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System Engineering Qualification Process

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1.0 PURPOSE

This document outlines standards by which systems and services should be acquired and qualified for certain needs, based on the Systems Engineering (SysE) approach. Where applicable, the procedure includes International Best Practices.

The aim of this document is to:

- Encourage Entities to follow the course of best practices during their Acquisition Process (AP)
- Ensure that the current methods and procedures enable Entities to secure new technology, to achieve their business objectives and accomplishing their mission.

2.0 SCOPE

This document is developed as a guideline for the Operations and Maintenance (O&M) domain within government Entities, and describes fundamental aspects of how to decide, select and qualify, new systems or services. Although there are references to commonly used Information Technology (IT) APs, each entity shall establish its own individual goal, objectives, requirements, and analysis concerning "acquisition activities" methodologies, according to their pre-defined mission, vision, and strategic plan.

This document is not designed to explain or develop any specific AP, analysis, or qualification methods to any entity in particular. Rather, it demonstrates the key aspects of the IT-AP, and Qualification Analysis (QA) for "Commercial off-the-shelf (COTS)" products (hardware/software). Furthermore, this procedure has been developed to guide Entities to utilize current best practices, tools, and concepts, in order to assist in the selection of systems and services that lead to successful Assets and Facilities Management (A&FM) activities. Entities should fulfil the Expro standards and guidelines during their IT Qualification Process (QP).

2.1 Defining IT "Acquisition/Qualification" Method and Related Concepts

IT (hardware/software) acquisition refers to "an investment that requires the expenditure of funds for IT, which could address a single acquisition; a logical grouping of hardware, software, telecommunications and support services that will involve multiple acquisitions. Or a project that will take place either within a particular fiscal year or over a longer life cycle and involve multiple acquisitions," (The United States of America (US) Department of Commerce, 2007).

- AP is a management process by which the Entity acquires any system/services for its O&M domain, such as the Asset Management System (AMS-SH [Software & Hardware])
- QP is the management process by which the Entity selects the best system/services to satisfy their O&M requirements. Thus, the Qualification Process is a component within the overall Acquisition Process approach. Figure 1 below, shows the relationship between AP and QP

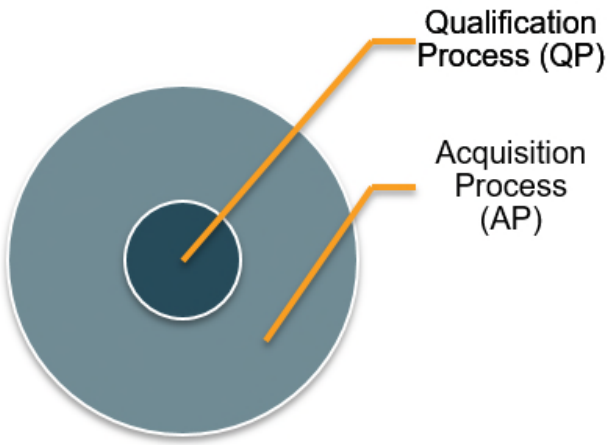

Figure 1: The AP Encompassing The QP

Any proposed system (hardware/software) to be used on the Entity's network and for the Entity's O&M domain, shall be verified for compatibility with its infrastructure, information systems' standards, security polices, and technical specifications, by a qualified division within the Entity.

This document is designed to explain the concept of an Entity's QP system within the O&M context, based on two of the best current AP practices in the industry today. These are SysE and US "Department of Defense (DoD) Acquisition Approaches." In developing this document, mapping between both practices has been considered.

2.1.1 Systems Engineering (SysE) & the DoD Acquisition Approaches

The concepts of the above-mentioned approaches are briefly defined as follows:

The SysE approach is "a multidisciplinary approach intended to transform a stakeholder's needs, into a balanced system solution that meets those needs" (Moore et al., 2012). Thus, the Qualification Process (QP), is part of the SysE approach.

The DoD 5000 acquisition approach is a management process developed by the "Defense Acquisition University (DAU)," and is used by the DoD to acquire systems. This approach enhances the understanding of the AP and its associated requirements with flexibility, and standardization. It also encourages innovation and maintains accountability. The DoD acquisition approach is comprehensive, and used worldwide, within government and industry sectors. The DoD approach comprises three pillars working together in parallel, which are as follows:

- Defense Acquisition System (DAS)
- Planning, Programming, Budgeting, and Execution (PPBE) Process
- Joint Capabilities Integration and Development System (JCIDS)

Further reading is advised on the underlying principles of this approach and the references are provided within Section 4, of this document. However, this procedure is focused on explaining the phases from both approaches (SysE and DoD acquisition approach), that are related to the Qualification Process (QP), within the O&M context.

2.1.2 Business Needs 'Requirements,' Requirements Analysis, and Functional & Non-Functional Analysis

This section briefly explains the main requirement concepts. "Requirement" as defined in the Cambridge dictionary is "something needed or necessary," whereas the Institute of Electrical and Electronic Engineers (IEEE) - 729 defines requirements as "a condition or capability needed by a user to solve a problem or achieve an objective."

"Business Requirement" is some "activities/systems" that the business (organization) needs, to "perform/have", in order to achieve their pre-defined objectives. A Business Requirements Document (BRD), is the output artefact of the business requirement, and expected solution.

The functional requirement comprises a set of actions undertaken by a system; the non-functional requirement is a quality/attribute that judges the operation of the system, such as "performance and security."

IT [AMS (S&H)] functional requirements include:

- The system should allow users to add an authorized number of customized fields to the database
- The system should allow users to associate/re-associate components to an asset, assets to a facility, and facility to an Entity

IT [AMS (S&H)] non-functional requirements include:

- The system should be available at least 98% of the time, per year
- The system should operate with an acceptable response time (performance), and within no more than 99 Millisecond (ms)

O&M IT-solutions can be considered as any other IT-solutions, which are developed based on an Entity's objectives and O&M requirements. Therefore, this document is not designed to set any requirements for any O&M system/service, but to explain the concept of how to acquire and qualify those systems and services.

Further information may be found within the "Asset Management System [AMS (S&H)] Standard Criteria and Methodology" document (EXP-ZA0-SD-000002).

Any system or service required by an Entity, should be analyzed against the defined needs, and the requirements should be reviewed from differing perspectives, as outlined in Figure 2 below.

Further information regarding requirement concept, process and analysis, may be found within the "System Requirements" chapter within this volume. This document defines the main requirement concepts, which are important as a part of the QP.

