Deep Space Mission System

Standards and Guidelines for Service and System Design (SSD) Reviews

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Section 1
Introduction

1.1 PURPOSE AND APPLICABILITY OF THIS DOCUMENT

The purpose of this document is to define the requirements for DSMS Service System Design (SSD) reviews, and to assist the review organizers (i.e., responsible individuals) and participants in planning, organizing, and conducting those reviews. The System/Service Requirements and Design Review (SRDR) and the Preliminary Definition and Cost Review (PDCR) are the specific review types that fall within the SSD process. Figure 1-1 depicts the context of these reviews as a part of the overall DSMS review cycle.

The specific reviews to be conducted are established by the DSMS Systems Engineering Manager, or in the schedules for system engineering tasks. The DSMS Systems Engineering Manager may choose to combine reviews, as appropriate. Formal reviews are usually held for:

- major new services,
- new internal capabilities,
- changes in architecture, or
- addition of major assets.

Peer reviews are encouraged (and sometimes required by the entry criteria) for materials (such as draft documents) that support a formal review, and for other requirements/design documents produced within the SSD process.

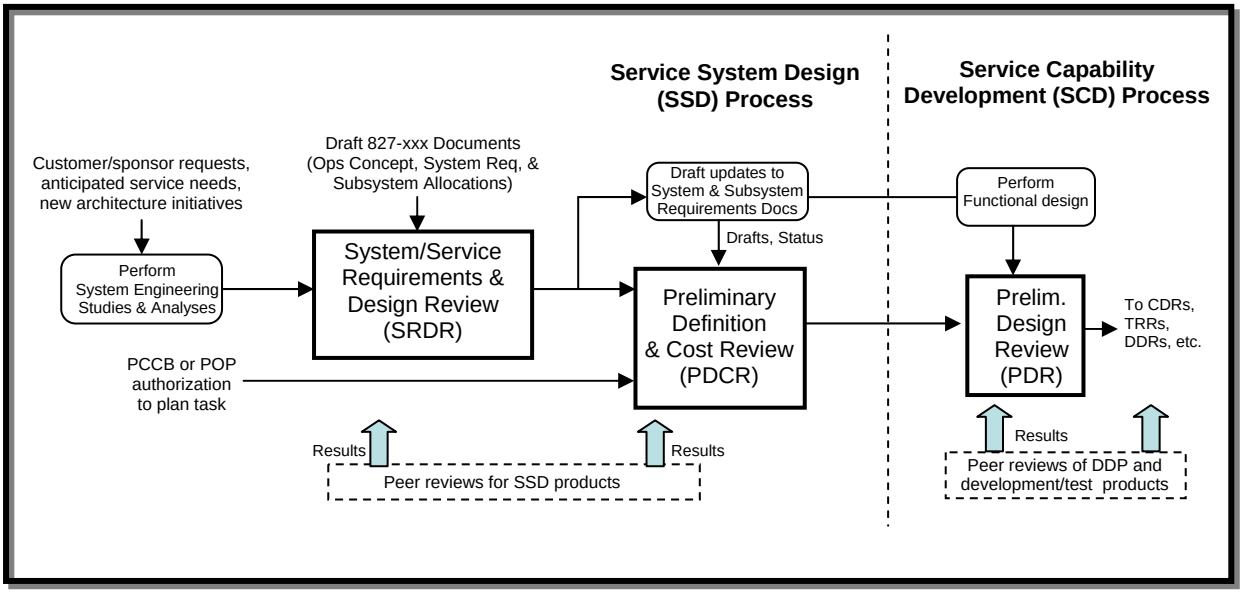

Figure 1-1: Context for SSD Reviews

1.2 EFFECTIVITY AND REVISION CONTROL

This document is effective upon issuance. It is released and updated in accordance with the DSMS 810-001 standard and supporting procedures. Requests for changes or clarifications should be addressed in writing to the document owner.

