Space Systems MOSA Interface Standards Alliance

Product Development Process

Revision Log

Each release of this document supersedes all previously released versions. The change history log lists all significant changes made to the document since its initial release.

Revision Date	Summary of Changes
August 2022	V1 of Bylaws ratified by Alliance Board
September 2022	V1.1 Updated to reflect alias name
December 2022	V1.2: Streamlined and clarified the approval process for Products and Revisions thereof
September 2023	V1.3: Updated to conform with updates made in the Bylaws
June 2024	V1.4: Updated to include minor additional details and a process flow diagram for visual clarity
September 2024	V1.5: Updated to include mandatory initial steps for all committees
December 2024	V1.5.1: Updated the "Space Systems MOSA Interface Standards Alliance Committee Charter" section to include the finalization, and formal concurrence on the Committee Charter with a Preliminary MVP delivery schedule, using the MOSA Alliance Committee Charter template.
September 2025	V1.6: Removed IEEE in all instances it appeared. Added definitions of MOSA Alliance products. Made minor grammatical corrections for accuracy or clarity. Renamed from Standard Development Process to Product Development Process. Made flow diagram corrections for more accurate synergy with the text. Added a new section, the Committee Operating Procedure section.

About this Document

This document is intended to provide information relating to the development and use of voluntary industry consensus products (i.e., Standards, Specifications, and Guides) developed by the Space Systems Command Modular Open System Approach (MOSA) Interface Standards Alliance, alias Space Systems MOSA Interface Standards Alliance (hereinafter "MOSA Alliance"). Alliance products are developed in collaboration with small but effective groups of industry subject matter experts (SMEs). This process brings together volunteers from government, suppliers, and manufacturers representing diverse viewpoints to achieve the comprehensive and holistic knowledgebase needed to develop high-quality industry consensus products at an accelerated pace.

The Alliance establishes rules to promote fairness in development of consensus. ISTO serves as a neutral facilitator to oversee administration of the process and adherence to Alliance Bylaws and this document describes the Product Development Process.

This Alliance does not independently test, evaluate, or validate the accuracy of any information contained in the Alliance products.

Product Disclaimer

The Alliance disclaims any liability for any damages of any nature whatsoever, whether special, direct or indirect, consequential or compensatory, directly or indirectly resulting from the use of, or reliance on these Alliance products. The Alliance also makes no guarantee or warranty as to the completeness or accuracy of any information published within the products.

In issuing voluntary industry consensus products, the Alliance is not undertaking to render professional or other services on behalf of any entity or person. Anyone using these documents should rely on his/her independent judgment or, as appropriate, seek the advice of competent professionals in the exercise of any given MOSA Alliance product implementation.

MOSA Alliance Products

The MOSA Alliance will develop space system interoperability Standards, Specifications, and Guides, which this Alliance defines as follows:

Table 1. Product Glossary

Term	Definition
Standard [1]	a. The term "standard," or "technical standard," (hereinafter "standard") as cited in the "National Technology Transfer and Advancement Act of 1995," as amended (hereinafter "the NTTAA"), includes all of the following: (i) common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods, and related management systems practices; (ii) the definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance,

	designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; formats for information and communication exchange; or descriptions of fit and measurements of size or strength; and (iii) terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process, or production method. b. The term "standard" does not include the following: (i) professional standards of personal conduct; or (ii) institutional codes of ethics.
Government-unique Standard [1]	A "Government-unique standard" is a standard developed by and for use by the Federal government in its regulations, procurements, or other program areas specifically for government use (i.e., it is not generally used by the private sector unless required by regulation, procurement, or program participation). The standard was not developed as a voluntary consensus standard as described in Sections 2d and 2e.
Voluntary Consensus Standard [1]	A "Voluntary consensus standard" is a type of standard developed or adopted by voluntary consensus standards bodies, through the use of a voluntary consensus products development process as described in Section 2e. These bodies often have intellectual property rights (IPR) policies that include provisions requiring that owners of relevant patented technology incorporated into a standard make that intellectual property available to implementers of the standard on nondiscriminatory and royalty-free or reasonable royalty terms (and to bind subsequent owners of standards essential patents to the same terms). In order to qualify as a "voluntary consensus standard" for the purposes of this Circular, a standard that includes patented technology needs to be governed by such policies, which should be easily accessible, set out clear rules governing the disclosure and licensing of the relevant intellectual property, and take into account the interests of all stakeholders, including the IPR holders and those seeking to implement the standard.
Interface Standard	[A type of] standard that specifies the physical, functional, or […] operational environment interface characteristics of systems, subsystems, equipment, assemblies, components, items, or parts to permit interchangeability, interconnection, interoperability, compatibility, or communications. **[2]**
Specification	A document prepared to support acquisition that describes the essential technical requirements for purchased materiel and the criteria for determining whether those requirements are met. **[3]** Other characteristics of a specification:

