Open Systems Management Plan (OSMP) Template

Executive Summary

1.0 Scope

1.1 Background
1.2 System Context and Applicability
1.3 System Description

2.0 Reference (or Applicable) Documents

2.1 Government Documents
2.2 Non-Government Documents

3.0 OSA Application Context and Strategy

3.1 Program Goals & Requirements Supported by OSA

- Describe how OSA will be applied as an enabler to achieve program objectives.
- Obtain mutual buy-in between the customer and supplier(s)

3.2 Applicable Principles

- Identify the key OSA principles relating to the program objectives which will serve as the basis for metrics, to include:
    - Modular Open Systems Approach (MOSA)
    - Naval Open Architecture (NOA)
    - Future Airborne Capability Environment (FACE)
    - Other (e.g., company specific)
- Examples:
    - Establish enabling environment (MOSA)
    - Design disclosure (NOA)
    - Variability isolation (Other)

3.3 Desired OSA Attributes

- Identify key OSA Preferred System Solution attributes that support program objectives
    - Prioritize in order of relative importance to achieving program objectives
    - Identify metrics and document how they will be used to track, assess and/or verify system attributes and business models throughout the system's life cycle
- Examples are:
  (1) Reconfigurability
  (2) Portability
  (3) Maintainability
  (4) Technology Insertion
  (5) Vendor Independence
  (6) Reusability
  (7) Scalability
  (8) Interoperability
  (9) Upgradeability

(10) Long-Term Supportability
(11) Competition at the Subsystem and Component Level

3.4 Systems Engineering OSA Implementation Approach

- Identify how OSA principles and attributes will be achieved in conjunction with the Systems Engineering process
- Describe how OSA is integrated into a SETR processes
    - Business Model examples
        (1) Describe how sourcing (make/buy) decisions are made
        (2) Describe any collaboration and partnerships
        (3) Describe use and plans for alternate sources
    - Technical Approach examples
        (1) Describe how existing SE processes will address OSA goals
        (2) Describe how OSA attributes will be considered in trade studies

4.0 Major Tasks

- Describe how the following key OSA activities will be performed and documented in the context of program execution
- Identify which of these tasks will be executed on an iterative or recurring basis throughout various phases (concept development, acquisition and sustainment) of a program

4.1 Identify Acquisition Objectives and Business Drivers supported by OSA

Identify program objectives and business drivers that are facilitated or achieved through OSA application.

Address these objectives and drivers across the entire program team, stated in key program documentation along with the metrics that will be used to measure progress and success. These objectives and related metrics will typically be flown down to suppliers and are made apart of the supplier agreement (i.e., contract).
Update the future competition strategy based on results of the KOSS analysis and included in this section.

- Example: [refer to Desired OSA Attributes, section 3.3]

4.2 Assign OSA Duties and Establish Personnel Qualifications

Define responsibilities for advocacy and execution of OSA within the organization. Identify the key personnel positions responsible for execution of OSA activities and describe how these positions fit into the overall engineering and management organizational structure and processes. Assign personnel to OSA positions. Ensure program staff capabilities meet or exceed required qualifications, as stated in customer requirements or supplier OSA best practices. Provide initial and on-going OSA training and continuous learning opportunities, as needed, to improve OSA competencies in the workforce.

- Examples:
    (1) Utilize DoD training resources, such as the Defense Acquisition University (DAU) MOSA and NOA Continuous Learning Modules (CLMs).
    (2) Provide corporate OSA training resources tailored to the unique goals and needs of the organization.

4.3 Develop OSA Strategy

Describe the TD strategy, which takes into account the long term strategies used, to apply selected OSA principles (Section 3.2) to achieve the program's goals and objectives (described in section 4.1) and the desired OSA attributes (from Section 3.3). The strategies described (and employed) should identify the specific OSA principles both business and technical methods used to achieve one or more program objectives. Identify key parties, organizations and roles that must participate for the strategy to be successful.

- Examples:

(1) The OSA principle of modularity must be applied at strategic points in a system's architecture to partition or govern the design such that hardware, firmware and software components are developed such that tight coupling is avoided and program objectives like software portability or vendor independence are achieved.

(2) How strategic software reuse is applied to drive down costs and schedule.

(3) How TD related Systems Engineering tasks will develop the needed longer term competition at the best suited component level.

4.4 Develop OSA Metrics

Metrics should be developed for all OSA related objectives and drivers (see 4.1) to permit monitoring of progress on and achievement of the key program parameters and system attributes identified in Sections 3.3 and 4.1 above. Describe how OSA metrics will be established and used to monitor and govern program activities. Typically, OSA metrics will be included as part of business and engineering trade studies, and reviewed (and adjusted if appropriate) at major program and technical reviews such as Integrated Baseline Reviews (IBR), System Functional Review (SFR) and Preliminary Design Reviews (PDR). OSA metrics should be documented in the systems engineering, OSMP and similar management plans.

