TECHNICAL EVENT PROCESS GUIDEBOOK

Version 3.0

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PMW 240 SEA WARRIOR PROGRAM

Systems Engineering Team

Sea Warrior PROGRAM | eSolutions for Sailor and Fleet Readiness

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1 PURPOSE

This document articulates and facilitates the implementation of the Sea Warrior Program (PMW 240) version of SPAWARINST 5400.3 - Systems Engineering Technical Review Process Handbook (reference a). PMW 240 primarily manages Abbreviated Acquisition Programs (AAP), Non-Designated Projects, Sustainment projects, and Programs of Record rather than Acquisition Category (ACAT) programs. Reference (a) in its entirety is not applicable for non-ACAT programs and it encourages tailoring for non-ACAT programs. This Technical Event Process Guidebook (TEP) contains the PMW 240 tailoring and provides overarching guidance for each product release under PMW 240, whether sustainment, modernization, or new development.

This document focuses on the technical review events and test events. It is organized by module for each event. The technical review events describe the purpose, recommended timing, entry criteria, planning, conduct, and exit criteria. This document is used as the authoritative source for all events.

1.1 REFERENCED DOCUMENTS

Information from the documents referenced below was used to create this document.

a. SPAWARINST 5400.3 – Systems Engineering Technical Review Process, 09 OCT 07

b. Defense Acquisition Guidebook, 5 Aug 11 (https://dag.dau.mil)

c. Guidebook for Acquisition of Naval Software Intensive Systems, v1.0 September 2008

d. Supplement to Guidebook for Acquisition of Naval Software Intensive Systems, version 1.0, September 2010

e. DoDI 5000.02 - Operation of the Defense Acquisition System, December 8, 2008

f. PMW 240 Tailored Abbreviated Acquisition Program Initiation & Execution Guideline, version 2.4 2JAN13

2 PROJECT MANAGEMENT AND OVERSIGHT

As PMW 240 manages a portfolio of projects, it is necessary to identify the assigned responsibilities within PMW 240 and its supporting organizations. Figure 1- Responsibility Assignment Matrix, is the matrix for assigning responsibilities based on the type of program or project within the portfolio.

The Accountable Lead (L) is responsible for the project's Systems Engineering Plan (SEP), Integrated Master Plan (IMP), and System/Sub-system Specification (SSS) deliverables.

The Manager (M) is responsible for facilitating the events; coordinating staff reviews and adjudicating comments; signing out final artifacts.

The Advisor (A) is responsible for serving as an independent advisor, reviewing reports and event artifacts.

MDA = Milestone Decision Authority, M = Manager, L = Accountable Lead, A = Advisor				
	ACAT	**AAP**	**Non-Designated Program**	**Sustainment**
MDA				
ASN(RDA)/OSD(AT&L)	MDA			
PEO-EIS	M	MDA		
PMW 240 PM	M (as delegated)	MDA (as delegated) / M	MDA	MDA
PMW 240 Product APM*		M (as delegated)	M	MDA/M (as delegated)
SETR/TEP Event Participants				
SPAWAR 5.0 CHENG	A			
SPAWAR 5.0 TA (CSE)	A	A		
PMW 240 TD	L	A	A	A
PEO EIS APEOs	A	A	A	A
PMW 240 APM-E	A	L	L	L
PMW 240 Cyber Security Mgr	A	A	A	A

Figure 1- Responsibility Assignment Matrix

For Sustainment projects, the Assistant Program Manager (APM) is normally delegated authority for class 2 software change requests implemented in maintenance releases. Class 1 changes impacting Sailor facing applications always default to PM for decision authority.

For each technical review:

- The Assistant Program Manager (APM) shall brief the status of the project and ensure that planning for the technical review event is fully integrated within the overall project plans for any PMW 240 managed projects. This technical review planning shall be coordinated with the PMW 240 Program Manager, the PMW 240 Technical Director (TD), and designated Assistant Program Manager – Engineering (APM(E)).
- The PMW 240 TD shall perform any required technical assessments.

- The PMW 240 Deputy Program Manager (DPM) shall perform any required programmatic assessments.
- The PMW 240 is part of the SPAWAR Competency Aligned Organization (CAO) and has competency representatives assigned to PMW 240.

3 PMW 240 Systems Engineering Support

The PMW 240 Systems Engineering (SE) processes adhere to the referenced documents in section 1.1 and integrate with the acquisition processes implemented by PMW 240. The figure below illustrates the integration of these processes. The SE processes begin during the Initiation Phase and continue through the Deployment and Sustainment Phase.

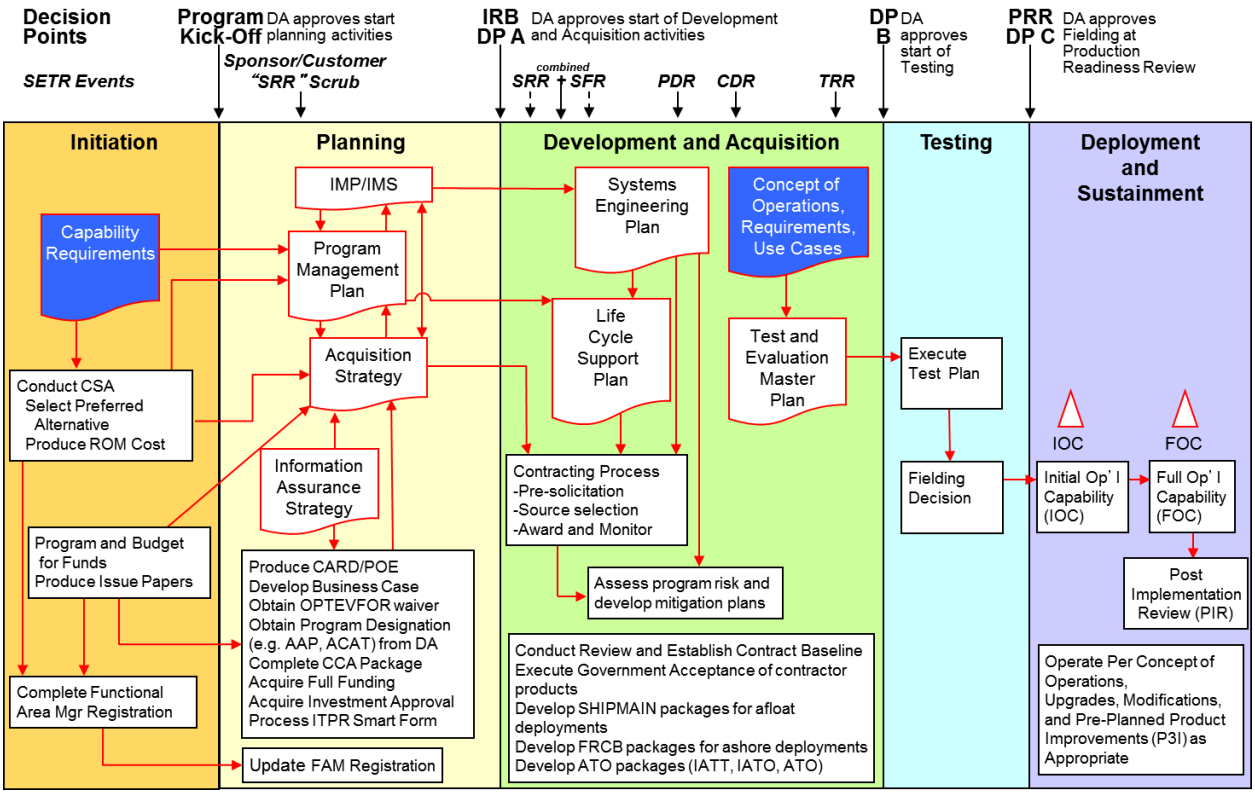

Figure 2 – PMW 240 AAP Life Cycle as of 2JAN13

During the Initiation Phase (per the PMW 240 AAP Guidance, ref [f]), an APM(E) works with the PMW 240 project team to define the deliverables applicable for that specific project. The APM(E) is responsible for development of the following systems engineering documents and works with the project team to ensure that the content in these documents reflect the project's needs: SSS, IMP, and SEP.

The APM(E) is also responsible for verifying that the Contract Data Requirements Lists (CDRLs) accurately reflect the deliverables required to support the PMW 240 systems engineering processes.