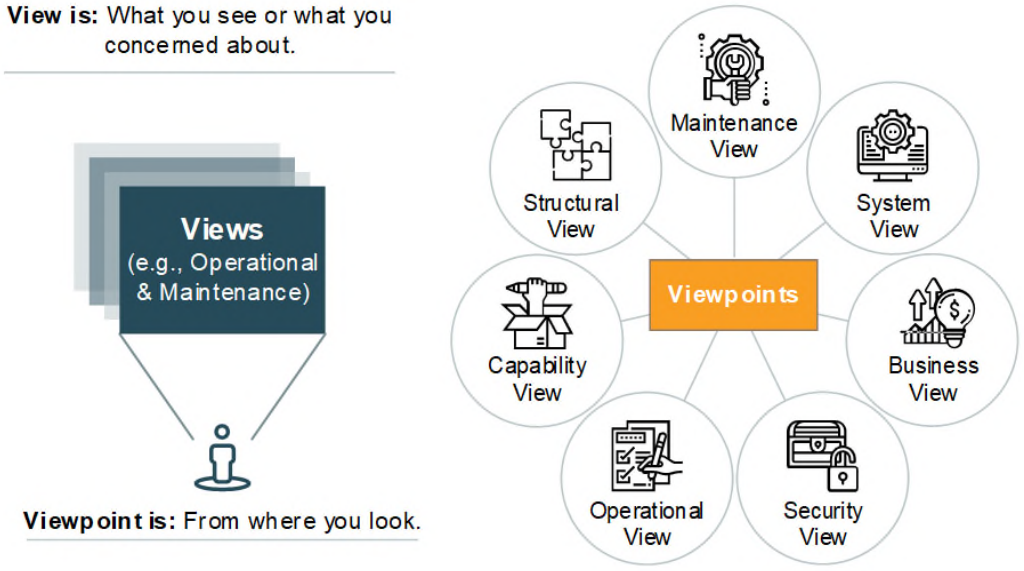

Figure 2: Sample Systems/Services Requirements' Viewpoints

2.1.3 Why Does One Need SysE Acquisition Methods in an O&M Domain?

The SysE approach has many advantages concerning O&M System's AP, as demonstrated in the list below:

- Involves traceability factors that help to connect systems e.g., (AMS [S&H]) requirements to design (if applicable), to test the O&M objectives and improve decision making.
- Reduces errors in system delivery, by enabling validation/verification within an asset's (system) lifecycle, from requirements to acceptance/test, as they are created/purchased.
- Improves a system's stakeholder participation through setting O&M requirements and benchmarking processes.
- Assists by following standard processes in acquiring the best products available on the market.
- Supports management with any changes prior/post to the system purchase process.
- Assists in risk-management during AP
- Improves organizational learning during QP
- Assists in product selection, and can be tested before procuring the system when the Entity includes this condition in their Expression of Interest (EoI) document.

3.0 DEFINITIONS

Term	Definition
Acquisition Process (AP)	It is the management process by which the Entity acquires any system/services for the O&M domain, such as the Asset Management System (AMS [S&H]).
Entity	It includes a Government Ministry, Entity Project Management Organization (EPMO), Engineering Management Company, or any other agency authorized by the Government Ministry, to work on its behalf.
Expro	National Project, Management Organization
Operations and Maintenance (O&M)	O&M of facility and assets. The Entity may be required to enter into single or multiple agreements with other parties to perform O&M works or services.
Qualification Process (QP)	Is the management process by which the Entity selects the best system/services that should satisfy their O&M requirements. Thus, QP is a component within the overall AP approach.
Abbreviations	
AMS (S&H)	Asset Management System (Software & Hardware)
AoA	Analysis of Alternatives
AP	Acquisition Process
ASR	Alternative Systems Review
A&FM	Assets and Facilities Management
BIFM	British Institute of Facilities Management
BRD	Business Requirements Document
CA	Capability Assessment
CBA	Cost Benefit Analysis
CD	Capability Document
CDD	Capability Development Document
CDRL	Contract Data Requirements List
CDR	Critical Design Review
CE	Concept Exploration
COTS	Commercial off-the-shelf
CPD	Capability Production Document
DAS	Defense Acquisition System
DAU	Defense Acquisition University
DoD	Department of Defense
EAB	Entity Acquisition Board
EoI	Expression of Interest
EPMO	Entity Project Management Organization
FAA	Functional Area Analysis
FNA	Functional Needs Analysis
FSA	Functional Solution Analysis
GAO	Government Accountability Office (US)
ICD	Initial Capabilities Document
IDEF	Integration Definition Function
IEEE	Institute of Electrical and Electronic Engineers
IFB	Invitation for Bid
IOC	Initial Operational Capability
ISO	International Standards Organization
IT	Information Technology
KSA	Kingdom of Saudi Arabia
MOE	Measure of Effectiveness
NASA	National Aeronautics and Space Administration

Term	Definition
NCLOM	The National Committee for Legislation and Standardization of Operation and Maintenance
NSS	National Spatial Strategy
O&M	Operations and Maintenance
ORD	Operational Requirement Document
PDR	Preliminary Design Review
PIR	Post Implementation Review
PPBE	Planning, Programming, Budgeting, and Execution
QA	Qualification Analysis
QFD	Quality Function Deployment
QP	Qualification Process
RA&M	Risk Assessment and Mitigation
RFD	Request for Quotation
RFI	Request for Information
RFP	Request for Proposal
RFT	Request for Tender
SEI	System Engineering Institute
SFA	System Feasibility Analysis
SFR	System Functional Review
SMC	Missile Systems Center
SOO	Statement of Operation
SOW	Statement of Work
SRR	System Requirements Review
SVR	System Verification Review
SysE	System Engineering
SysML	System Modelling Language
S&S	Systems and Services
TRR	Test Readiness Review
US	United States of America
WBS	Work Breakdown Structure

Table 1: Definitions

4.0 REFERENCES

- British Institute of Facilities Management (BIFM) – Sourcing strategies
- ENT-ZAO-SD-000001 – Asset Management System Standard Requirements
- ENT-ZAO-SD-000002 – Assets Register Standard Requirements
- ENT-ZCO-SD-000001 – Condition Assessment Standard Requirements
- National Manual of Assets & Facilities Management
- EXP-ITO-PL-000005 – Expro Dashboard Development Scope
- EXP-P00-PR-000001 – Expro Monitoring and Evaluation Operating Procedure
- Project of Survey and Study of the current Operation and Maintenance work statues at government Facilities –Executive Report (31st Jan 2016)

The Industry Best Practice considerations referenced in this document are as follows:

- A Practical Guide to SysML, Sanford Friedenthal, Alan Moore and Rick Steiner-2012
- Adoption of IT Asset Management Systems Reaching Maturity
- Guidelines for auditing management systems (ISO 19011:2018)
- https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-885j-aircraft-systems-engineering-fall-2005/readings/sefguide_01_01.pdf
- https://www.computereconomics.com/article.cfm?id=1454,

- https://www.fcbco.com/articles-and-whitepapers/articles/bid/129469/how-to-select-any-business-system-four-steps-to-take-now,
- https://www.isixsigma.com/implementation/project-selection-tracking/business-requirements-document-high-level-review/,
- https://www.isixsigma.com/tools-templates/qfd-house-of-quality/qfd-when-and-how-does-it-fit-software-development/-by David L. Hallowell,
- https://www.kbmanage.com/concept/strategic-it-acquisition,
- https://www.nap.edu/read/6224/chapter/4#5,
- NASA "Systems Engineering Handbook-NASA/SP-2007-6105 Rev1
- Purchasing Procurement Logistics (ISO 03.100.10)
- System Engineering Fundamentals, January 2001, DoD System Management College
- Systems Analysis and Systems Engineering in Environmental Remediation Programs at the Department of Energy Hanford Site (1998)
- Systems Engineering Primer & Handbook Space & Missile Systems Center (SMC) – 29 April 2005
- United States Government Accountability Office (GAO), Applied Research and Methods, March 2009 GAO-09-3SP

The Statutory Regulations referenced in this document will be:

A review of the local Kingdom of Saudi Arabia (KSA) Statutory Regulations which will inform the development of this Chapter, is undertaken on a continuous basis. Although no such local Statutory Regulations have been found to date, pertaining to Asset Management, should any be issued before CP05, then these shall be incorporated within the Chapter.