1.3 NOTATION AND TERMINOLOGY

Abbreviations and acronyms used in this document are defined with the first textual use of the term. Appendix A contains a list of abbreviations and acronyms used in this document. Within this document, the terms "**shall**" and "**must**" denote a requirement; **"**should**"** is used to denote a strong recommendation; and **"**may**"** is used to denote an option.

1.4 APPLICABLE DOCUMENTS

1.4.1 Controlling Documents

1. DSMS 812-010, *Service System Design (SSD) Policies*

1.4.2 References

For referenced documents, refer to most current version.

1. DSMS 810-001, *DSMS Documentation Structure, Standards, and Definitions*
2. DSMS 810-050, *DSMS Waiver Policy and Procedure*
3. DSMS 812-002, *Service System Design (SSD) Document Review Procedure*
4. DSMS 812-011, *Service System Design (SSD) Process Definition*
5. DSMS 813-101, *Standards and Guidelines for Service Capability Development (SCD) Reviews*
6. DSMS 814-101, *Standards and Guidelines for DSMS Operations Reviews*
7. DSMS 820-061, *DSMS Subsystem, Configuration Item, and Responsibility Definitions*

Referenced websites/ links:

1. DSMS Review Planning and Reporting Tool: http://cmsas.jpl.nasa.gov/rprt/
2. DSN Action Item Tracking Tool: <<tbd>>
3. DSMS Review Controlled Records in ind-lib (by review type): https://ind-lib.jpl.nasa.gov/docushare/dsweb/View/Collection-1938
4. DSMS Review Controlled Records Instructions and Naming Conventions: https://ind-lib.jpl.nasa.gov/docushare/dsweb/View/Collection-2008 (see Appendix C)

Section 2
General SSD Review Requirements & Guidelines

2.1 GENERAL REVIEW REQUIREMENTS

The requirements for reviews include:

- Board membership
- Timing and entry criteria
- Success criteria
- Certain agenda topics

All review action items (AIs) **must** be entered into the DSMS AI Tracking System, and their status maintained. The status of open action items from SSD reviews **must** be presented at subsequent reviews relevant to the service/system.

Any deviation from the requirements must be approved using the DSMS Waiver System, or written approval of the SSD process owner.

Note that for schedules and status reports, a review cannot be designated as completed until the Convening Authority accepts the board report and its associated recommendations.

2.2 GENERAL REVIEW PROCEDURES AND RESPONSIBILITIES

The general flow of activities for SSD reviews is depicted in Figure 2-1. A summary of the key participants and their responsibilities follows:

a) The *Convening Authority* is the person ultimately responsible for determining the outcome of the review, based on recommendations from the board. The Convening Authority:
   - approves the selection of the chair and board
   - is the final disposition authority for the review results
   - concurs with the close-outs of any action items generated from the review.

b) The *Responsible Individual* is responsible for the organization, planning, and preparations for the review. The Responsible Individual:
   - works with the convening authority to select the review board members, and ensures their availability before the announcement is sent out
   - prepares and issues the announcement
   - is responsible for <u>all</u> logistics (including the meeting room, any refreshments, any needed teleconference or projection equipment, meet-me lines, and Request For Action (RFA) forms)
   - distributes the review materials
   - confirms the attendance of all review board members (or designated alternates) prior to the review meeting
   - ensures that all action items are entered into the DSMS AI Tracking System
   - performs action item follow-up activities, including status reporting, and ensuring that the convening authority concurs with close-outs

c) The *Review Board Chair* is responsible for moderating the conduct of the review, and for producing the review report that includes all findings, recommendations, and action item assignments.

d) The *Review Board Members* are responsible for reviewing the materials prior to the review, actively participating at the review, and submitting findings/comments for the review report.

e) The *Presenters* provide materials for the review, and make the associated presentations.

The review board should be both knowledgeable and have some degree of independence (particularly the review board chair). It should contain a mix of independent and involved members. The convening authority and the responsible individual select the specific board members, consistent with required board membership for each review type.