The APM(E) communicates with the leads of the various PMW 240 systems engineering support teams to ensure they are engaged with new projects. It is important that these leads are involved to determine the level of support and deliverables required for each project. This should occur during the Initiation and Planning phases of the AAP project life cycle, well in advance of the System Requirements Review/System Functional Review (SRR/SFR) event. These support teams and the respective leads include:

- Cyber Security Team* – Cyber Security Manager
- Logistics Team – Product Support Manager/APM(L)
- Integrated Master Schedule (IMS) Team – IMS Lead
- Test Team – PMW 240 Test Lead
- Enterprise Change Management (ECM) – ECM Lead
- Distance Support – Afloat Systems Lead
- Interface Team – PMW 240 Enterprise Data Lead
- Configuration Management (CM) – CM Lead

** The PMW 240 Cyber Security Team acts as the PMW 240 Information Assurance Team.*

3.1 Information Assurance / Cyber Security Team Support

The Cyber Security Manager identifies the Information Assurance (IA) deliverables and activities required for each project. This begins during the Initiation Phase (ref Figure 2). Depending upon the scope of the project, the following deliverables and associated activities should be considered:

- Acquisition Information Assurance Strategy (AIAS)
- Privacy Impact Assessment (PIA)
- Register system in eMASS
- Department of Defense (DoD) Information Assurance Certification and Accreditation (DIACAP C&A) Package
- Program Protection Plan (PPP)
- Interim Authority to Test (IATT)/Interim Authority to Operate (IATO)/Authority to Operate (ATO)
- Information Assurance Testing (the results of this testing is submitted in the DIACAP C&A Package)
- Review the IA documents included in the IMP and verify those needed, providing justification for any not applicable to the project.

3.2 Logistics Support

The Product Support Manager/APM(L) determines the deliverables and activities to include to satisfy the logistics and training needs of the project. This begins during the Initiation Phase (ref Figure 2). The following activities should be considered:

- Conduct a "Training Scoping Meeting" to identify the requirements, expectations, and deliverables for training and performance support,
    - Participants shall include the system Functional Lead (i.e., the Customer), the APM/Project Director, the APM(L), and the PMW 240 Training competency (PMW 240T);
    - The results of this meeting shall be documented in a Memorandum For the Record (MFR) prepared by PMW 240T and promulgated by the APM(L).
- Complete and submit the Fleet Readiness Control Board (FRCB) form to determine if a waiver will be granted;
- Perform a Front End Analysis to assess the breadth and scope of training/performance support requirements (Ref: OPNAVINST 1500.76B Encl 1.);
- Review the logistics documents included in the IMP and verify those needed, providing justification for any not applicable to the project. (Note: ULSS is required if the system needs an ILS Certification for Afloat

deployment. Note also that any program designated as an AAP will require a Navy Training System Plan (NTSP), and that all programs, regardless of designation, will require a mini-NTSP.);

- Identify any logistics processes or deliverables required prior to the Development and Acquisition phase of the AAP life cycle and timing for these deliverables;
- Inclusion of training/performance support and logistics analyses and artifacts as entrance and exit criteria for each technical review.

3.2.1 Diminishing Manufacturing Sources and Material Shortages (DMSMS) and Obsolescence Management

The purpose of DMSMS and Obsolescence Management is to proactively manage risks of loss or impending loss of industrial or commercial manufacturers of items or suppliers of items (both hardware and software) that endanger the development, production, or post-production support capabilities of the system/application.

PMW 240 APMs will conduct Technology Assessments prior to Preliminary Design Review (PDR) and/or procurement decision of hardware/ software. Programs that are post-deployment shall provide assessments in their quarterly In-Process Reviews.

Technology assessments support planning of technology refreshes and technology insertions throughout the life of the program. The incorporation of new technology into the system/application naturally mitigates the occurrence of DMSMS cases. By implementing emerging new technology that improves operational availability, capability, and supportability the program can realize secondary benefits such as decreasing total cost of ownership (TCO) and minimizing the number of changes to the product baseline. These changes will be implemented in accordance with the PMW 240 Configuration Management Plan.

Figures 3 and 4 below provide an example of a Technology Roadmap that APMs should create to track configuration items (CIs) and their forecasted market trends. This will provide the APM knowledge in advance of CIs going out of production which will require technology insertion to be completed and DMSMS risk mitigated. Technology assessments also help an APM determine the correct version of software to select for their system/ application to ensure the appropriate Business Capability life cycle is supported without untimely refreshes.

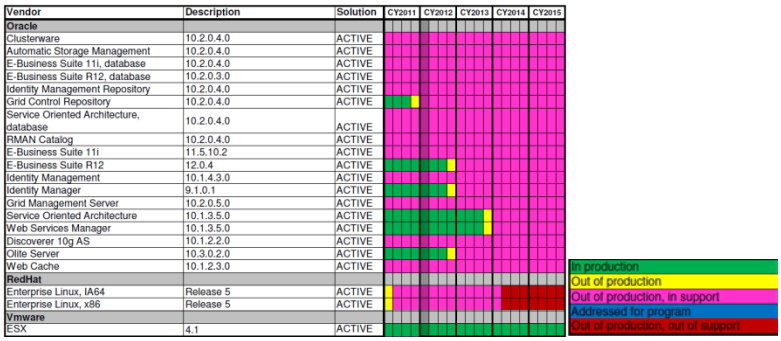

Figure 3 – Software Obsolescence Technology Roadmap

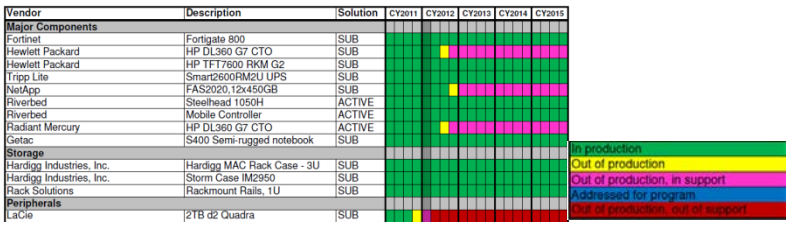

Figure 4 – Hardware Obsolescence Technology Roadmap

3.3 IMS Team Support

When assigned to a project the APM(E) will engage with the IMS Lead to ensure that the developed project IMSs track the detailed Initiation Phase (ref. Figure 2) activities. Additionally, engineering support teams will support the APM(E) and the IMS Lead by ensuring that their activities throughout the life cycle are captured in the IMS. The IMS includes all items identified in the project's tailored IMP and detailed activities, resources, and timeframes required to complete the project.

3.4 Test Team Support

The PMW 240 Test Team supports the project's testing. The Test Team is responsible for the project's Test & Evaluation Master Plan (TEMP) that documents the required test phases, deliverables, and success criteria for each test phase. Standard Test Team deliverables also include Application Functional Testing (AFT) Plans, Application System Integration Testing (ASIT), Plans AFT Reports, and ASIT Reports. The "Testing" section of this TEP identifies the standard participants, roles and activities throughout the testing phases.

3.5 Interface Team Support

The Interface Team will assist the APM(E) and project team with setting up Interface Integrated Project Team (IPT) structure (recommended for development involving 3 or more interfacing systems). Additionally, the Interface Team will assist with fulfilling the requirements of the Manpower, Personnel, Training, and Education (MPTE) Data Management Instruction, including Data Transfer and Compliance Review, data model review and coordination with MPTE Enterprise Information Management (EIM) team.

As part of the MPTE Data Management Instruction, the MPTE Chief Data Steward is responsible for approving all Enterprise Data Architecture products. To help with the coordination of the development, review and approval of DoD Architectural Framework (DoDAF) Data & Information Viewpoints (DIVs), the following guidance is provided:

- DIV-1: The development project teams will develop the draft DIV-1 with guidance from MPTE EIM team (recommend coordination meetings with EIM team during the development process to ensure the DIV-1 meets requirements). The draft DIV-1 will be provided to the EIM team to finalize and have approved by the Chief Data Steward.
- DIV-2: The development project teams will develop the DIV-2 with guidance from MPTE EIM team (again, recommend coordination meetings with EIM team during the development process to ensure the DIV-2 meets requirements). The draft DIV-2 will be provided to the EIM team for review and comment. The Chief Data Steward will sign as concurring on the final product along with the PMW 240 Enterprise Data Lead.
- DIV-3: The development project teams will develop the DIV-3 following similar guidance as other project DoDAF viewpoints. The MPTE EIM team should be included as part of the review process only, no signature from the Chief Data Steward or PMW 240 Enterprise Data is required.

It is recommended that data models be developed using ERWin tool (EIM indicated that concurrent use licenses are available). The final versions will be loaded into SADIE System Architect tool for use with linking to other DoDAF viewpoints.

3.6 Enterprise Change Management (ECM) Approach

As an enterprise acquisition agent, PMW 240 is accountable for the delivery of sound solutions with the technical capability to meet the sponsor's defined requirements. In addition, PMW 240 is accountable to ensure accurate and efficient transition of personnel as they use the new capabilities. To that end, PMW 240 has established a robust ECM capability with the following mission and goals:

Mission: To apply change management methodology to successfully transition the Navy personnel to new processes and technology.