5.0 RESPONSIBILITIES

5.1 Roles' Description Table

Role	Description
The Government Entity	• Should develop all necessary strategies, plans and documents, for acquiring/developing the O&M's new systems/services, based on predefined objectives. • All stakeholders within the Entity should be involved in the AP and QP, where applicable. • Within the Entity, all the O&M's AP and QP should follow Expro guidelines.
Expro	Provide guidelines and support to any Entity, in regard to O&M AP and QP processes, when required.

Table 2: Responsibilities

6.0 PROCESS

SysE, is an approach designed for developing and/or, procuring systems and managing projects, in order to help organizations achieve their specific needs. The following sections assist the Entity in following best practices during their systems/services procurement process.

6.1 Five Key Aspects for System/Service Procurement Process

The five main topics to be covered during a new O&M system/service acquiring process, are shown in Figure 3, below.

- Understand the organization's (Entity) mission, vision, goal, and O&M objectives
- Define the Entity's business needs concerning the O&M domain, according to different analyses such as:
    - Capability Assessment (CA)
    - Risk Assessment and Mitigation (RA&M)
    - Functional Area Analysis (FAA)
    - Functional Needs Analysis (FNA)
    - Or, others, as needed
- Develop minimum required documents (where applicable), that are related to the acquiring process such as, but not limited to:
    - EoI
    - Request for Information (RFI)
    - Request for Proposal (RFP)
    - Request for Tender (RFT)
    - Request for Quotation (RFD)
    - Initial Capabilities Document (ICD)
    - Initial Operational Capability (IOC)
    - Operational Requirement Document (ORD)
    - Statement of Operation (SOO)
    - Statement of Work (SOW)
    - Work Breakdown Structure (WBS)
    - Invitation for Bid (IFB)
    - Or, others, where applicable

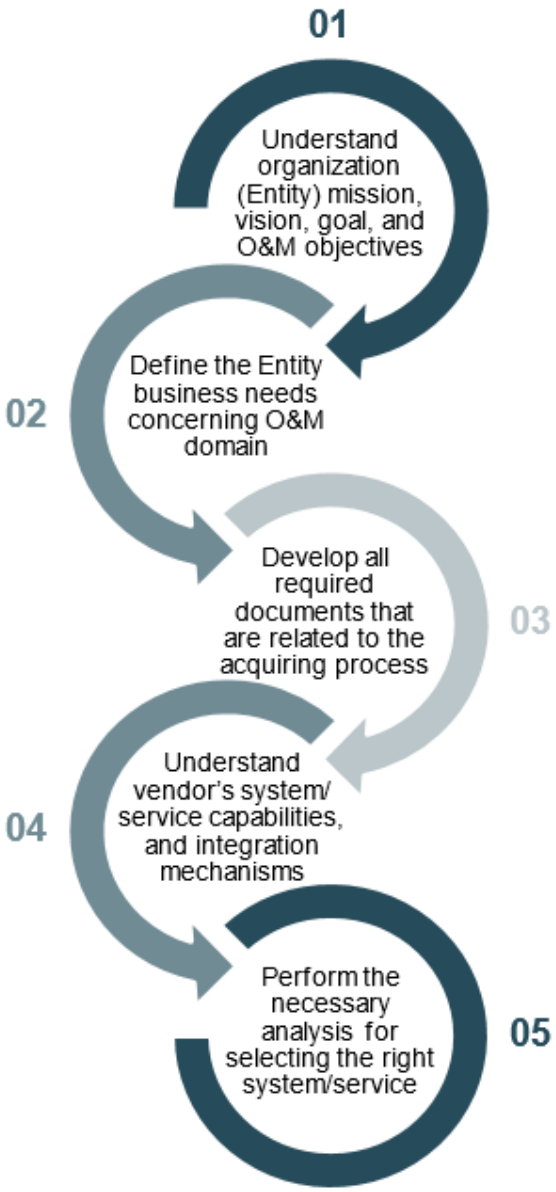

Figure 3: Five Key Aspects for System/Service Procurement Process

Each of the procurement documents above contains a scope and development period, which should be taken into consideration during the system/service procurement process.

- Understand the vendor's system/service capabilities and integration mechanisms
- Perform the necessary analysis for selecting the right system/service such as:
  - Functional Solution Analysis (FSA) following different needs analysis, the Entity and the required system/service
  - Analysis of Alternatives (AoA) for solutions, or other similar products within the market (Refer to **Attachment 2 – AoA Plan Outline for Studying Alternatives,** as an example)
  - System Feasibility Analysis (SFA)
  - Cost Benefit Analysis (CBA) – Cost Estimation targeting required system/service, and the benefits to the Entity from acquiring such a product
  - Benchmarking
  - Or, other analyses, as needed

Selecting a proper system/service should assist an Entity, when the above topics are performed based on best practices or standards. An Entity may cover the five topics above, without developing or performing all

the above assessments, documents, or analysis. However, each topic should be understood before commencing or signing any contract. Numerous approaches, methods, steps, analysis, and documentation exist, in performing system and services acquisition activities. However, they are mostly concerned with adopting the same concepts above, using different techniques.

Describing each method and document involved in the procurement process is beyond the scope of this procedure. However, there are common practices that are currently defined within the industry, and their information is available through several reliable sources such as DAU, the System Engineering Institute (SEI), and the Guidelines for Auditing Management Systems (International Standards Organization (ISO) 19011:2018).

6.2 Common Contract Approaches for the Procurement Process

Current industry practices use one of the options illustrated in Figure 4 or adapt similar concepts either for developing, and/or acquiring new services/systems.

All options are subject to the agreement between the customer (Entity), and the contactor (Vendor) which can be managed according to the customer's demands. All options vary based on giving the contractor more flexibility or controlling the overall procurement process (by the Entity), as is the case in options 3 and 4 (Figure 4). Option 1 gives the contractor the flexibility to develop a document concerned with the intended project or system. For example, in option 1, the government Entity identifies its areas of concern through ORD, and the expected contractors (bidders) compile a SOW, based on the ORD as part of their proposed solution. In general, each option could be preferable in specific situations, rather than others. Thus, option 1 is suitable for early efforts where the contractor's input is essential to increase the understanding of the proposed solution/solutions and tread-off analysis, if required.