	• An information item that identifies, in a complete, precise, verifiable manner, the requirements, design, behavior, or other expected characteristics of a system, service, or process. **[4]** • A detailed, exact statement of particulars; especially a statement prescribing materials, dimensions, and quality of work [workmanship] for something to be built, installed, or manufactured. **[5]**
Interface Specification (End Product Interface Specification)	The end-product interface specifications contain the detailed build-to and code-to requirements for the behavior and characteristics of all logical and physical interfaces that the end product has with external elements, including the human-system interfaces. **[6]**
Guide (Guidance/Guidebook/Guidelines)	[A document that provides] technical information that supports present or future standards or recommended practices and provides instruction for their application. **[7]**

References:

[1] OMB Circular A-119: Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities, effective January 27, 2016.

[2] MIL-STD-962D with Change 2, "DoD Defense Standards Format and Content," January 9, 2014.

[3] DoD Manual (DoDM) 4120.24 incorporating Change 2, "Defense Standardization Program (DSP) Procedures," October 15, 2018.

[4] ISO/IEC/IEEE 15289:2019 – Systems and software engineering – Content of life-cycle information items (documentation).

[5] American Heritage Dictionary Entry: specification (ahdictionary.com)

[6] NASA SP-2016-6105, Rev. 2, "NASA Systems Engineering Handbook."

[7] Standards | AIAA

MOSA Alliance Product Development Process

Note 1: MOSA Alliance products are Standards, Specifications, and Guides, as defined in Table 1 above.

Note 2: See Figure 1 below for a flow diagram of the steps below.

1. A need for a new or revised MOSA Alliance product is identified and the proposed product is submitted via a Standards Change Request (SCR) form which is available electronically on the Alliance web page [https://www.interoperabilityalliance.org].
2. The ISTO Program Office will initially review the SCR proposer's email address for legitimacy (e.g., rejecting email addresses like MickeyMouse@yahoo.com or GobbeldyGook@gmail.com) as well as the

completeness and appropriateness of the information provided in the SCR form (i.e., no nonsense or unintelligible type of content, or profanity-laced sentences).

   a. If the SCR proposer's email address appears to be legitimate and the SCR content is intelligible, it is forwarded to the Space Systems Command SSC/BZEI Program Office.
   b. If the email address does not appear to be legitimate or the content is unintelligible, the ISTO Program Office will either reject the SCR as spam or if deemed appropriate (e.g., the SCR form was incomplete), inform the proposer that additional information is needed.

3. The SSC/BZEI Program Office will cursorily review the technical merit of the SCR to determine if the proposal satisfies a need of the Alliance and is not duplicative of other efforts.
   a. If the SCR appears to have technical merit, the proposer will be provided an Entry Criteria Questionnaire.

      NOTE: The purpose of the questionnaire is to elicit additional information from the proposer that could help the Stakeholder Advisory Council (SAC) more thoroughly determine the technical merit of the proposal and appropriateness for possible application to, in alphabetical order, NASA, NRO, and SSC (hereafter referred to as the Big Three) space systems.

   b. If the SCR does not appear to have technical merit the proposer will be informed and given an opportunity to clarify and resubmit their SCR.
4. The Proposer provides the completed or revised Entry Criteria Questionnaire to the SSC/BZEI.
5. SSC/BZEI sends the completed questionnaire to appropriate subject matter experts (SMEs) within the Government team (i.e., FFRDC, UARC, SETA engineers) for a thorough technical assessment.
6. The SME peer review team reviews and comments upon the completed questionnaire.
   a. If there are concerns or issues, the SME peer review team may need to circle back with the Proposer for clarifications on the Entry Criteria Questionnaire.
7. The completed Entry Criteria Questionnaire, technical assessment, and comment resolution matrix (CRM) documenting the Government SME comments and dispositions are sent to the SAC. The SAC will be given two weeks to review and vote on the proposed SCR.
   a. If the SAC has comments on the technical merits of the proposal, the comments will be dispositioned by the Government SMEs who may need to contact the Proposer for additional clarifications.
   b. The Government team SMEs will have two weeks to disposition the SAC comments.
   c. The final CRM is delivered back to the SAC who will have another two weeks to review and vote on approval of the SCR.
   d. If the SAC does not concur on the proposed new or revised product, the process stops, and the proposer is notified.
8. If consensus by the SAC is achieved, the MOSA Alliance roadmap will be revised to include the proposed product or revision, and an associated summary chart will be prepared to take to the Executive Board.
9. The Executive Board will review and vote on acceptance of the summary recommendation and updated Alliance roadmap.
   a. If the Executive Board approves, by consensus, the revised roadmap, a new Committee will be instantiated.