Goals:

- Increased speed of adoption
- Greater user proficiency
- Total Force utilization
- Increased return on investment (ROI)

Change management is defined as a structured approach to transitioning individuals, teams, and organizations from a current state to a desired future state. Change management communications is a discipline focusing on the creation of accurate, open, honest, consistent, and timely messaging customized for targeted audiences and distributed through the most effective vehicles. The ECM efforts support each other and serve to inform, prepare, and build support among all individuals affected by an organizational or technological change. PMW 240 system releases have an ECM component tailored based upon the scope, complexity and/or special interest of the release. During each technical review event, the statuses of ECM initiatives for the project are briefed by the Project Director.

3.6.1 ECM: Material Acquisition and Non-Material Components

Since sound solutions consist of both materiel and non-materiel components, ECM begins its process by completing an analysis of the change to ascertain all variables that are a part of the system change. This establishes the complete scope of the change as well as the stakeholder personnel involved.

At Decision Point A (ref Figure 2) the ECM team defines and scopes Change Management requirements for PMW 240 projects. The ECM team conducts a Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy (DOTMLPF-P) analysis of the project with the project leaders. The analysis builds upon any existing DOTMLPF-P assessments that may have previously been conducted such as in the project's Business Case Analysis (BCA). The DOTMLPF-P analysis provides information necessary to build the Change Initiative Summary and the Change Management Plan, as needed.

Through the systems engineering processes, the disciplined acquisition of the materiel component is well defined and structured. The non-materiel component, consisting of all non-technical elements (e.g., DOTMLPF-P) is more ambiguous with less clear-cut roles, responsibilities, and accountabilities. ECM strategies and processes assist the greater Navy enterprise by aligning the technical and non-technical aspects of the project for greater efficiency in affecting the change throughout the Department of Navy.

3.6.2 Alignment with Leadership / Sponsorship and Project Management

To succeed, ECM efforts must align with those of leadership/sponsorship and project management. Figure 5- Prosci's Project Change Triangle illustrates the direct relationship among these three components and how each helps ensure a successful transition to the future state. The PMW 240 mission success requires not only project management (delivering new IT functionality on time, on budget, and without defect), but also change management (ensuring stakeholders fully embrace the future state and are proficient in conducting new system operations and/or business processes).

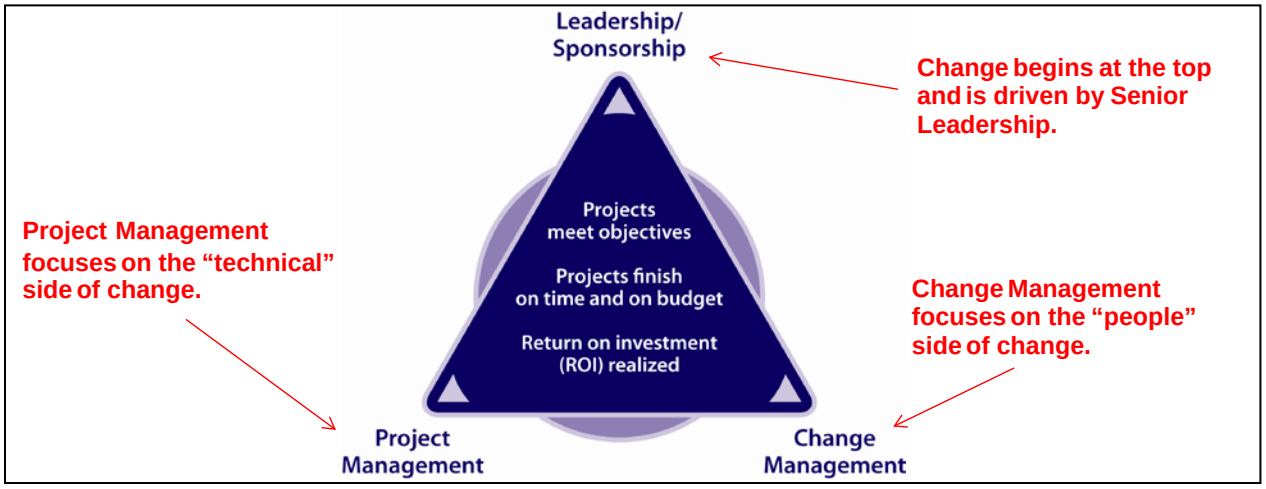

Figure 5- Prosci's Project Change Triangle

The ECM Team works with Navy leadership, sponsors, and functional project leaders to ensure the vision of the future is clearly defined. Further, they ensure that the reason for the change is communicated and understood throughout the Navy.

The ECM Team also collaborates closely with PMW 240 project management (APMs and PDs) to align change management activities with project management activities. Effectively balancing leadership and sponsorship, project management, and change management helps ensure that upon new IT deployment, stakeholders are fully aware of any change in system operations or business processes. A goal is for stakeholders to embrace and take ownership of the change, and proficiently implement the new processes. Effective change management with change management communications is vital to achieving the desired project outcome.

Change management activities are conducted in four phases aligned with the technical review events as shown in Figure 6- Phases of Change Management. The phases are: Understanding and Scoping the Change, Building Awareness and Support, Building Knowledge and Ability, and Reinforcing the Change.

A Phased Approach – Aligned with Technical Review Events

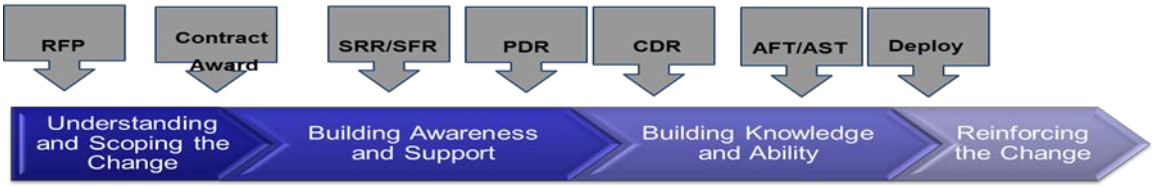

Figure 6- Phases of Change Management

3.7 Engaging PMW 240 Public Affairs and Strategic Communications

The PMW 240 Public Affairs Office (PAO) / Strategic Communications function (program level) works collaboratively with the ECM Team (project level) to promulgate information associated with the release of business IT products in the PMW 240 portfolio. The PAO is the central channel for releasing official news and information about the PMW 240 program and product deliveries. To that end, the PMW 240 PAO helps establish linkages between the ECM team and functional PAO channels to ensure information is synchronized and consistent across cross-organizational boundaries to reach intended users. The standard suite of PAO-generated broadcast communication products in support of major system engineering efforts releases includes:

1) News release for distribution Navy wide (i.e., www.navy.mil)
2) Senior Leader Summary
3) Fact Sheet
4) Sea Warrior Program web site and Facebook content
5) Feature story (depending upon the size and impact of the software release)
6) Updated PMW 240 System Description and Acronym Database

It's important to note the types of PMW 240 PAO-generated products are dependent upon the business significance and/or impact of change brought about by the IT releases. In other words, the level of PAO support is commensurate with the development efforts/modernization effort (e.g., AAPs), major Engineering Change Proposals (ECPs) and/or System Change Requests (SCRs) that enable a new or improved business process. To that end, the PAO collaborates with both the product line APM and the ECM lead to identify required PAO-generated products, key messages and content, and the responsibilities for associated distribution.

The PMW 240 PAO also contributes to identifying the information requirements of application end users as well as developing content for input into various ECM-generated communication products. These products include system-specific ECM plans, newsletters, "What's New for You" documents, visual aids, and other targeted, user-specific information products. In addition, some of these products are created by the N16 Fleet Introduction Team (FIT), in which PMW 240 PAO may contribute perspective and content.

The PMW 240 PAO is the focal point for coordinating any media activity associated with PMW 240 IT contract awards, system releases, or issues that may be of interest to the DoD and Department Of the Navy (DON) investment management communities, the public, industry, or other external audiences.

The PMW 240 PAO is the focal point for coordinating any media activity in support of the program office. This includes IT contract awards, software releases, and/or issues that may be of interest to the DoD and DON IT investment management and acquisition communities, the public, industry, or other external audiences.

As best practice, APMs and PDs should notify the PMW 240 PAO of upcoming system releases prior to the first technical review (SRR/SFR). This will enable the PAO to begin understanding both user and enterprise communication needs, synchronize with ECM, and plan strategic communication deliverables and activities, accordingly.

For more information related to media, please read "*Quick Reference Guide 16: PAO Rules of Engagement*."