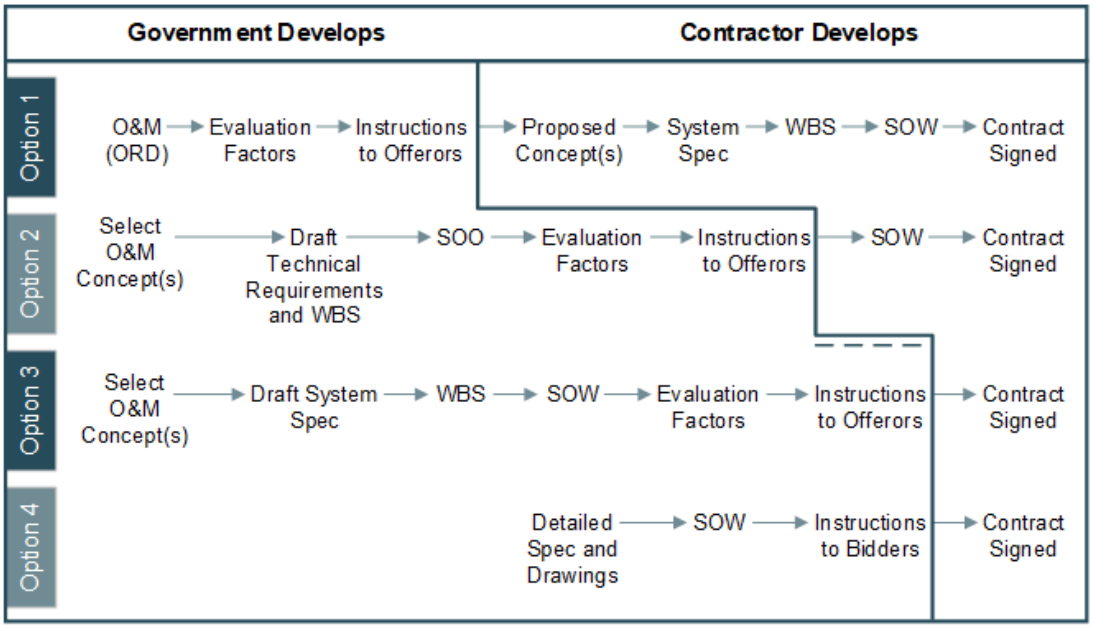

Figure 4: Methods of Developing and/or Acquiring New Services or Systems after "SysE Fundamentals" by DAU, with Amendment to the O&M Scope

6.3 Mapping Between SysE & DoD-5000 Acquisition Lifecycles

In order to help any Entity, follow the best practices available, this section maps the DoD-5000 with the SysE process, with regard to acquiring new systems and/or services. This brief mapping allows readers to understand the options concerned with their systems/services acquisition, and qualification activities.

Figure 5 and Figure 6 illustrate condensed phases of DoD-5000 and SysE APs. However, the qualification part of the AP, relies upon the first two components of each approach (the concept and development). Both approaches emphasize the five aspects explained in Section 6.1. Also, both concepts have the same context, even if their phase's terminologies are different.

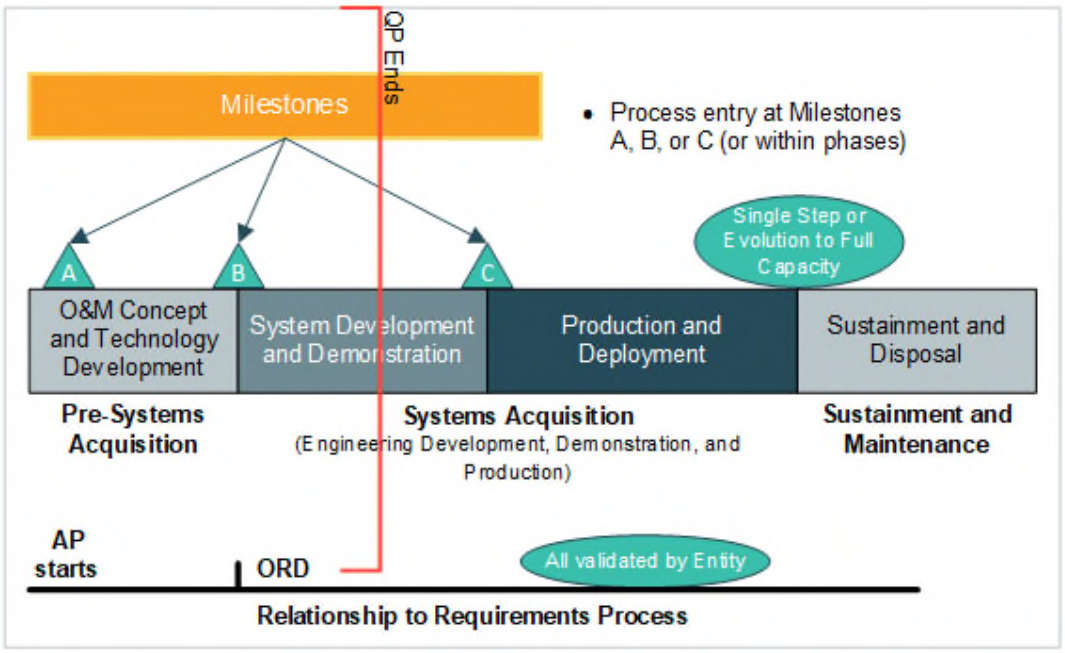

Figure 5: DoD-5000 Systems/Services AP Lifecycle after DAU with Modification (Scoped into O&M Domain)

Figure 6: SysE Development Lifecycle (O&M Scope)

If an Entity requires new product/system/services that is scoped into their "O&M Enterprise" context, they should have their IT division follow a best practices process, prior to procurement, to ensure that the proposed solution is fulfilling their intended use and business requirements.

Furthermore, if an Entity produces some of the required documents regarding the O&M's new system/service such as those listed in Section 6.1, a review process should be initiated, and documents should be developed such as the following:

- Alternative Systems Review (ASR)
- System Requirements Review (SRR)
- System Functional Review (SFR)

- Other reviews, as needed

In regard to the AP, the qualification activities and development of required documents, should be performed within the early phases of the lifecycle, as illustrated by the *"RED line"* in Figures 5, 6, and 7.