   b. If the Executive Board does not approve, by consensus, the revised roadmap, the process stops, and the proposer is notified.
10. To stand up a Committee, the SAC or their Government support team will identify the Government team SME Committee Chairs, Technical Advisors, and Committee Managers.
11. The Committee Chair will develop an initial draft of the Committee Charter with a clearly stated objective for the Committee, based on the approved Entry Criteria Questionnaire, and an initial Preliminary schedule of anticipated Committee minimum viable product (MVP) deliveries.
12. The Committee Stand-up package with the Stand-up checklist, Draft Committee Charter, and Preliminary Schedule are delivered to the SAC for formal approval to kick-off the committee.
    a. The SAC must approve the stated objective for the Committee and Preliminary Schedule because it is the Government's responsibility to set the objective (and need date, if appropriate) for the product or revision and it is the committee's responsibility to then determine the scope and content of the product or revision.
    b. If the SAC does not approve the Committee kick-off, discussion(s) with the Committee Chair will be coordinated as often as needed to resolve the SAC concerns to their satisfaction.
13. When the SAC approves the Committee Charter and Schedule, the Committee Manager will coordinate the kick-off and all subsequent Committee meetings.
14. The Committee will develop/revise the product via voluntary consensus in accordance with the Alliance bylaws.
15. When the Committee determines via consensus that they have met their exit criteria and/or dispositioned all comments, the final draft package is sent to the SAC. The final draft package consists of the final draft of the product, a summary chart explaining their product, a list of major issues, if any, their resolution, and lessons learned, if any.
    a. A SAC approval summary chart template is available in Causeway.
16. The SAC reviews the final draft package for approval to release/publish it as a new ISTO MOSA Alliance product.
    a. Optionally, the Committee Chair is encouraged to additionally make the final draft available to member companies who did not participate in the committee but who have the appropriate SME expertise to provide meaningful comments.
    b. If the SAC approves the final draft, the product or revision is added to the MOSA Alliance Product Library (MAPL).
        i. All SAC-approved MOSA Alliance products are archived and configuration-managed in MAPL.
    c. If the SAC does not approve the final draft, it is sent back to the Committee Chair, who must work with the Committee to ensure all review comments from the SAC (and optionally from relevant member company SMEs) are dispositioned.
    d. This process will loop until the SAC is satisfied with the dispositions.
17. There may be some cases in which a Funding Organization (i.e., a program office, other agency, or commercial provider) may fund the validation of the product or revision. In those instances, the appropriate prototyping development and testing will be performed.
18. A Prototype Test Report will be generated.

   a. If requirement compliance issues were identified during the test process, the SAC will reconvene the previous Committee, or a new one, to resolve/correct the issues based on the findings of the prototype development and test effort.
   b. If no issues are found, the product is considered validated.

19. The Validated product is marked as validated, with the validation date, on the cover page of the product.
   a. Upon approval by the SAC, the Validated product (and associated test report) are placed under configuration management in the MAPL.

*Notes

1) Any and all Revisions of the Alliance products (e.g., Standards, Specifications, Guides, Guidebooks, Tailoring Guides) will be at the discretion of the Stakeholder Advisory Council.
2) Controlled Unclassified Information (CUI) and Classified material will be maintained in a secure, government database.
3) Alliance member access to any CUI or Classified Alliance products and materials is subject to, and determined by, US Government security policies and regulations.

Committee Operating Procedure

Note: See Figure 2 below for a flow diagram of the steps below.

Committee Objective: Set by the Stakeholder Advisory Council

Development Schedule: Minimum Viable Product (MVP) deliveries in six-month sprints.