4 System Documentation and Software Metrics

There are a number of documents that may be required during a project life cycle. The figure below illustrates the relationships between some of the system documents. The figure does not list all of the documents that may be required for a project. PMW 240 recommends eliminating as much redundancy between the documents as possible, by referencing documents vice duplicating information. The mapping of how the system documentation fits together is shown in Figure 7- System Documentation Map.

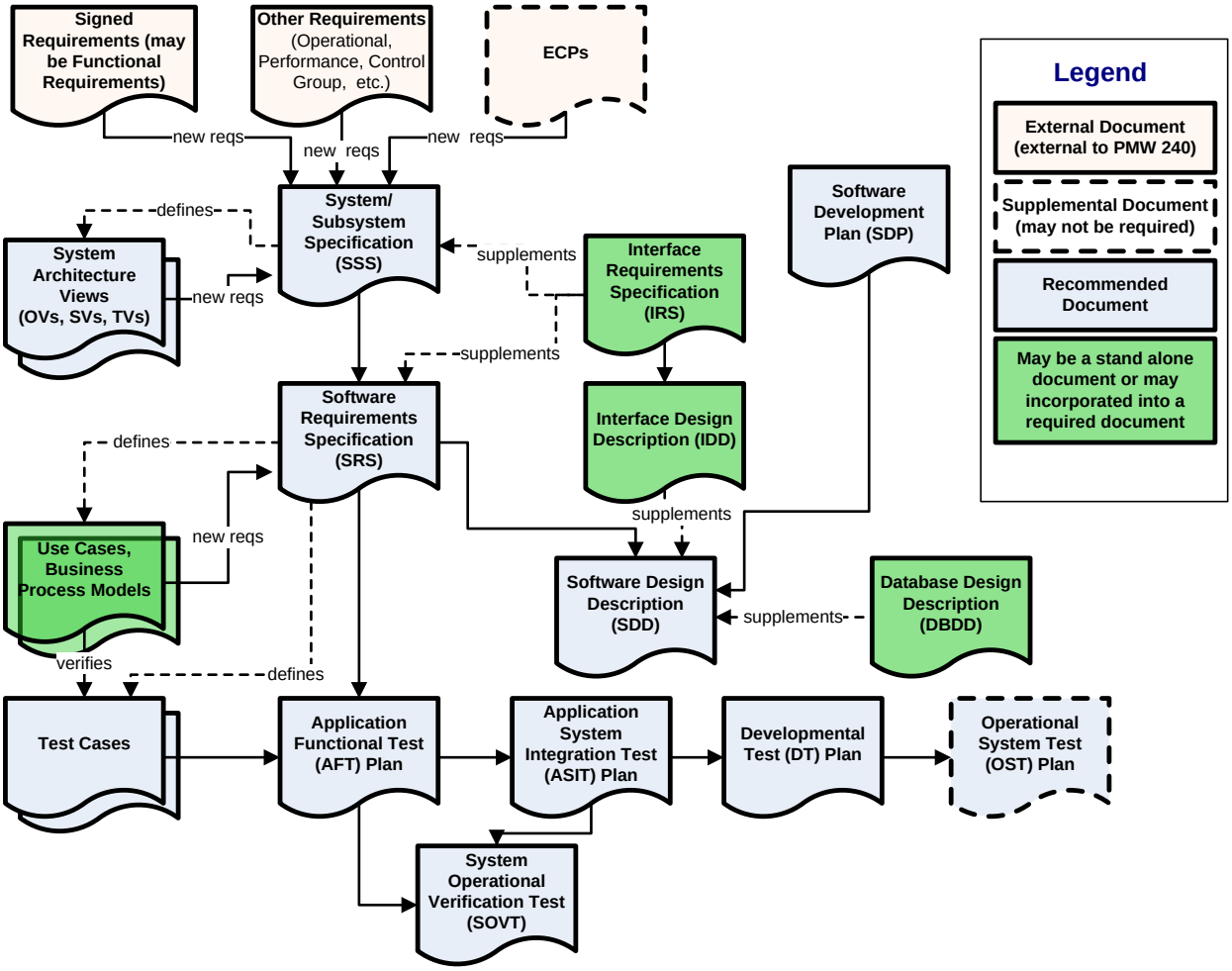

Figure 7- System Documentation Map

Reference "Appendix B: DoDAF Requirements and Mapping v 1.5 to 2.0" and "Appendix C: DoDAF Names and Descriptions" for information about System Architecture Views and other DoDAF documents. The DoDAF version 2.0 documents to be considered are included in the IMP template. If using web services the "SvcV" artifacts should be included.

The following descriptions are provided as a reference to the documents included in the Figure 7- System Documentation Map and also includes additional supporting documents.

DBDD The Database Design Description (DBDD) describes the design of a database, that is, a collection of related data stored in one or more computerized files in a manner that can be accessed by users or computer

programs via a database management system (DBMS). It can also describe the software units used to access or manipulate the data. Reference the DBDD DID (DI-IPSC-81437) for document requirement details.

ICD The Interface Control Document (ICD) provides a record of all interface information (such as drawings, diagrams, tables, and textual information) generated for the project. It also describes access to, or delivery of, copies of the actual interface information. Reference the ICD DID (DI-CMAN-81248A) for document requirement details.

IDD The Interface Design Description (IDD) describes the interface characteristics of one or more systems, subsystems, Hardware Configuration Items (HWCIs), Computer Software Configuration Items (CSCIs), manual operations, or other system components. An IDD may describe any number of interfaces. The IDD can be used to supplement the System/Subsystem Design Description (SSDD), Software Design Description (SDD), and DBDD. The IDD and its companion Interface Requirements Specification (IRS) serve to communicate and control interface design decisions. Refer to the "Supplement to Guidebook for Acquisition of Naval Software Intensive Systems" (ASN/RDA September 2010), ref d, for document requirement details. Reference the IDD DID (DI-IPSC-81436A) for document requirement details.

IRS The Interface Requirements Specification (IRS) specifies the requirements imposed on one or more systems, subsystems, HWCIs, CSCIs, manual operations, or other system components to achieve one or more interfaces among these entities. An IRS can cover any number of interfaces. Reference the IRS DID (DI-IPSC-81434A) for document requirement details.

LCSP The Life Cycle Sustainment Plan (LCSP) is developed and included as a part of the Acquisition Strategy to document how the sustainment strategy is being implemented. The LCSP is an evolutionary document begun by the government during the Development and Acquisition Phase (ref Figure 2) as a strategic framework for obtaining optimal sustainment at minimal life cycle cost. The developer evolves it into an execution plan for how sustainment is applied, measured, managed, assessed, and reported after system fielding. Refer to the "Supplement to Guidebook for Acquisition of Naval Software Intensive Systems" (ASN/RDA September 2010), ref. d, for document requirement details.

NTSP The Navy Training Systems Plan (NTSP) is the principal document for defining manpower, personnel, and training requirements and resources for new and/or modified developments. The NTSP is a life cycle document that identifies manpower and training needs, concepts, strategies, constraints, risks, data, and resources required to establish and maintain an effective training program throughout the development's life cycle.

All ACAT and AAP programs within PMW 240 require a formal NTSP, and all other programs require a "mini-NTSP". The mini-NTSP is essentially the System Description/Operational Use section of the formal NTSP (section I.D.1) and the Concepts section (section I.H), which will address the system's Operational, Maintenance, Manning, and Training concepts.

RTM The Requirements Traceability Matrix (RTM) maps requirements vertically from spec to spec (multiple tiers), spec to design, design to test, and return. Horizontal traceability should represent dependencies between components. The traceability matrix will be managed in DOORS® and will be include in those documents that require a traceability matrix (e.g. SSS, SRS, test plans). Refer to the "Supplement to Guidebook for Acquisition of Naval Software Intensive Systems" (ASN/RDA September 2010), ref d, for document requirement details.

SDD The SDD describes the design of a software item. Safety-critical items shall be clearly identified for traceability. The SDD describes software design decisions, the architectural design, and detailed design (e.g.

lowest level Computer Software Units and Packages). Includes a matrix that shows where requirements from the corresponding SRS are designed into the software code. Refer to the "Supplement to Guidebook for Acquisition of Naval Software Intensive Systems" (ASN/RDA September 2010), ref d, for document requirement details.

SDP The Software Development Plan (SDP) describes plans for conducting a software development effort. The term "software development" is meant to include new development, modification, reuse, reengineering, maintenance, and all other activities resulting in software products. This provides insight into, and a tool for monitoring, the processes to be followed for software development, the methods to be used, the approach to be followed for each activity, and project schedules, organization, and resources. Defines the developer's life cycle model and the processes used; includes primary, supporting and organizational processes. Refer to the "Supplement to Guidebook for Acquisition of Naval Software Intensive Systems" (ASN/RDA September 2010), ref d, and DID (DI-IPSC-81427A_REV A_SDP_A004) for document requirement details.