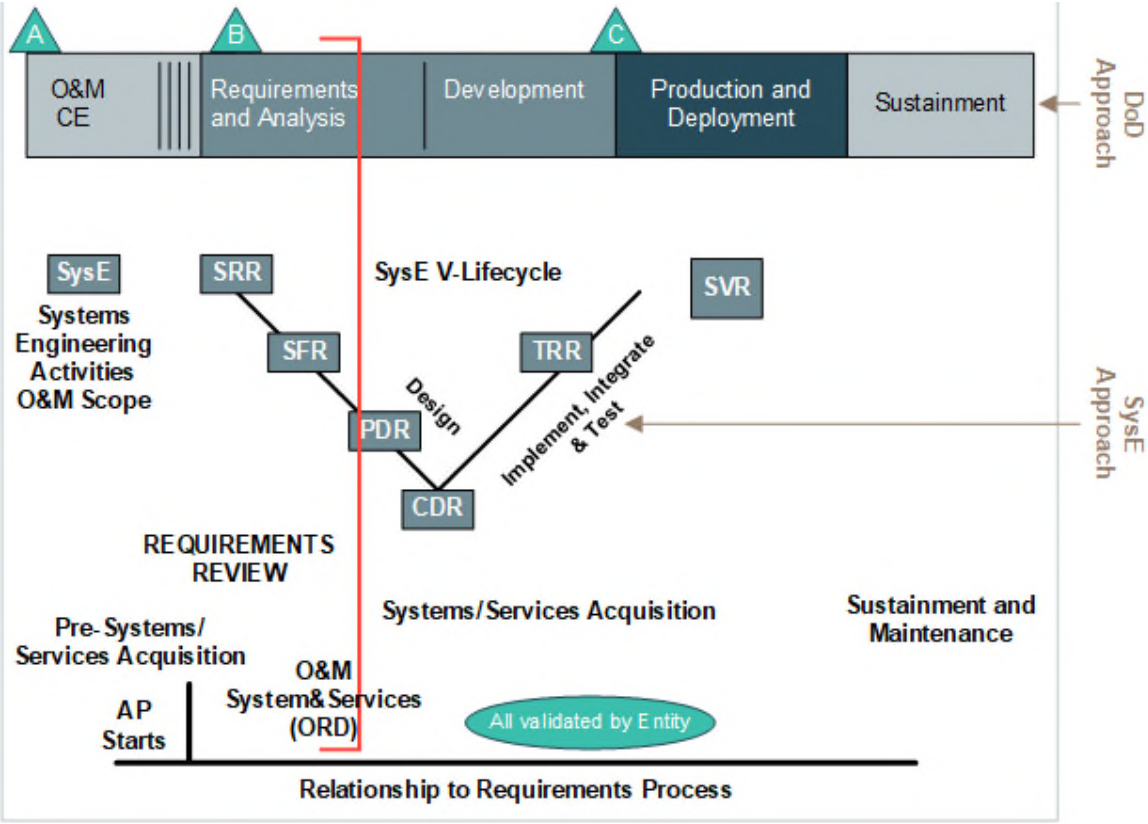

Figure 7: Mapping Between SysE & DoD-5000 Acquisition Phases Scoped into O&M

6.4 Common Standard Contracting Process

A Contracting Process is an integral part of the acquisition lifecycle. In order to qualify the correct system/service for O&M activities within budget, which should also satisfy the O&M's requirements and the Entity's overall objectives, a Common Process is obtained from best practices, based on several standards. Standards such as SysE, National Aeronautics and Space Administration (NASA) SysE, and DoD-5000. The best practices are illustrated here in Figure 8., and the processes should be performed sequentially. Most of the current standards such as ISO 03.100.10, apply a similar concept.

Contracting Process consists of two main phases as follows:

1. Procurement Planning
2. Contractor Selection and Qualification

The first-phase comprises four main components as mentioned below:

- Understanding the Entity's overall O&M objectives from different perspectives, such as operational, maintenance, assets, systems, and services (stakeholder engagement).
- Translating the needs/requirements required to perform O&M with optimal success and continuous improvements, including any products purchased, that may assist in achieving those objectives.
- Performing analyses for the requirements outlined in the previous step, to ensure that the obtained requirements are correct and are the best use of resources and costs.

- On completion of the above, confidence is achieved in acquiring new systems/services to support its business objectives. The required documents can then be developed in order to seek a proper solution that fits their problem context

Once the first phase is accomplished, the second phase should begin with the aim of capturing the following:

- Studying/searching and surveying the market for available solutions, making the necessary analyses and benchmarking, cost analysis/estimation, and comparisons between different solutions.
- Following the development of the required documentation to support the Entity's needs in the previous step such as the RFP, SOW, SOO, and Contract Data Requirements List (CDRL), the solicitation process begins by distributing these developed documents to potential contractors. However, any invitation from the government's side, to potential contractors, shall contain sufficient information within their offer that should establish the basis for the contract to follow.
- Upon receipt of proposals, evaluations and comparisons should be performed between them, from defined parameters such as functionality, cost, integration, and product/service support.
- Negotiation with contractors should follow the evaluation step to fully understand the proposed solution, and further discuss different aspects such as alternatives, costs and support.
- The selection process should be performed based on best nominated and compliant offers; more comparisons could be executed here, in order to choose the optimal solution.
- Awarding the contract to the best vendors' solution is the last step of the QP.

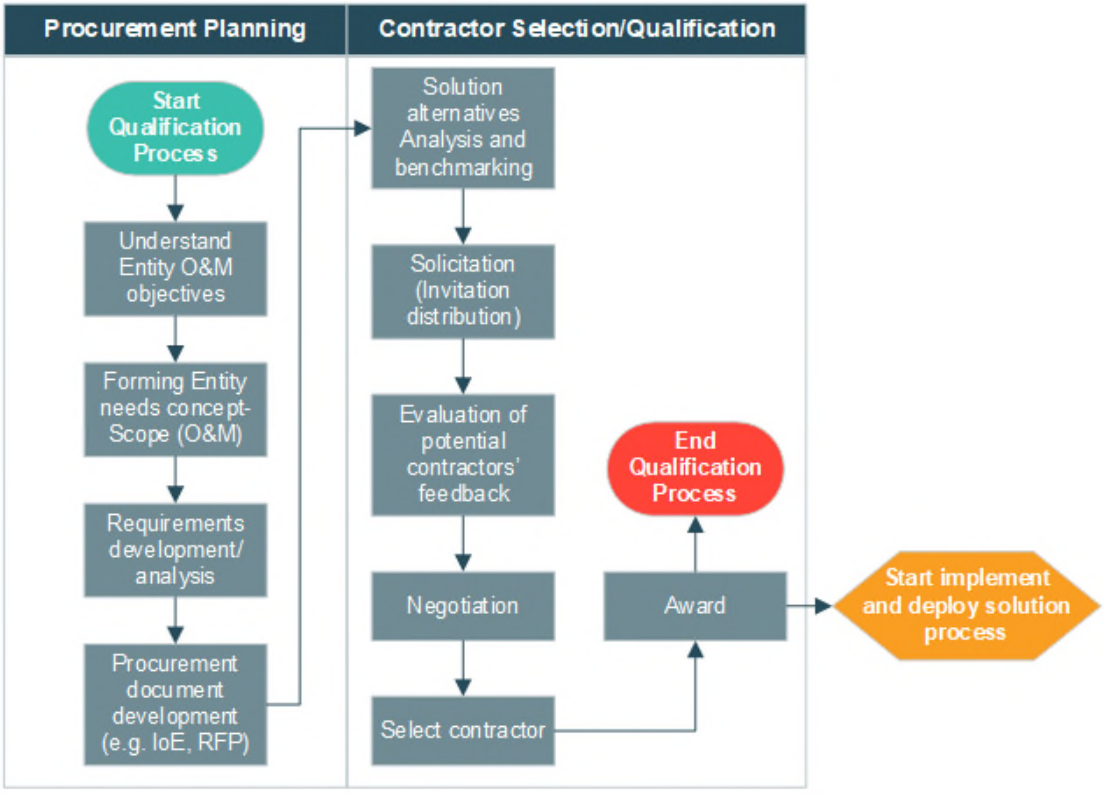

Figure 8: Contracting & Qualification Process

7.0 ATTACHMENTS

1. Attachment 1 - One Component Sample of a Standard SysE Common Process, for Acquiring/Developing New System/Services
2. Attachment 2 – AoA Plan Outline for Studying Alternatives
3. Attachment 3 – Cost Estimation Analysis Process (as an Example)
4. Attachment 4 – QFD and Tread-off Qualification Methods (as Examples)
5. Attachment 5 – Some SysE Analysis Methods during the SysE Lifecycle, Including Procurement Phases
6. Attachment 6 – Samples of Selection Rating and Criteria

Attachment 1 – One Component Sample of a Standard SysE Common Process for Acquiring/Developing New System/Services

To acquire a new system or service after setting the requirements, part of the requirement acquiring analysis, is to analyze proposed solutions from a functional viewpoint, to ensure that the acquired system/service is satisfying predefined requirements, as illustrated in Figure 9.