The Responsible Individual should establish the review date and confirm the availability of board members prior to sending the review announcement. Any planned reviews must also be entered into the DSMS Review Scheduling and Support Tool.

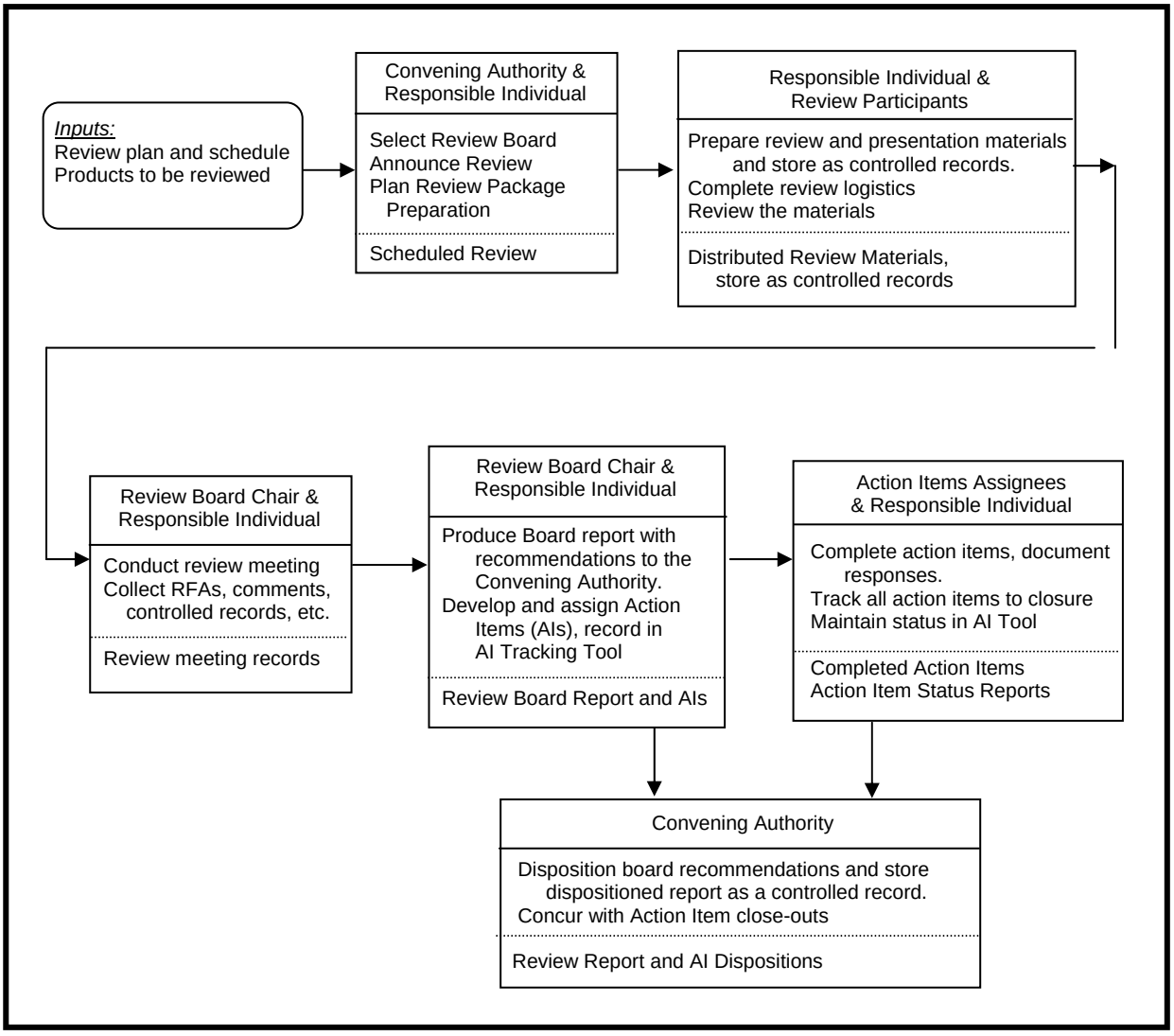

Figure 2-1: General Activities Flow for SSD Reviews

This section addresses formal design reviews; for details on peer reviews, see Section 5.