SEP The Systems Engineering Plan (SEP) is a technical planning document and the blueprint for the conduct, management, and control of the technical aspects of the government's program from concept to deployment. SEP defines the methods for implementing all system requirements having technical content, technical staffing, and technical management. A SEP Template and also the SEP Annotated Outline are available on the portal for SEP content details.

SRS The Software Requirements Specification (SRS) specifies the requirements for a CSCI and the methods to be used to ensure that each requirement has been met. Requirements pertaining to the CSCI's external interfaces may be presented in the SRS or in one or more IRSs referenced from the SRS. The SRS is used as the basis for design and qualification testing of a CSCI as documented in a RTM. The SRS may be output generated by DOORS®. Reference the SRS DID (DI-IPSC-81433A) for document requirement details.

SSDD The System/Subsystem Design Description (SSDD) describes the system- or subsystem-wide design and the architectural design of a system or subsystem. The SSDD may be supplemented by IDDs and DBDDs. Reference the SSDD DID (DI-IPSC-81432A) for document requirement details.

SSS The System/Subsystem Specification (SSS) specifies the requirements for a system or subsystem and the methods to be used to ensure that each requirement has been met. Requirements pertaining to the system or subsystem's external interfaces may be presented in the SSS or in one or more IRSs referenced from the SSS. The SSS is used as the basis for design and qualification testing of a system or subsystem as documented in a RTM. The SSS may be output generated by DOORS®. Reference the SSS DID (DI-IPSC-81431A) for document requirement details.

STP The Software Test Plan (STP) describes the plan for qualification testing of software Configuration Items (CIs) and software systems. It describes the tests at a high level, including the software requirements covered by each test (as defined in a RTM generated by DOORS®), together with the test environment and test personnel requirements. It describes the problem reporting and resolution procedures, and provides schedules for test activities. Refer to the "Supplement to Guidebook for Acquisition of Naval Software Intensive Systems" (ASN/RDA September 2010), ref d, for document requirement details.

STrP The Software Transition Plan (STrP) identifies the hardware, software, and other resources needed for life cycle support of deliverable software and describes the developer's plans for transitioning deliverable items to the support agency. Reference the STrP DID (DI-IPSC-81429A) for document requirement details.

SVD The Software Version Description (SVD) identifies and describes a software version consisting of one or more CSCIs. It is used to release, track, and control software versions. The term "versions" may be applied

to the initial release of the software, to a subsequent release of that software, or to one of multiple forms of the software released at approximately the same time (for example to different sites). Reference the SVD DID (DI-IPSC-81442A) for document requirement details.

4.1 Requirement Traceability

Requirement traceability is the process of mapping individual test scripts back to functional requirements they validate. This process is used to ensure all functional and system requirements have been implemented within the system, as well as tested. Requirement traceability is documented in a requirement traceability matrix (RTM).

PMW 240 uses IBM's DOORS® requirements management software application to manage requirements. The APM(E) is responsible for managing the project's requirements and traceability in DOORS®. DOORS® uses links to create the traceability between each requirement module: functional, system, software and test. The features of DOORS® make it easy to identify gaps in requirements, as well as ensure that the functional requirements have been completely tested.

The following documents will leverage the RTM and all or part of the document may be generated by DOORS®:

- **SSS**: Provides traceability that maps system requirements to the stakeholder's requirements, typically identified in the Functional Requirements Document (FRD).
- **SRS**: Contains a section depicting a RTM that shows the traceability of software requirements to the system requirements documented in the SSS. Should also map computer software configuration items (CSCIs) to the system requirements.
- **SDD**: Contains a section depicting an RTM that shows traceability of software design to software requirements documented in the SRS.
- **Test Plans**: Provides traceability that maps test scripts to software requirements. These test plans include plans AUT, AFT, ASIT and DT.

The mapping of how the documentation fits together to enable requirement traceability and test script traceability is shown in Figure 8- Requirement Traceability Mapping.

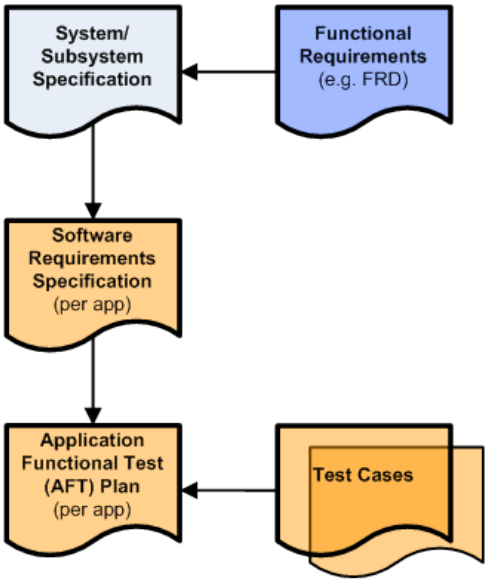

Figure 8- Requirement Traceability Mapping

4.2 Software Metrics

The following information is largely extracted from the "Guidebook for Acquisition of Naval Software Intensive Systems" [ref c] and its' "Supplement" [ref d]. Additional information regarding software metrics is available in each of those documents.

"The core metrics are mandated across the entire software development life cycle by ASN (RD&A) policy. The core metrics are assessed at all technical review events, and evaluate the readiness for transition from acquisition to sustainment. They are to be defined, gathered, analyzed, reported, and used to assess software health during all phases of the acquisition."

"Metrics are a critical risk management mechanism for successful acquisition of naval systems and platforms." Four mandatory core metrics (listed below) serve as the basis of management display of program risk and are reported at major reviews and applicable technical reviews.

1) Software Size/Stability

2) Software Cost/Schedule

3) Software Quality

4) Software Organization

For each metric type, various methods may be used to "measure" the metric. To be effective, metrics should clearly portray variances between planned and actual performance, present a clear view of trends over time, provide prediction or early detection of situations that require management attention, and support the assessment of the impact of proposed changes on the program. Each metric has various "measures" that may be selected for a project:

1) Software Size/Stability Measures:

   a) Lines of Code Count

b) Software Requirements Count

c) Function Point Count

2) Software Cost/Schedule Measures:

a) Planned Data (Planned effort/hours by Work Breakdown Structure (WBS) or work package)

b) Actual Data (actual hours per WBS items/work package)

3) Software Quality Measures:

a) Defects

b) Number/frequency of iterations to correct defects

4) Software Organization Measures(Labor categories by role and Experience factors):

a) Effort

b) Staff Training and experience

c) Staff Turnover

The project management team evaluates the various measures/indicators and select those that are relevant and most valuable to the project. APMs should lean on the use of Function Points for software metrics, particularly for any new development efforts. Source lines of code (SLOC) is a viable option for any modernization or sustainment projects, specifically if there are established lines of code measures for the system being modified. The metrics used by the project are documented in the project SEP.

5 SYSTEMS ENGINEERING TECHNICAL REVIEWS

This section describes essential technical reviews and test events to be conducted, as applicable, for all PMW 240 projects. Technical reviews provide PMW 240 with an integrated technical (i.e., logistics, engineering, test and evaluation, etc.) recommendation with respect to proceeding to the next technical phase of the project. This is accomplished via a multi-disciplined engineering assessment of the project's progress toward demonstrating and confirming completion of required accomplishments as defined in initial project planning efforts and documents.

The technical reviews form the technical basis for establishing:

a. Project definition (cost and performance), and

b. Project timing (schedule).

The APM ensures that planning for the technical review event is fully integrated within the overall guidance for any PMW 240 managed project. Projects already in progress should comply with the PMW 240 guidance to the maximum extent possible (within the constraints of the existing budget and contract(s)). This technical review planning is coordinated with the PMW 240 Program Manager, the PMW 240 TD, and designated APM(E).

The project's APM, with APM(E) support and guidance, ensures technical reviews are conducted in accordance with the project's SEP and this document. The APM(E) will conduct a technical evaluation of the application as part of each technical review. The technical reviews are structured to assess a project's progress toward demonstrating and confirming completion of required accomplishments and readiness to proceed to the next technical review. These reviews are event driven and only conducted when the product's

design/development is ready for review. As a product develops, it passes through a series of technical reviews of increasing detail. Each event has defined entry and exit criteria tied to the required level of design/developmental maturity and applied across all requirements and technical disciplines. These reviews are confirmation of the Systems Engineering process.

In addition to technical reviews, projects conduct Baseline Reviews (BRs) as necessary. The project SEP should identify the technical elements of the BR.