- An MVP is a portion of a standard that can be put on contract.
- When all planned MVPs have been delivered, the standard is complete.
- Each subsequent, additional MVP cannot supersede a previous MVP.

Committee Responsibility:

- Determine, by consensus, the scope and content of the product(s) that meet the Committee Objective
- Prioritize the number and order of MVP deliveries.
- Define their definition of "Done" (the criteria by which the committee will determine their product is ready for release as a new ISTO MOSA Alliance product)

Standard Operating Procedure:

Definition: A standard operating procedure (SOP) is a set of step-by-step instructions for performing a routine activity. SOPs should be followed the same way every time to ensure consistency and objectivity in its application. [Derived from What Is Standard Operating Procedure (SOP)? | Writing Guide and Definition from TechTarget]

All ISTO Space Systems MOSA Interface Standards Alliance committees shall follow the following SOP:

1. Finalize the DRAFT Committee Charter with a more clearly defined "Objective" section. The Committee Charter must include a best-estimate on the number of MVPs to be delivered on a six-

month cadence, based on the objective(s), and the expected scope of content for each MVP. This initial Committee Charter must be formally approved by the committee via a ballot in Causeway.

2. Determine whether there are any existing products that can be applicable to the Committee's purpose/objective.
3. If applicable existing product(s) are identified, the Committee will determine whether the product(s) should be used as-is or tailored to enable interoperability across the Big Three (NASA, NRO, SSC) Space Systems.
    a. If the consensus is to use the existing products) as-is, the Committee will send the proposal, with rationale to the Stakeholder Advisory Council for approval.
    b. If the consensus is to tailor the existing product(s), the committee will determine the scope and content of the tailoring guide.
        i. Tailoring is a process by which individual requirements of a product are evaluated and made applicable for a specific project or purpose. [Derived from What is Tailoring of Standards | IGI Global (igi-global.com)]
4. If there are no suitable existing products, the Committee will begin work on the development of a new product.
    a. The committee will develop one or more use cases on which to base the requirements within the new product, and to determine the number and schedule of the Committee's minimum viable product (MVP) deliveries.
        i. Each MVP shall have a six-month Sprint period.
        ii. Each subsequent MVP shall not supersede the previous MVP deliveries.
        iii. The delivery of the final MVP completes the whole product
    b. NOTE: The committee may develop one or more use cases to formulate the down-select criteria for existing applicable products.

