effects.

* + - 1. 3.11 – Electromagnetic Radiation

This paragraph shall specify the applicable requirements pertaining to electromagnetic radiation, including infra-red (eg, IR signature), for each relevant subset of the Support System in terms of performance, design (including grounding requirements), and interface considerations.

* + - 1. 3.12 – Architecture, Growth and Expansion

This paragraph shall specify the applicable architectural and other requirements to accommodate the need for flexibility, growth, and expansion for relevant subsets of the Support System to support anticipated areas of growth or changes in technology, threat, or mission. If necessary, the need for specific Support System Components to have spare capacity (eg, memory and timing) to support growth and expansion shall also be identified.

This paragraph shall also specify the applicable requirements for the Support System to grow and expand as the number of Materiel System elements requiring support increases as the Contract progresses, including growth and expansion requirements associated with additional Mission Systems and equipment being delivered under the Contract.

* + - 1. 3.13 – Safety

This paragraph shall specify the applicable requirements for the Support System to preclude or limit hazards to personnel and equipment. To the extent practicable, it shall cite established and recognized standards. It shall identify those safety characteristics unique to the Support System, which constrain the design due to hazards in assembly, disassembly, test, transport, storage, operation, maintenance or disposal when they are not addressed by standard industrial or service practices. It shall address ‘fail-safe’ and emergency operating restrictions, when applicable, as well as any procedural requirements pertaining to safety. Work Health and Safety considerations shall also be addressed, including the need for design registration of Support System Components that are classified as ‘registerable plant’.

This paragraph shall also specify the applicable health and safety criteria, including criteria pertaining to physical, mechanical, biological and explosive effects. These criteria shall include consideration of the toxicological effect of Hazardous Chemicals, waste and by-products; ionising and non-ionising radiation; software provisions to prevent inadvertent actions or non-actions; gas detection and warning devices; grounding of electrical systems; decontamination; explosion proofing; and mishap-mitigating factors such as crash worthiness, escape systems, and fire suppression systems.

* + - 1. 3.14 – Environmental Impact Requirements

This paragraph shall specify the applicable requirements to preclude or limit hazards to the physical environment, including the use of Hazardous Chemicals, Ozone Depleting Substances and Synthetic Greenhouse Gases, and management of hazardous waste and environmental pollutants in the physical design of the Support System and during its employment. This paragraph may also specify requirements or preferences for energy / fuel efficiency, where different to the requirements for deployability.

This paragraph shall also specify requirements for recycled, recovered, or preference for environmentally-sustainable materials to be used, provided that the material meets the operational and support requirements.

* + - 1. 3.15 – Useability and Human Factors

This paragraph shall specify the applicable useability and human-factors requirements for the relevant subsets of the Support System, including any special or unique requirements (eg, constraints on allocation of functions to personnel, interactions of communications, and interactions of personnel with equipment). Included shall be those specified areas, stations, or equipments that require concentrated human-engineering attention due to the sensitivity of the operation or criticality of the task, particularly those areas where the effects of human error would be particularly serious. These requirements shall include, as applicable, considerations for:

anthropometric factors;

human sensory and information-processing capabilities and limitations;

foreseeable human errors under both normal and extreme conditions (especially for input, display, control, maintenance and management of critical information and systems); and

physiological factors for the operational and support environments.

* + - 1. 3.16 – Security and Privacy

This paragraph shall specify the applicable security / privacy requirements that are basic to the design with respect to the operational and support environments for both the Mission System and relevant subsets of the Support System, including in relation to physical security, Emanation Security (EMSEC), Information and Communications Technology (ICT) security, and cyber security. Mission System security details need only be included to the extent that these details have implications for the relevant subsets of the Support System. Included shall be requirements associated with shipment, storage, maintenance, use, and disposal.

As applicable, these requirements shall address:

the security and / or privacy environment in which the relevant subsets of the Support System will be employed (for both operations and support);

any EMSEC/TEMPEST considerations;

the classification of information to be handled by relevant subsets of the Support System;

the security threats relevant to the operational and support environments;

the type and degree of security or privacy to be provided;

the security / privacy risks the subsets are required to withstand;

the security / privacy policy that is to be met;

the security / privacy accountability the subsets are to provide; and

the criteria to be met for security / privacy Certification, Accreditation and/or declarations of Cyberworthiness.

* + - 1. 3.17 – Adaptation Requirements

This paragraph shall specify the applicable requirements for adaptation for relevant subsets of the Support System. If not addressed elsewhere, this paragraph shall also include the Support System requirements for necessary reconfiguration on changes of Mission System role.

This paragraph shall specify the applicable requirements concerning installation-dependent data that the Support System is required to provide to the Mission System or to relevant subsets of the Support System (such as site-dependent latitude and longitude or mapping, charting and geodesy support) and operational and support parameters that the Support System is required to use that may vary according to operational and support needs (such as peacetime versus wartime support requirements).