Technical reviews are complete when the review's deliverables are provided, as defined in the project's IMP, all Action Items have been addressed, assessed, their status agreed upon, and approval to proceed has been granted by the decision authority. Unless specifically provided for in the contract(s), successful completion of the technical reviews does not affect the requirements, terms, and conditions set forth in the project's contract(s). Technical reviews should NOT be used to:

a. Constitute government approval of the design,

b. Change the responsibility as set forth in the contract(s),

c. Change or affect ownership of the design, or

d. Relieve the developer from meeting specification requirements as set forth in the contract(s).

Table 1 - Event Attendee Matrix, identifies recommended participants by event. Required and optional participants are to be determined for each project based on scope, and support required by the various teams. The table below recommends event attendees, **R = Required Attendee, I = Invitee**.

Attendees by Role	**SRR/SFR**	**PDR**	**CDR**	**ATRR**	**TRR**	**PRR**
Chair – MDA as delineated in Figure 1	R	R	R		R	R
Accountable Lead as delineated in Figure 1	R	R	R		R	R
PMW 240 PM	R	R	R		R	R
PMW 240 DPM	R	R	R		R	R
PMW 240 TD	R	R	R	R	R	R
Requirement Sponsor	R	R	R		R	R
Functional Lead(s)	R	R	R	R	R	R
User representatives(s)	I	I	I	I	I	I
Fleet TYCOM(s) – SURFOR, AIRFOR, SUBFOR	I	I	I		I	I
Resource Sponsor	R	R	R		R	R
Reserves CIO	I	I	I		I	I
Designated SPAWAR 5.0 Systems Engineer	I	I	I		I	I
Functional Test Lead	I	I	I	R	R	R
OPNAV Fleet Introduction Team (FIT) Lead	I	I	I	I	I	I
Developer representatives	R	R	R	R	R	R
Interface Partner(s)	I	I	I	I	I	I
MPTE Enterprise Architecture (EA) Lead	I	I	I		I	I
Installation Facility/Data Center representatives	I	I	I	I	I	I
PMW 240 representatives:						
Product APM	R	R	R	R	R	R
Product APM – Engineering	R	R	R	R	R	R
Product Project Director (PD)	R	R	R	R	R	R
APM – Enterprise Integration	I	I	I		I	I
APM – Engineering, Configuration Management	I	I	I		I	I
APM – Enterprise Data	I	I	I		I	I
APM – Logistics / Product Support Manager	I	I	I	I	I	I
Cyber Security (IA) Manager	I	I	I	I	I	I
Afloat Business Manager (if deploying afloat)	I	I	I		I	I
Test Lead	R	R	R	R	R	R
Systems Engineering representative	I	I	I	I	I	I
Risk Lead	R	R	R	R	R	R
Integrated Master Schedule (IMS) Lead	R	R	R		R	R
Enterprise Change Management (ECM) Lead	I	I	I		I	I
Public Affairs Officer & Communications (PAO)	I	I	I		I	I
Cost Team representative	I	I	I		I	I
Enterprise Architecture (EA) Lead	I	I	I		I	I
Contracts Lead	I	I	I		I	I

Table 1 - Event Attendee Matrix

5.1 Life Cycle Requirements

All PMW 240 technical projects must conform to one of the following life cycles: Figure 9 - Full Life Cycle, or Figure 10 - Agile Life Cycle. This life cycle is implemented whether the project is new development, updates, enhancements, maintenance, or sustainment.

Tailoring or elimination of life cycle events are coordinated with the appropriate organization and documented in the project's SEP. The project's IMP specifies the signing/approval of major document deliverables (SRS, SSS, etc.) by key review individuals (e.g., PM, DPM, TD, APM, and APM(E)) also signifies approval of any tailored life cycle events.

If Operational System Testing (OST) is required, the Developmental Testing (DT) acts as a preparatory test for OST. If OST is not required, DT is the User Acceptance Testing (UAT).

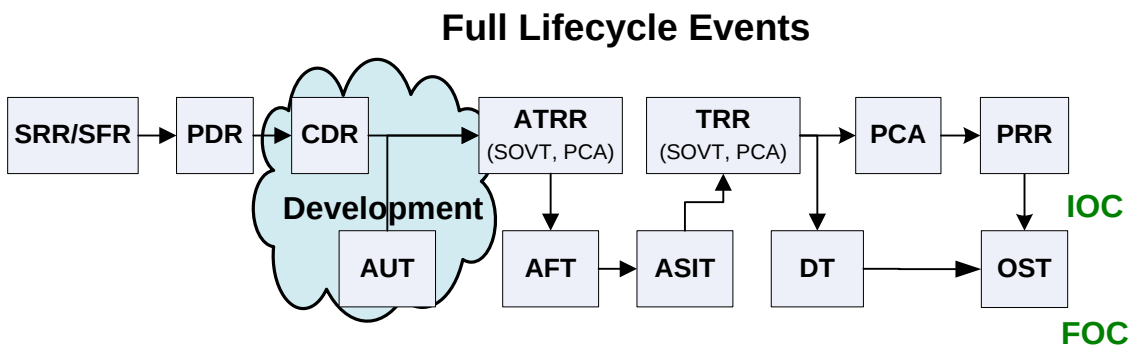

Figure 9 - Full Life Cycle

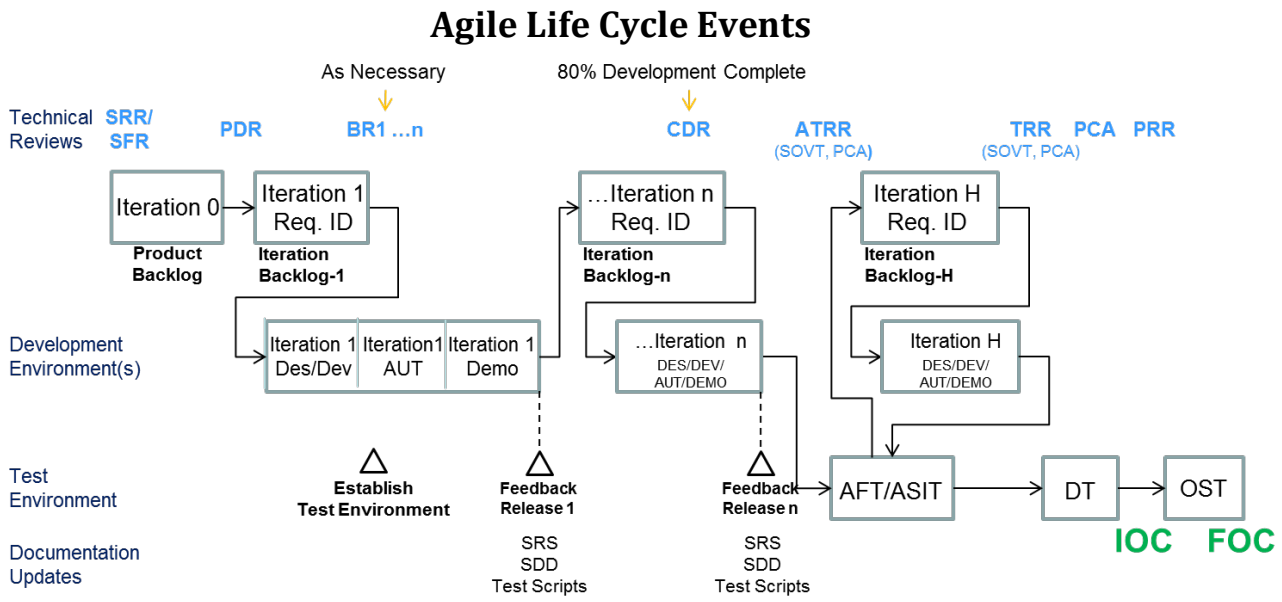

Figure 10 - Agile Life Cycle

The Agile life cycle depicted is a hybrid of Agile and waterfall approaches - it is not true "Agile".

Iteration 0: "Planning iteration" – This is used for environment setup, ramp-up, discovery and initial overviews, and design discussions.

Iteration 1-n: These are the development cycles that will be identified and planned during Iteration 0. Each iteration should represent a short time frame that typically lasts from one to four weeks, in which a slice of functionality is designed, developed and tested. At the end of each iteration a working product is demonstrated to stakeholders.

Iteration H: "Hardening iteration" – No new features are implemented during this iteration. Escaped defects are corrected, documentation is completed and gold version of the software is created.

Backlog: A prioritized list of work to be completed. Backlogs are often divided from largest to smallest: product backlog (items for the entire project/product), release backlog (just the items for a particular release), and iteration backlog (items for the current iteration).

5.2 SRR/SFR – System Requirements Review/System Functional Review (Combined)

The System Requirements Review / System Functional Review (SRR/SFR) is a combined system-level review conducted to ensure system requirements are completely and properly identified and there is a mutual understanding between the government and developer. The SRR captures systems requirements and is conducted after project kick-off and planning and is conducted early in the Development and Acquisition Phase (ref Figure 2). In addition, the SRR also validates project cost, schedule, and performance for the purpose of supporting Milestone or equivalent approvals.