- Example Metric: Percentage of key OSA system interfaces that are architected and specified to permit procurement of [interfaced] components from multiple sources of supply.

4.5 Select Reference System Architecture and Identify System Architecture Constraints

System architectures that reuse proven and widely accepted design patterns are the preferred basis for OSA. They reduce development risk and increase the likelihood that 'modular solutions' are readily available off-the-shelf. They can also be used to constrain a system design by imposing high-level architectural constraints without the need to completely specify a detail design. Describe all architectures and constraints imposed as part of the customer's system requirements and any architectural constraints imposed on the supplier. Identify which of these constraints derive directly from widely recognized design patterns or reference architectures and which ones are unique or new for the program. Describe how the subject system's architecture conforms to, and possibly extends, suitable industry reference architectures and related models. Address the feasibility and applicability of the Future Airborne Capability Environment (FACE) standard, plus the rationale for where and how FACE is or is not applied within the NGJ Architecture via OSA's business and technical principles and associated processes.

4.6 Develop MOSA Key Interface Selection Criteria

- Establish criteria that will be used to identify the subsystems or components that should be "protected" against specification/implementation of closed interface designs
- Describe how the criteria is used in design and verification processes to minimize closed interfaces

- Example criteria:
  (1) Isolation of high risk components for competition beyond IOC
  (2) Isolation of components that are subject to rapid changes in capability, technology, performance, or materiel availability (i.e., due to obsolescence)
  (3) External influences such as higher level architecture requirements (e.g., interoperability, coalition operations)
  (4) Insertion of popular, standards-based commercial-off-the-shelf (COTS) items
  (5) Considerations for fostering alternate sources of supply
  (6) Isolate software dependencies from hardware and infrastructure

4.7 Identify & Manage OSA Opportunities in Change Baselines

- Identify opportunities and tactics for applying OSA to achieve the program goals and attributes
- Examples of indications to be monitored for opportunities:
  (1) Capability and product line roadmaps
  (2) Technology forecasts and insertion plans
  (3) Software upgrade plans
- Examples of change-driven opportunities:
  (1) Analysis of Alternatives (AoA) and Preferred System Solution
  (2) Changes to technical or configuration baselines
  (3) Changes due to capability (e.g., roadmaps), technology refresh or obsolescence mitigation upgrades

4.8 Establish Standards Selection Criteria

- Develop domain- and technology-appropriate criteria for selection of MOSA key interface design specifications, ideally based on widely adopted open standards
- Describe how the criteria is used in design and verification processes to achieve program objectives and system attributes described above
- Example criteria: publicly available, widely used, community or consensus-based, mature and stable, and technically adequate

4.9 Develop Component Competition and Governance Mechanisms

- Describe how implementations of MOSA key components and associated interfaces will be verified for TD related conformance such as relevant design documentation; alignment of component based data rights strategy; data model strategy and associated tools and process, and be able to show with clarity how these elements come together to form an NGJ Component Competition Roadmap.
- Describe the processes for COTS and Non-Developmental Items (NDI) support
- Describe the process for long-term support of COTS and NDI

4.10 Identify Key Open Sub-Systems (KOSS)

- Establish a long range volatility capabilities roadmap forecast (10-15 years beyond IOC), and select MOSA key components at appropriate levels of the system design
  (Recursively applied at system, subsystem, WRA and other levels, as appropriate to achieve program objectives)
- Identify the key subsystems selected and provide the rationale in terms of the program objectives, business drivers, OSA attributes, key interface criteria and
- Describe how key system interfaces and modules will be protected and managed as part of the configuration and interface management processes

- Document data rights established for key interface implementations as part of data management process
- Explain how KOSS identified key components support competition after IOC.

4.11 Select Interface Standards for MOSA Key System Interfaces

- For every MOSA key interface, describe how standards selection criteria (identified above) will be used to select standards that will form part of the interface's specification
- Describe how the selected interface standards, and their applicability, will be documented (e.g., DODAF Rev. 2.0)

4.12 System Component and System Interface Table

- Summarizes in detail the information from sections 4.8-4.11

List all system components and interfaces, links to their Interface Documentation, rationale for use of proprietary items, Identification of Key Interfaces, the IA strategy (or link to documentation), standards uses and % modification:

System component and System Interfaces	Applicable ICDs, IDDs, and IRSs	Interface Type (open or Rationalize use of a proprietary component)	Category of Interface (e.g., key, non-key),	Rationalize the IA strategy	Standards Used	% Modified