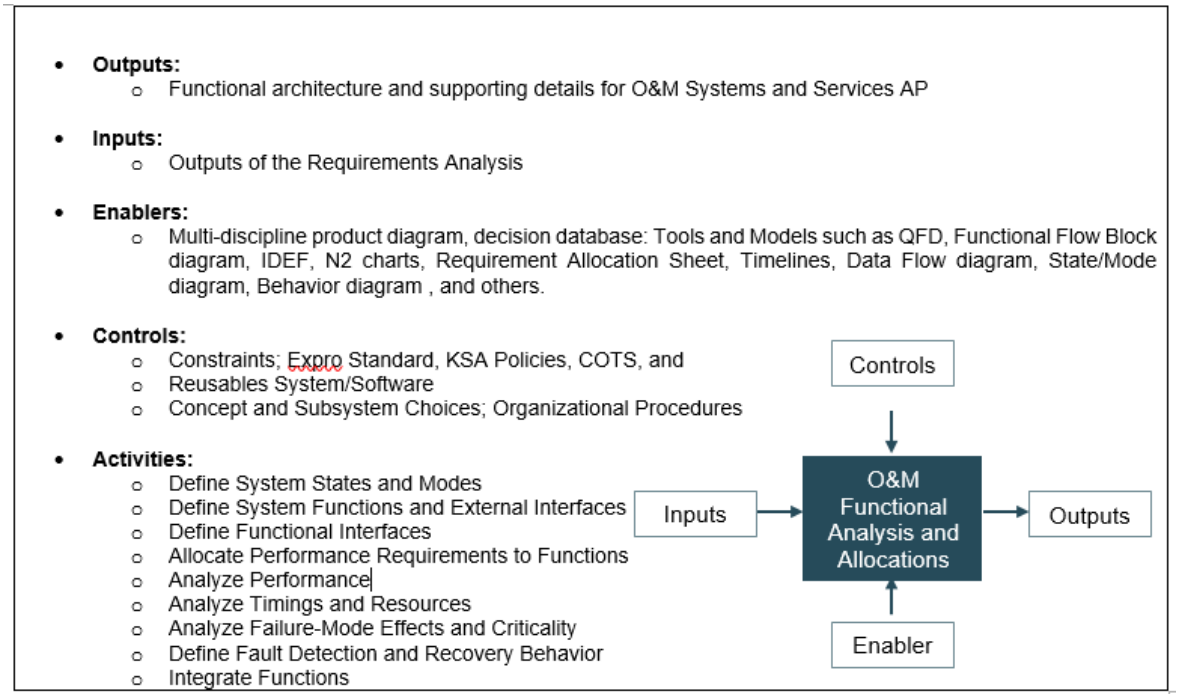

Figure 9: Functional Analysis Component (O&M) Scope

Attachment 2 – AoA Plan Outline for Studying Alternatives

The following AoA Plan Outline is for studying/analyzing alternatives, during the acquisition process (after DAU), with modifications and customizations into the O&M scope.

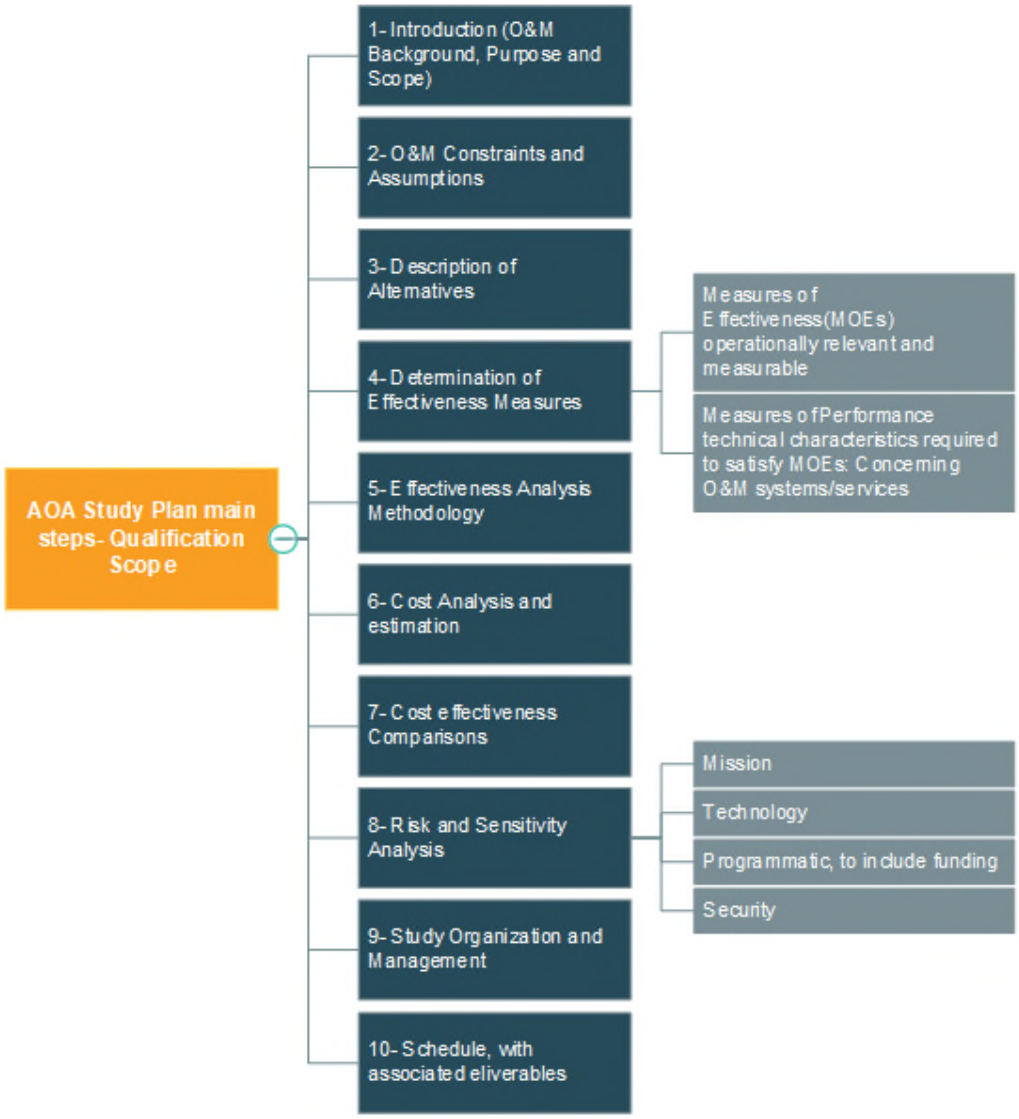

Figure 10: AoA Steps, Scoped to O&M Domain (Example)

Attachment 3 – Cost Estimation Analysis Process (as an Example)

Figure 11 below, shows the cost estimation process for a new product, after Government Accountability Office (GAO), and modified to the O&M Scope