The SFR is a multi-disciplined product and process assessment to ensure that the system under review can proceed into preliminary design, and that all system requirements and functional performance requirements derived from the FRD and SSS are defined, aligned with the external environment (systems and infrastructure) and consistent with cost (project budget), schedule (project schedule), risk, and other system constraints. System performance may be decomposed and traced to lower level subsystem functionality that may define hardware and software requirements. SFR determines whether the system's functional definition is fully decomposed to its lower level, and is prepared to start preliminary design.

5.2.1 SRR/SFR Purpose

The combined SRR/SFR is a multi-disciplined product and process assessment to ensure the system under review can proceed into preliminary design. The SRR portion of this review ensures that all system and performance requirements derived from the capability or functional requirements document are defined. The SFR portion of this review extends this assessment to ensure all system requirements and functional performance requirements derived from the functional requirements are defined in the system specifications (functional baseline), and that all required system performance is fully decomposed and defined in the functional baseline. The SRR/SFR ensures the specifications are aligned with the external environment (systems and infrastructure), and consistent with cost (project budget), schedule (project schedule), risk, and other system constraints.

The system requirements are evaluated to determine whether:

- they are fully defined and consistent with the mature system solution,

- traceability of systems requirements to the functional document is maintained,
- systems functional definition is fully decomposed to its lower level, and
- traceability of lower-level systems requirements to top-level system requirements.

A successful review is predicated on the determination that the system requirements, system performance requirements, lower level performance requirements preferred system concept, available technology, project resources (funding, schedule, staffing, and processes) and plans for design and development form a satisfactory basis for proceeding into preliminary design.

The following SRR/SFR guidance attempts to address 'generic' concepts and requirements for conducting a 'typical' PMW 240 SRR/SFR. Each project is different in terms of purpose, scope, size, risks, and delivered solutions. The APM(E) tailors the review to the technical scope and risk of the system, and address the SRR/SFR elements in the project's SEP and IMP. Details of any tailoring are described in the project SEP. The APM is encouraged to assess the project's unique aspects, and tailor the SRR/SFR presentation to address any project-specific items requiring resolution or decision, any concerns, and any successes. Notwithstanding successful completion of the SRR/SFR, the developer remains responsible for the system design/performance requirements within the terms of the contract.

5.2.2 SRR/SFR Timing

The SRR/SFR is typically conducted early in the Development and Acquisition phase, when the presentation of the system functional requirements and system performance requirements are ready for formal review, prior to a decision being made on proceeding to preliminary design activities. The SRR/SFR should not be scheduled at a particular number of months after contract award; rather, the SRR/SFR should occur when the developer can ensure the system has successfully met the entrance criteria, described below.

The SRR/SFR consists of a review period, a meeting and a close-out. The review begins when the first SRR/SFR document is released for review. The APM determines when the meeting will take place, based on completion of the entry criteria and the guidance in the sections below. The close-out lasts until the exit criteria are met and approval to proceed is granted.

5.2.3 SRR/SFR Entry Criteria

Typical SRR/SFR Entrance Criteria addresses and answers the following:

a. If applicable, an Alternative Systems Review (ASR) is successfully completed. (NOTE: An ASR is a technical review demonstrating the 'preferred' system concept is cost effective, affordable, operationally effective and suitable; and the preferred system concept can be developed to provide a <u>timely</u> solution at an acceptable level of risk).

b. Has a preliminary agenda been coordinated (nominally) 10 days prior to the SRR/SFR?

c. Have the preliminary software functional requirements been defined?

d. Has a preliminary Cost Analysis Requirements Description (CARD) been provided? (See Appendix A: Guidance Documents & Templates: ERP Budget Structure, Spend Plan, SPAWAR GWBS, Spend Plan Soft Controls).

e. Is there a documented, updated risk assessment? Has a clear risk management strategy, assessment, and reporting process been documented? Does the strategy address stakeholder interaction?

f. Have all deliverables identified in the project's IMP for SRR/SFR been made available to all participants prior to conducting the review?

g. Have any updates to the Logistics documentation been performed in accordance with the project's IMP and the SRR/SFR Checklist? (Reference Appendix A: Guidance Documents & Templates: SRR/SFR Checklist.)

h. Has obsolescence screening been performed for both proposed hardware and software?

i. Are the software requirements and interface requirements to be implemented in each incremental software build and/or release identified?

j. Have updated cost and schedule data been submitted? Have changes/updates to the initial cost estimates and the schedule been documented? Are life cycle logistics costs included in the project cost estimates?

k. Has a preliminary identification (with supporting context information) of the percentage of total software that will be new development vs. Commercial Off The Shelf (COTS)/Government Off The Shelf (GOTS)/Non-Developmental Items (NDI)/open source been produced?

l. Have the names of each CSCI intended to be a part of the planned system been documented? Have clear and concise capability-based descriptions of key CSCIs of the planned system been documented? For each key CSCI, have interfaces with other CSCIs been identified?

m. Have all information assurance requirements been adequately addressed? Has the initial version of the AIAS been provided? Has the system been registered in eMASS?

n. Has a SSS document been produced, to include a description of interoperability and/or distributed services requirements?

o. Has a preliminary functional baseline as documented in the SSS been established (with supporting trade-off analyses and data)?

p. Have the APM and APM(E) met with PMW 240 Training Lead? PMW 240 Training Lead will conduct a Front End Analysis to determine if training is required.

q. Has the project's IMS been submitted for approval to be baselined?

r. Has the SRR/SFR checklist review been conducted? And have action item(s) (AIs) from the checklist review been documented?

5.2.4 SRR/SFR PLANNING

a. Planning for a technical review should start nominally six weeks prior to conduct of the review. The assigned APM(s) is responsible for how the SRR/SFR is conducted, including:

1. Coordinating with the APM(E) to determine if the project is ready for a SRR/SFR.

2. Developing a preliminary agenda for the planned review meeting. This agenda should be made available to the review participants 10 business days prior to the meeting.

3. Ensuring all documents requiring formal approval are provided at least 20 business days prior to the meeting, and other review documents are provided to reviewers at least 10

business days prior to SRR/SFR. Documents provided are to be in the status defined in the project's IMP for the event.

4. Ensuring the required leads have provided any supporting data for addressing specific entry and exit criteria, and other project issues and concerns.

5. Coordinating with PMW 240 Operations to schedule the review and send out meeting invitations.

6. Completing the project's SRR/SFR slide deck.

b. SRR/SFR event Participants: refer to Table 1 - Event Attendee Matrix.

c. Location – The facility chosen should be adequate to ensure complete participation by all required organizations and competencies. The intent is to minimize travel and travel costs.

d. Conduct of Review. All participants are to assess the review materials provided to them, document any concerns by the means of document deliverable comment matrices, and submit these documented concerns to the project document owner prior to the event (APM-specified deadline).

5.2.5 Conduct of SRR/SFR

Recommended Agenda

a. Introduction/agenda/administrative

b. Purpose/Overview of Project

1. Problem statement

2. 'As Is' and 'To Be' Models

c. SRR/SFR overview

1. Entrance and Exit Criteria

d. Technical Presentation

1. Software requirements review

a. SSS review

b. Issue review, as necessary

c. Requirement change management

d. Requirement traceability

2. Design review

a. Preliminary, high-level diagrams (ex. architecture, database, interfaces, etc.)

b. Key Performance Parameters (if applicable) as documented in the FRD

c. Issue review, as necessary

3. Initial Test planning review
4. Logistics review
5. Information Assurance (IA) review
6. Configuration Management review
7. Initial Enterprise Change Management review
8. Communications review

e. Programmatic Presentation

1. SRR/SFR documentation status review
2. DOTMLPF-P Analysis
3. Risk mitigation review
4. Schedule review
5. Staffing analysis
6. Cost review
7. Outstanding Action Items review
8. Next steps

f. Request to Proceed

Event Deliverables/Products

The following post SRR/SFR meeting items must be completed prior to review closeout:

a. Meeting minutes – to include list of attendees (name, functional area represented, and code) and any recorded Action Items.

b. Technical Assessment (responsibility of the PMW 240 TD) to include technical recommendations to the MDA prior to entering the PDR.

c. Programmatic assessment (responsibility of the PMW 240 DPM) to include programmatic recommendations to the MDA prior to entering the PDR.

d. Acquisition Decision Memorandum (ADM) issued with Objective and Threshold dates for the technical reviews.

5.2.6 SRR/SFR Completion/Exit Criteria

a. The SRR/SFR is considered complete when:

1. All SRR/SFR Entrance and Exit Criteria have been met.

2. The SRR/SFR action items have been satisfied per the following:

    a. Closed / Resolved or,

    b. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution.