2.3 REVIEW MATERIALS AND SUPPORTING DOCUMENTATION

Review presentation materials are the core package for most reviews. In addition, for each review type, there is a list of supporting documentation that **must** be available. Copies of all the materials should be accessible by the board prior to the review (preferably via ind-lib, see Appendix C).

All review materials **must** be under change control once they have been distributed to the review board/team. Any new or updated materials that are distributed after the initial review package **must** be annotated and clearly identified. The Review Board Chair may postpone a review if the extent of last minute changes does not allow for sufficient preparation by the board members.

Review materials **must** be distributed before the review meeting (to allow for board time evaluation prior to the meeting). Materials should be distributed at least one week before the review. These materials form part of the review records, and **must** be stored in the appropriate review collection in https://ind-lib.jpl.nasa.gov/docushare/dsweb/View/Collection-1938. They should be submitted to the 'Document Submissions' area in ind-lib. See Appendix C for the naming convention of review record files.

2.4 REVIEW OUTPUT

A review report **shall** be produced for all reviews, and must be entered into the DSMS Review tool. The report includes

- summary information about the review meeting.
- key comments from the Board members.
- the Board findings, recommendations, and readiness to proceed to the next phase of development or to implementation.
- the list of Action Items (AIs) resulting from the review, which should be issued to the assignees within 2 (two) working days of the review. The Board Chair (with support from the Responsible Individual) derives the action items from the set of RFAs submitted during the review.

The draft review board report **must** be submitted to the Convening Authority (CA) within 8 (eight) working days of the review; the CA **must** respond to that report within two (2) working days. The CA can accept the 'recommended disposition' without change, or request modifications to the recommendation and action items. The finalized review report **must** include the final disposition and any notes from the Convening Authority, and be submitted as a DSMS controlled record using the naming convention specified the controlled records collection under instruction and naming conventions at: https://ind-lib.jpl.nasa.gov/docushare/dsweb/View/Collection-2008 (see Appendix C).

The distribution for the complete review report (including AIs and, if desired, the RFAs) should include:

- Convening Authority
- SSD Process Owner
- Responsible Individual
- Board Members
- Review Attendees

2.5 REVIEW FOLLOW-UP ACTIONS

The Action Item assignments are made by the Board Chair. The Action Items (AIs) are included in the board report; the Responsible Individual (RI) ensures that the AIs are entered into the DSMS Action Item Tracking System. The assignees **must** complete the action items and provide a documented response.

The RI is responsible for monitoring and reporting on the status of all action items through closure, and for ensuring that the Convening Authority concurs with the closures. (Note: the Board Chair has no follow-up responsibility after the board report is issued). Status of open AIs is presented at the appropriate, subsequent reviews; status / progress of open AIs may be required at progress reviews (such as Monthly Management Reviews (MMRs)).

If backup materials are generated that support the closure of a review Action Item, these materials **must** be submitted by the Responsible Individual as controlled records associated with the review in https://ind-lib.jpl.nasa.gov/docushare/dsweb/View/Collection-1938 using the prescribed file naming convention (see Appendix C).

Section 4
Preliminary Definition and Cost Review (PDCR)

4.1 PURPOSE/OBJECTIVES

The Preliminary Definition and Cost Review (PDCR) focuses on the readiness for a proposed task to be funded, formalized, and begin the preliminary design phase activities. The review process evaluates the maturity of the service/system requirements and the associated system design, the adequacy of the preliminary planning for the proposed task, and the validity of the cost/schedule estimates for the implementation.

4.2 TIMING AND ENTRY CRITERIA

This review **shall** be held

- before the implementation of new major DSMS capabilities or internal architectural modifications
- before the establishment of a new task's funding profile in the DSMS budget.