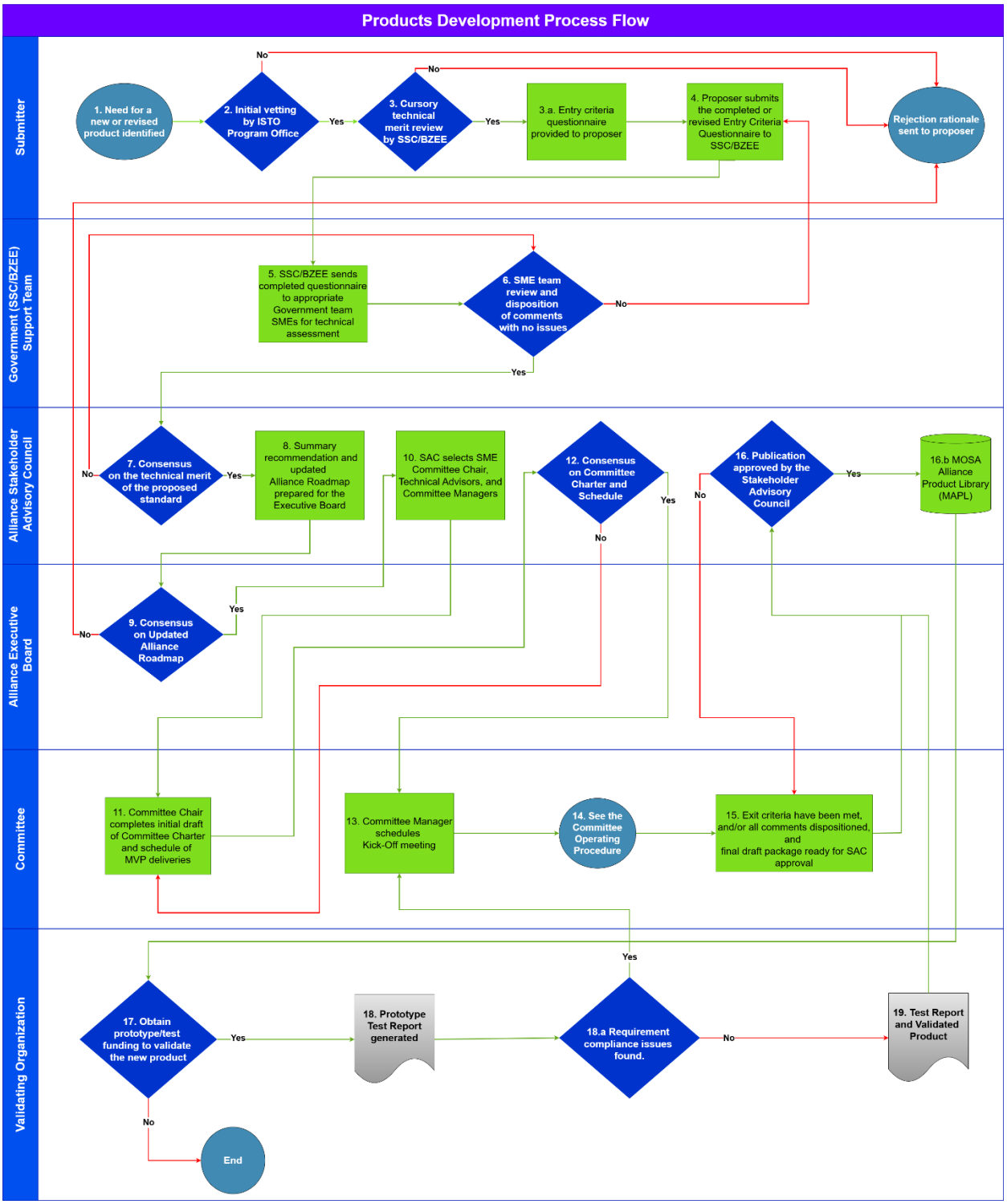

Figure 1. Product Development Process Flow Diagram

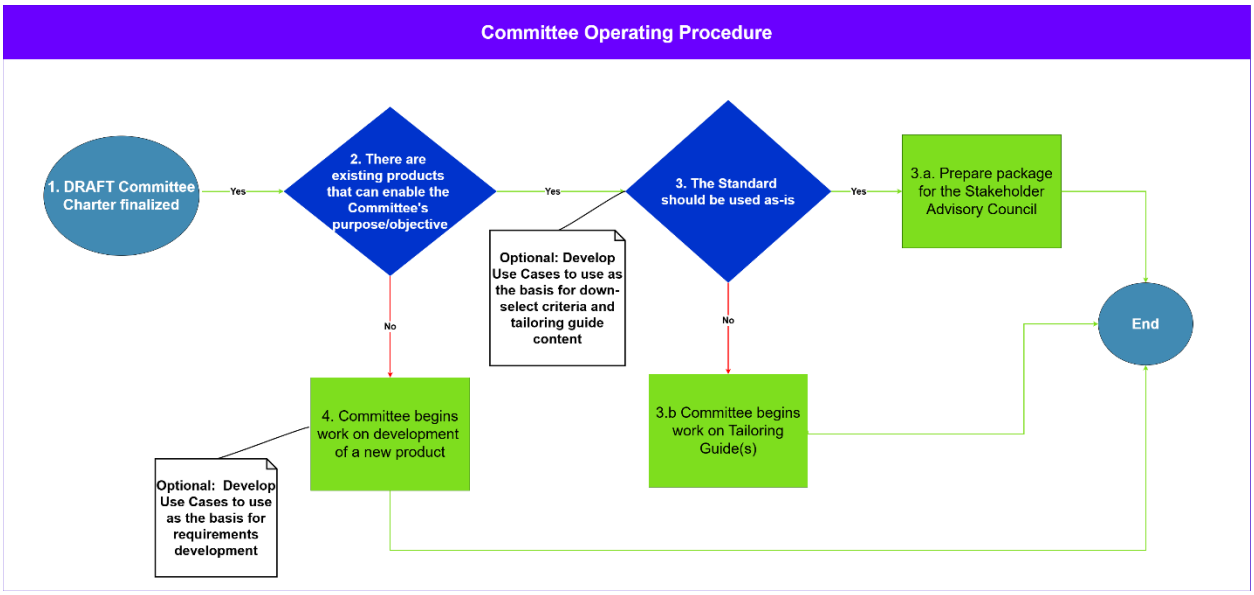

Figure 2. Committee Operating Procedure