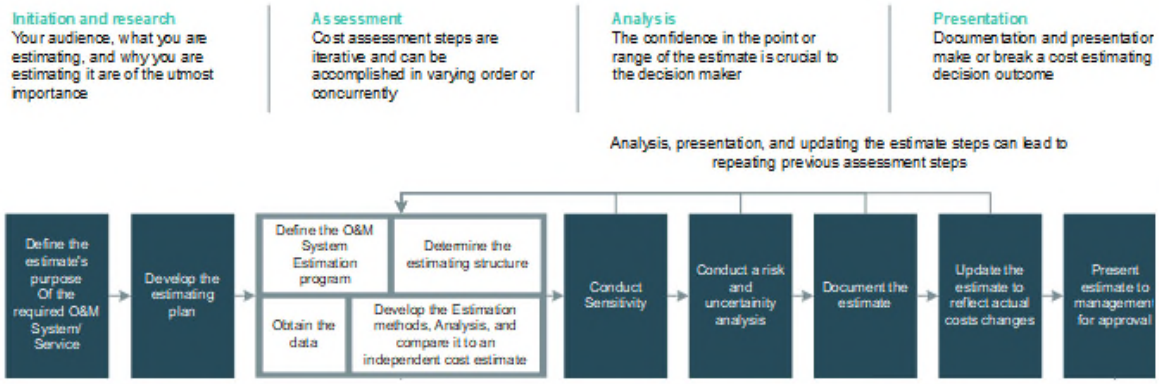

Figure 11: Cost Estimation Process within AP Method, Scoped to O&M Domain

Attachment 4 – QFD and Tread-off Qualification Methods (as Examples)

For any Entity to select the right product for the right purpose, some benchmarking methodologies should be performed. The following diagrams illustrate Quality Function Deployment (QFD) and “Trade-off” (after DAU) techniques, as examples of system QA methods.

QFD is a structured method to define customer requirements, and comparing them with different proposed solutions with a priority mechanism. “Trade-off Analysis” on the other hand, is a method that studies the solutions, compares them to the required needs such as functional needs, money, and development time, and then selects the best-in-class for the organization.

Figure 12: Standard QFD, (Example Template)

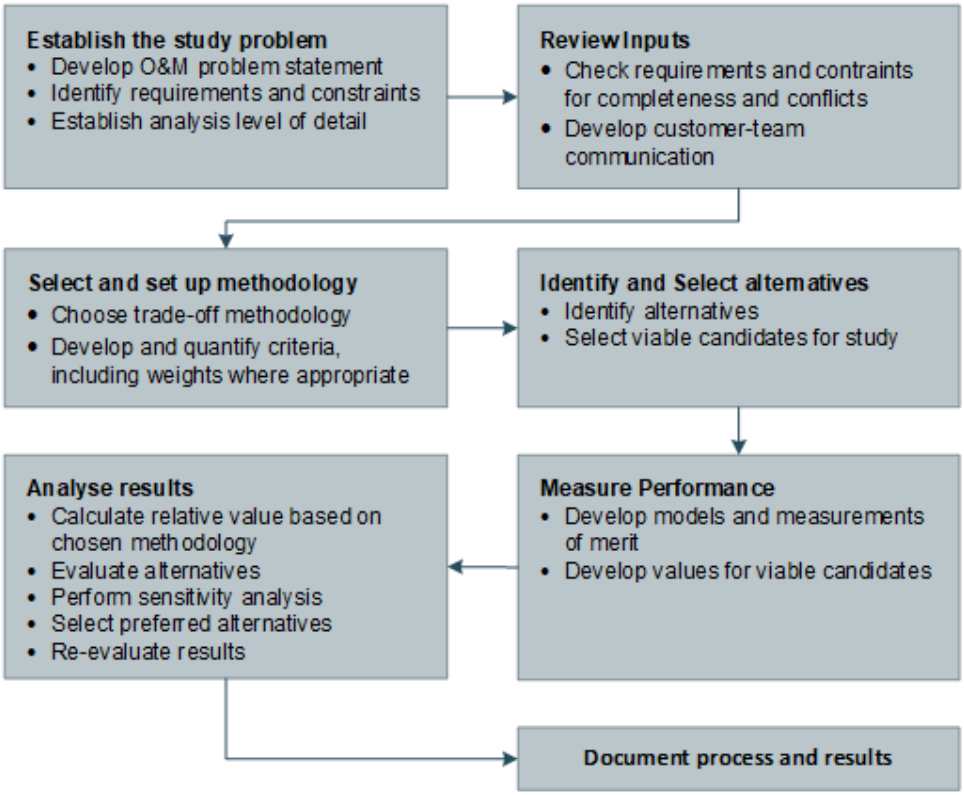

Figure 13: Example of Trade-off Process after DAU with Modification, Scoped to the O&M Domain

Attachment 5 – Some SysE Analysis Methods during SysE Lifecycle, Including Procurement Phases

As an example of how the acquiring systems/services could be a critical task, the following two diagrams (S&H) show best practices of some SysE analyses methods, phases, and documents for developing/acquiring and managing new systems/services from NASA "Systems Engineering Handbook" and DAU standards.

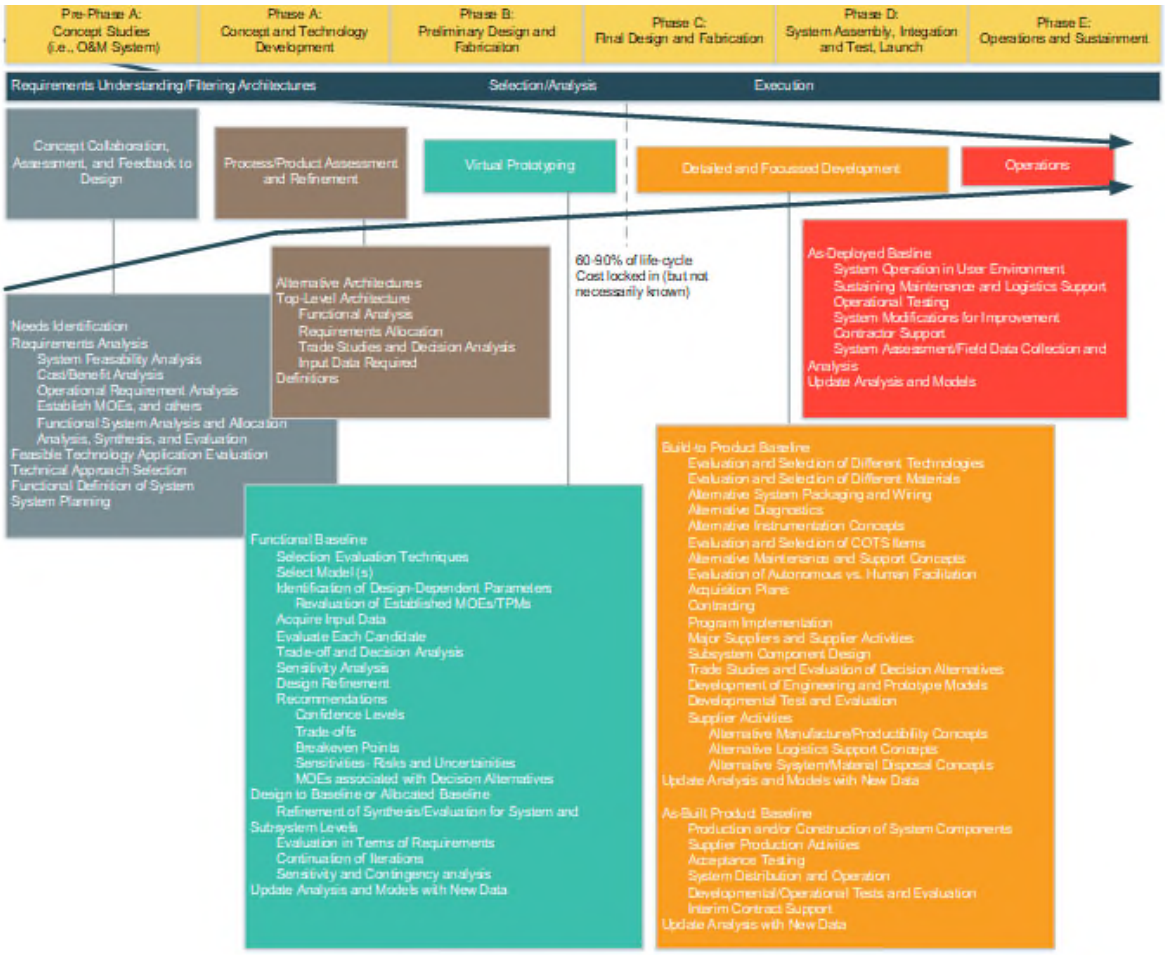

Figure 14: Some NASA SysE Analysis Methods, Including Acquisition (example), with Modification