The following **shall** have been completed prior to the review:

- Applicable service requirements (821s) and system concept and design (827s) documents have been released.
- Drafts of new or modified subsystem requirements documents (834s) that relate to this task have been peer reviewed
- A listing of task requirements (new or modified) is available.
- New or modified Interface Agreements (820-013s, 820-016s, and 820-017s) are at Level 1 (i.e., identified).
- Cost estimates for the task, including assumptions and uncertainty are available.
- A proposed implementation approach and schedule is available.

4.3 SUCCESS CRITERIA

The success of the review **shall** be evaluated against the following criteria:

a) The applicable subsystem requirements (and any associated standards) has been adequately reviewed, and is sufficiently mature for implementation planning; no major requirements issues are outstanding.

b) The scope of the deliverables for the new capability is adequately understood.

c) Technical, schedule, and cost data are consistent; the cost and schedule estimates have a credible basis.

d) Risks, dependencies, and potential problem areas have been identified, are understood, and are accounted for in the implementation approach.

e) The proposed technical implementation approach is consistent with DSMS standards, such as SCD and supporting standard practices.

f) Personnel resources are available for the task to enter the implementation (design and development) phase.

4.4 KEY PARTICIPANTS

Key Participants **must** be assigned as designated below. If agreed to by the Convening Authority, an alternate may be named by the key participant. The Board Membership listed is the minimal set; additional members may be added.

Convening Authority:	DSMS Program Manager
Responsible Individual:	Responsible Office 92x Operations and Engineering Manager (OEM)
Review Board Chair:	System Engineering Office Manager
Review Board Members:	Development & Operations Chief Engineer (DOCE) DSN and/or AMMOS Chief System Engineer Division Rep (for lead implementation Division) Operations and/or User Representative(s) (such as, Office 921 rep) Technical/Management Rep(s), independent of the SSD process DSMS Process Engineering Manager DSMS Chief Software Architect(for software-intensive implementations)

4.5 REVIEW MATERIALS AND AGENDA

Materials that should be available for the review include:

- Applicable functional and performance requirements (e.g., 821s)
- System concept, system-level design, and other supporting documents (e.g., 827s, 828s)
- Draft, reviewed Subsystem Functional Requirements Documents (FRDs) (i.e., 834s); for each subsystem that is involved in the implementation
- A listing of Task Requirements to be implemented by the task
- The Task Proposal

The standard Review Agenda is listed below (**bold** indicates <u>required</u> items). Typical presenters are indicated for each review topic.

1. **Introduction (by Chair)**
   Scope of review, success criteria, and review process (use of RFAs, etc.)
   Introduction of the board members and presenters

2. **Status of Requirements and System Design (by SEs)**
   Status of Action Items (AIs) from relevant SRDR(s)
   Summary of any system-level requirements or design changes since the SRDR(s), and the rationale for the changes
   Description of any new system-level standards
   Summary and status of peer reviews on relevant subsystem requirements (834s)
   Summary of customer and user participation in the requirements and design activities.

3. **Implementation Proposal (by OEM or designee)**
   - **Task objectives**
   - **Functional block diagram** (showing new, modified, and unmodified products)
   - **Description of interfaces affected,** impact on Operations modes, planning, preparation etc.
   - **Technical feasibility** (include description of any new technology and/or prototype results)
   - **Inheritance including amount, risk, and effort for legacy code,**
   - **Plan for use of multi-use components and off-the-shelf products; make/buy assessments**
   - **Technical, schedule, and cost constraints; Task dependencies; Downtimes required**
   - **Cost estimates, including basis of estimate, assumptions, description of methodology used, quantification of uncertainty, funding margins based on risk and, and reserves**
   - **Proposed task organization, and description of management approach**
   - **Status of DDP or task plan preparation, including completeness and the plan for release**
   - **Expected delivery sequence and testing approach**
   - **Risk identification and assessment**
   - **Commitment to the proposal**