- Describe how the interface data can be used to enable competition

4.13 Treatment of Proprietary or Vendor-Unique Elements

- Describe the rationale, Government interaction, and approval process for incorporating any proprietary or vendor-unique elements
- Describe how approved proprietary or vendor-unique elements will be integrated into the design
- Describe techniques to isolate approved proprietary or vendor-unique elements, such as architectural features (layering) and interface control documents (ICDs), Interface Requirements Specifications (IRS) and/or Interface Descriptive Documents (IDD).
- Describe mitigation approaches to ensure competition is not degraded due to incorporation of any proprietary or vendor-unique elements

List all system components, their manufacturer, their data rights, rationale for use of proprietary items, and if architecture supports replacement of item for future competition and collaboration:

System Component	Manufacture of product (Prime and Subs)	Type of product (COTS, MCOTS, NDI, DI, etc.)	Data rights associated with the component (unlimited, GPR, etc.)	Rationale for utilizing a proprietary components	Does the architecture support replacement of this item?

4.14 Verify OSA Requirements

- Describe the verification plans and processes to ensure OSA requirements are met
  (1) Include how OSA requirements are levied on subcontractors and suppliers
  (2) Document how the prime contractor will verify that subcontractors and suppliers meet the OSA requirements

5.0 Operations & Support (O&S) Tasks

While development and production costs of a system are significant (typically 10% and 20%, respectively), they are relatively small in comparison to the operations and support costs (typically 70%) over the system life cycle. This section of the plan should describe how OA aspects of up-front long-term support planning are carried through the remainder of the system life cycle.

- Describe any activities, in addition to those contained in Section 4 above, that would be undertaken to maintain a viable OA program and contain costs after system/platform initial operational capability (IOC)
- Examples:
  (1) In-service engineering
  (2) Market surveillance
  (3) Technology insertion/obsolescence mitigation
  (4) Configuration/change management
  (5) Planned product improvement/software maintenance strategy, e.g., blocking
  (6) Reintegration and modular test strategy, e.g., test coverage, reduced order regression testing
  (7) Component Competition

6.0 Verification and Assessment of OSA Requirements and Metrics

Successful application of OA principles is an on-going effort. Systems engineering and technical reviews (SETRs) provide a useful window into a program's incremental progress towards satisfaction of stated OA goals and objectives. The OA plan should include time-phased/event-driven tailorable checklists appropriate to the expected level of design maturity. For example, detail regarding external interfaces should be documented earlier than internal interfaces since external interfaces are generally proscribed in the early capabilities documents.

Metrics need to be developed by the contractor, incorporated in this OSMP and approved by the Government to assess success towards achieving OA and return on investment.

6.1 Key Checkpoints

6.1.1 SE Technical Reviews (SETR) Criteria (Entrance/Exit)

6.1.1.1 System Requirements Review (SRR)

- Establish a long range volatility capabilities roadmap

6.1.1.2 System Functional Review (SFR)

- Identify MOSA Key Components for Competition based on KOSS
- Identify MOSA Key Interfaces based on KOSS
- Define a Modular Architecture based on DODAF 2.0 and System Architecture tools
- Align Data Rights Strategy with OSA Strategy

6.1.1.3 Preliminary Design Review (PDR)

- Align and Identify Data Model Strategy, Tools and Processes with OSA Strategy
- Develop a Component Competition Roadmap based on data and supporting rational

6.2 Assessment Methods & Tools

6.2.1 MOSA Program Assessment Review Tool (PART)
6.2.2 Open Architecture Assessment Tool (OAAT)
6.2.3 OA Applicability Tool, Key Open Sub-Systems (KOSS)
6.2.4 Other Government/Industry OSA Working Group Tools and Processes

7.0 Assessment Results

7.1 Record of Evolving System Baselines and OA Scorecards

- Maintain a record of results from MOSA PART, OAAT and KOSS analyses as program progresses
- Document trends in key OA application metrics

8.0 Notes and Reference links

8.1 DoD Modular Open Systems Approach (MOSA), http://www.acq.osd.mil/osjtf

- MOSA Program Managers Guide, www.acq.osd.mil/osjtf/pmguide.html

8.2 Naval Open Architecture (NOA), https://acc.dau.mil/oa

- Naval Open Architecture Contract Guide Book, https://acc.dau.mil/CommunityBrowser.aspx?id=183088&lang=en-US

8.3 Defense Acquisition University (DAU) Continuous learning Modules, https://learn.dau.mil

- Modular Open Systems Approach to DoD Acquisition, CLE013
- Naval Open Architecture, CLE012
- Technical Reviews, CLE03
- Trade Studies, CLE026

8.4 Organizational/Corporate OA Guides and Training Materials