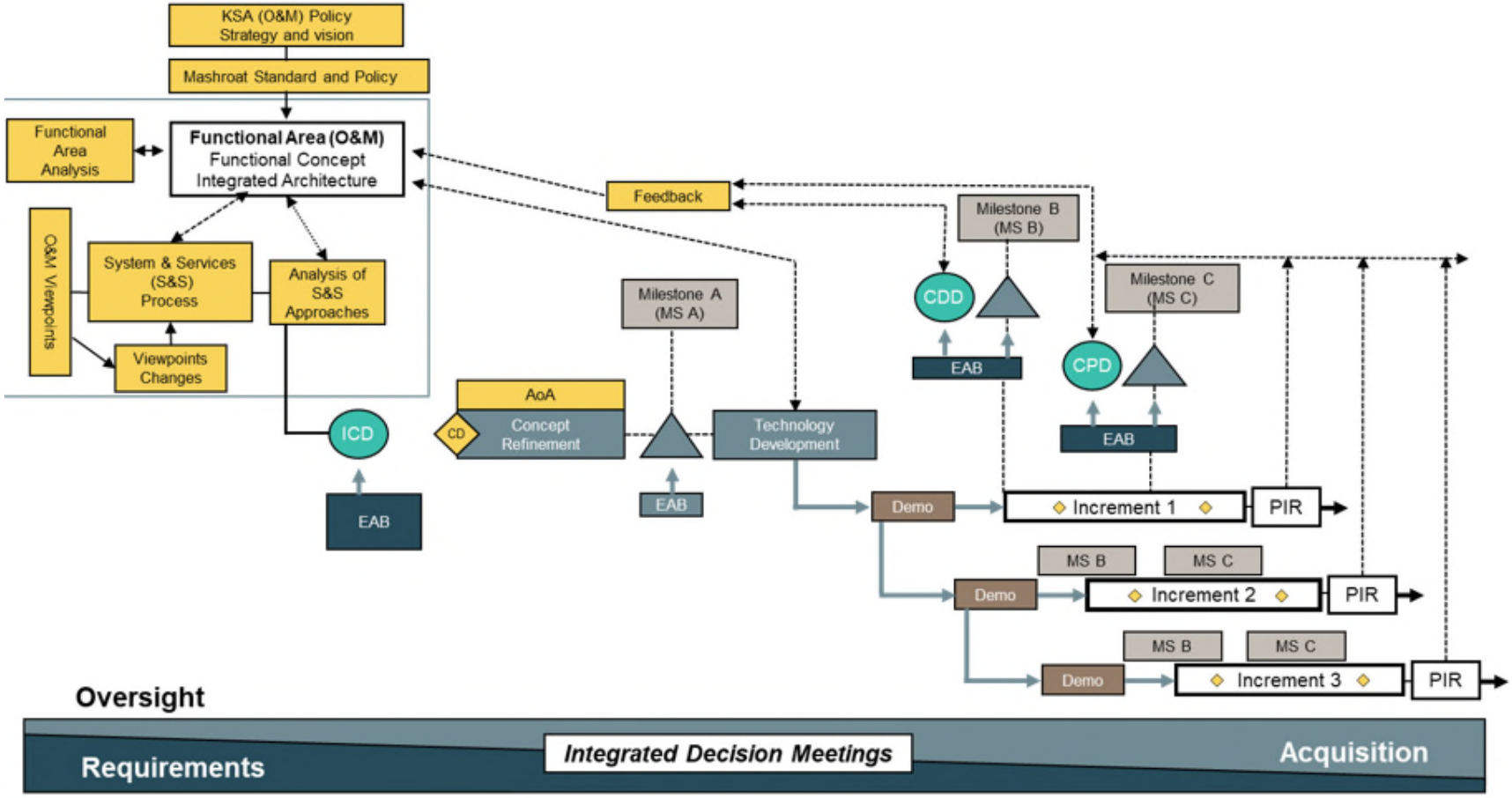

Figure 15: O&M S&S Functional Analysis Utilising a Small Portion of DoD-5000

Attachment 6 – Samples of Selection Rating and Criteria

The following two tables illustrate some examples of rating and selection benchmarks.

Rating (Points)	Evaluation Criteria-Life Cycle Cost
9-10	Offeror has included a complete Life Cycle Cost analysis that supports their proposal
7-8	Offeror did not include a complete Life Cycle Cost analysis, but has supported their design approach on the basis of Life Cycle Cost
5-6	Offeror plans to complete a Life Cycle Cost analysis as part of the contract effort, and has described the process that will be used
3-4	Offeror plans to complete a Life Cycle Cost analysis as part of the contract effort. but did not describe the process that will be used
0-2	Life Cycle Cost was not addressed in the Offeror's proposal

Table 3: Sample of Evaluation Rating by DAU

Evaluation Criteria	WT. Factor (%)	Proposal A		Proposal B		Proposal C	
		Rating	Score	Rating	Score	Rating	Score
A. Technical Requirements:	25						
1. Performance Characteristics	6	4	24	5	30	5	30
2. Effectiveness Factors	4	3	12	4	16	3	12
3. Design Approach	3	2	6	3	9	1	3
4. Design Documentation	4	3	12	4	16	2	8
5. Test and Evaluation Approach	2	2	4	1	2	2	4
6. Product Support Requirements	4	2	8	3	12	2	8
B. Production Capability	20						
1. Production Layout	8	5	40	6	48	6	48
2. Manufacturing Process	5	2	10	3	15	4	20
3. Quality Control Assurance	7	5	35	6	42	4	28
C. Management	20						
1. Planning (Plans/Schedule)	6	4	24	5	30	4	24
2. Organization Structure	4	4	16	4	12	4	16
3. Available Personnel Resources	5	3	15	3	20	3	15
4. Management Controls	5	3	15	3	20	4	20
D. Total Cost	25						
1. Acquisition Price	10	7	70	5	50	6	60
2. Life Cycle Cost	15	9	135	10	150	8	120
E. Additional Factors	10						
1. Prior Experience	4	4	16	3	12	3	12
2. Past Performance	6	5	30	5	30	3	18
Grand Total	100		476		516*		450
*Select Proposal B							

Table 4: Sample of Selection Criteria between Three Different Solution Proposals for O&M System/Services