* + - 1. 3.18 – Design and Implementation Constraints

This paragraph shall specify the applicable requirements that constrain the design and implementation of relevant subsets of the Support System. This paragraph may be divided into subparagraphs to itemise the constraints associated with each of the Support System Constituent Capabilities. Specific examples of constraints that shall be addressed include constraints imposed on the design of relevant subsets of the Support System by:

use of nameplates, design registration marks and compliance plates, part markings, serial and lot number marking, and other identifying markings;

use of special markings (eg, for item unique identification in accordance with an applicable standard, as listed in DEFLOGMAN Part 2, Volume 5) for function or identification coding and the use of stamped or imprinted information (eg, standard alloy designators or scannable bar codes) on the system;

personnel factors, such as:

limitations on the availability of operator, maintenance, and support personnel; and

the classifications, skill levels, and duty cycles of personnel involved in the operation, maintenance, and support of the Mission System and relevant subsets of the Support System;

requirements for standardisation and interoperability, including the criteria for determining when standardisation and interoperability should be pursued;

maintenance factors, such as levels of maintenance, maintenance and repair cycles, repair versus replacement criteria, and existing maintenance-related information-management systems;

supply factors, such as supply-chain constraints, supply chain security, and existing supply-related information-management systems;

transportation factors, such as modes, type, quantity to be transported, destinations, transportation times, etc;

existing facilities and facility equipment;

training factors, such as restrictions on the type of training to be used, length of training time, and training locations;

the remaining useful life of Support System Components after delivery to the Commonwealth;

power availability and limitations at each of the operating locations, including when the Mission System is deployed;

the availability of S&TE and Spares at each of the operating locations, including when the Mission System is deployed;

the use of Government Furnished Material (GFM);

the use of standard or military components;

the use of a particular design or implementation standards;

the use of particular data or Technical Data standards; and

other elements of the existing Commonwealth, Contractor, or Subcontractor support environments.

* + - 1. 3.19 – System Interface Requirements

This paragraph shall define the applicable interface requirements associated with each of the interfaces for the Support System defined in paragraph 3.2 – System Boundaries and Context.

The system response to any interface events should be addressed under paragraph 3.4 – Support System Capability Requirements, rather than in this paragraph.

Where the SSSPEC needs to elaborate on an internal interface as part of a constraint on the design of the Support System, it should also be included here.

The definition of each interface requirement shall include:

the designation of the interfacing entities (systems, configuration items, users, etc.) by name, number, version, and documentation references;

a brief description of each interfacing entity (one or more interface diagrams may be provided to depict each interface);

the identification of existing items that impose interface requirements on interfacing entities; and

the identification of those items being developed or modified and, therefore, have interface requirements imposed on them.

Applicable documentation, such as an interface control document, shall be referenced for each interface as appropriate.

Where the Support System developer is to define the detail of the interface, this paragraph shall so state, and provide relevant requirements relating to the function of the interface and any constraints on its implementation.

Where the Support System developer must conform to an existing interface, all necessary details of the interface to progress the development should be contained or referenced within this paragraph.

Where the Support System developer must conform to an interface which is still in development, but will mature in a relevant timeframe, this paragraph should so state. The relevant milestone at which the interface is expected to be defined should be included as a note against the applicable interface requirements.

Interface requirements shall include the following, as applicable, presented in any order suited to the requirements:

priority that the Support System must assign the interface;

physical location;

physical medium;

communication medium and communication protocols;

type of interface (such as real-time data transfer, storage-and-retrieval of data, etc);

required data that the Support System, as applicable, must provide, store, send, access, receive, etc;

capacity constraints of the interface (such as physical space, bandwidth, flow rate, etc);

security and privacy considerations;

sources (setting/sending entities) and recipients (using/receiving entities);

other required characteristics, such as physical compatibility of the interfacing entities (dimensions, tolerances, loads, plug compatibility, etc.), voltages, etc; and

the procedural and mechanical aspects of the interface.

* + 1. Section 4 – Precedence and Criticality of Requirements

Where applicable, this section shall specify the order of precedence, criticality, or assigned weights that indicate the relative importance of the requirements in the SSSPEC. Examples include identifying those requirements deemed critical to safety, to security, or to privacy for purposes of singling them out for special treatment. If all requirements have equal weight, this paragraph shall so state. The precedence, criticality, or assigned weight should be directly annotated against each requirement in Section 3, and this section should indicate how these factors are to be interpreted.

* + 1. Section 5 – Verification

Verification methods to determine that the Support System to be offered for Acceptance conforms to the SSSPEC shall be specified in the VCRM developed and delivered pursuant to the Verification and Validation clause of the Statement Of Work (SOW).

* + - 1. Section 6 – Requirements Traceability

Requirements traceability shall be provided in the Requirements Traceability Matrix (RTM) developed and delivered pursuant to the Systems Engineering clause of the SOW. In addition to the traceability requirements specified in that clause of the SOW, traceability shall also be provided from each requirement of the SSSPEC to the SOW and to the Contract (Support) (if one exists), with rationale for any modifications.

* + - 1. Section 7 – Notes

This section shall contain any general information that aids in understanding this document (eg, background information, glossary, and rationale). This section shall contain an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.