3. MDA has issued approval to proceed.

b. Typical SRR/SFR Exit Criteria will address and answer the following:

1. Are the system functional requirements as documented in the SSS defined in sufficient detail to enable system design to proceed?

2. Is the software functionality in the approved functional baseline consistent with the updated software metrics?

3. Does the functional baseline address all of the system's performance characteristics, down to a configuration item level, to include (but not be limited to) the functional, interoperability, and interface factors, while at the same time showing that these specified characteristics can be verified and validated?

4. Are the Family of Systems/System of Systems (FoS/SoS) requirements (as defined in the SSS) properly allocated (down to an initial CSCI level) and approved?

5. Are adequate processes and metrics in place for the project to succeed?

6. Have Human System Integration (HSI) requirements been reviewed and included, where needed, in the overall proposed system design?

7. Are all relevant supportability requirements addressed in accordance with the SRR/SFR Checklist? (Reference Appendix A: Guidance Documents & Templates: SRR/SFR Checklist)

8. Have the document deliverables identified in the project's IMP been provided in the status indicated for the SRR/SFR event?

9. Are the risks known and manageable for design and development?

10. Is the project schedule executable (technical/cost/risks)?

11. Has the IMS been approved for baseline by the PMW 240 PM?

12. Is the project properly staffed?

13. Is the project with the approved functional baseline executable within the existing budget (accounting for technical/cost/risks)?

14. Does the defined cost estimate fit within the existing budget?

15. Is the CARD consistent with the approved system specification and functional baseline?

16. Is the software functionality in the system specification consistent with the software sizing estimates and the resource-loaded schedule?

17. Is the software functionality in the approved functional baseline consistent with the software metrics (as identified in the project's SEP)?

18. Have all appropriate documents been updated and put under CM control?

19. Does the LCSP adequately address ILS requirements for the project? Are all relevant supportability requirements addressed in accordance with the SRR/SFR Checklist? (Reference Appendix A: Guidance Documents & Templates: SRR/SFR Checklist.)

20. Have all risks been assessed so that high level risks are being properly mitigated? Are risks associated with development, integration, testing, fielding, and maintenance, including project execution and performance being identified? Are Information Assurance security risks associated with programming languages and architectures covered? Are software risks and their mitigation status being reported according to plan?

21. Has a refined estimate and justification of the percentage of total system functionality to be provided by software been developed?

22. Has the requirements traceability strategy for software been defined in the SEP?

5.3 PDR – Preliminary Design Review

The Preliminary Design Review (PDR) confirms that the preliminary design logically follows the SFR findings and meets the requirements. It normally includes heavy emphasis on software specifications, and results in approval to begin detailed design. In addition, the PDR establishes the allocated baseline, validates project cost, schedule, and performance for the purpose of supporting Milestone or equivalent approvals.

5.3.1 PDR Purpose

The PDR is a multi-disciplined product and process assessment. This PMW 240 technical event ensures that the preliminary design of the system meets the system requirements and follows successful SRR/SFR. This review includes a heavy emphasis on software specifications, and results in approval to proceed into detailed design. In addition, the PDR establishes the allocated baseline, validates project cost, schedule, and performance.

The system's allocated baseline is defined as a breakdown of the configuration items (system elements under configuration management) making up a system, including how system function and performance requirements are allocated across lower level configuration items (hence the term allocated baseline). It includes all functional and interface characteristics that are allocated from the top level system or higher-level configuration items, derived requirements, interface requirements with other configuration items, design constraints, and the verification required to demonstrate the traceability and achievement of specified functional, performance, and interface characteristics. For PMW 240 AAPs, the allocated baseline is defined in the software specifications, such as the SRS, Interface Requirements Specification (IRS), and other supporting design documents, interface specifications, and system architecture views.

A successful PDR is predicated on determining the software requirements, and preliminary design (to include hardware, software and human systems integration preliminary designs), results of peer reviews, and plans for development and testing are complete, and form a satisfactory basis for proceeding into detailed design and test procedure development. The software requirements are evaluated to determine whether they correctly and completely implement all system requirements allocated to the subsystem, and whether traceability of subsystem requirements to system design is maintained.

The following PDR guidance attempts to address 'generic' concepts and requirements for conducting a 'typical' PMW 240 PDR. Each project is different in terms of purpose, scope, size, risks, and delivered solutions. The APM(E) tailors the review to the technical scope and risk of the system, and address the PDR elements in the project's SEP and IMP. Details of any tailoring are described in the project SEP. The APM is encouraged to assess the project's unique aspects, and tailor the PDR presentation to address any project-specific items requiring resolution or decision, any concerns, and any successes. Notwithstanding successful completion of the PDR, the developer remains responsible for the system design/system requirements within the terms of the contract.

5.3.2 PDR Timing

The PDR is typically conducted in the Development and Acquisition phase, following preliminary design, completion of preliminary allocated baseline documentation, and prior to detailed design activities. The PDR should not be scheduled at a particular number of months after contract award or project kick-off; rather, the PDR should occur when the developer can ensure the system has successfully met the entrance criteria, described below.

The PDR consists of a review period, a meeting and a close-out. The review begins when the first PDR document is released for review. The APM determines when the meeting will take place, based on completion of the entry criteria and the guidance in the sections below. The close-out lasts until the exit criteria are met and approval to proceed is granted (per the PMW 240 PM).

5.3.3 PDR Entry Criteria

Typical PDR Entrance Criteria will address and answer the following:

a. Have the SRR/SFR action items and exit criteria been satisfied per the following:

1. Closed / Resolved; or,

2. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution?

b. Has a preliminary agenda for the PDR meeting been coordinated (nominally) 10 business days prior to the meeting?

c. Has an appropriate software support concept and performance-based sustainment strategy been documented as part of the project's overall acquisition strategy and system design process?

d. Has the status of the execution on the event-specific ECM tasks been agreed to by the APM and ECM leads?

e. Have all deliverables identified in the project's IMP for PDR, been made available to all participants prior to conducting the review?

f. Have all of the requirements allocated to each specific build been clearly identified per build, including a list of the CSCIs (and/or incremental portions of CSCIs) to be included in each build and the functionality to be provided by each build?

g. Are software requirements articulated in sufficient detail to be supported in the detailed design, including specifications for safety, security and privacy, and human-equipment interactions? Are they traceable to higher level documents?

h. Are external interface requirements articulated in sufficient detail to be supported by the detailed design and are they traceable to higher level documents?

i. Are design and implementation constraints, including computer resource requirements, articulated in the software requirements in sufficient detail to ensure they will be adequately addressed in the detailed design of the software?

j. Are preliminary software design specifications for each configuration item (H/W and S/W), with supporting tradeoff analyses and data, as required, documented? Does the preliminary software design specification include a completed definition of the software architecture, and a preliminary database design description as applicable?

k. Has the status of Integrated Logistics Support (ILS) documentation such as LCSP, NTSP, Users Logistics Support Summary (ULSS) and others as identified by the PDR Checklist been identified? (Reference Appendix A: Guidance Documents & Templates: PDR Checklist.)

l. Have all information assurance requirements been adequately addressed? Has the Privacy Impact Assessment (PIA) been submitted?

m. Are software risks being handled according to a documented strategy? Are software risks continuously being identified, monitored, assessed / reassessed for mitigation and control, and reported?

n. Has the PDR checklist review been conducted? And have action item(s) (AIs) from the checklist review been documented?

5.3.4 PDR Planning

a. Planning for a technical review should start roughly six weeks prior to the PDR meeting. The assigned APM(s) hold responsibility for how the PDR is conducted, including:

1. Coordinating with the APM(E) to determine if the project is ready for a PDR.

2. Developing a preliminary agenda for the planned review meeting. This agenda should be made available to the review participants 10 business days prior to the meeting.

3. Ensuring all documents requiring formal approval are provided at least 20 business days prior to the meeting, and other review documents are provided to reviewers at least 10 business days prior to the PDR meeting. Documents provided are to be in the status defined in the project's IMP for the event.

4. Ensuring the required leads have provided any supporting data for addressing specific entry and exit criteria, and other project issues and concerns.

5. Coordinating with PMW 240 Operations to schedule the review and send out meeting invitations.

6. Completing the project's PDR slide deck.

b. PDR event Participants: refer to Table 1 - Event Attendee Matrix.

c. Location – The facility chosen should be adequate to ensure complete participation by all required organizations and competencies. The intent is to minimize travel and travel costs.

d. Conduct of Review – All participants are to assess the review materials provided to them, document any concerns by the means of document deliverable comment matrices, and submit these documented concerns to the project document owner prior to the event (APM-specified deadline).

5.3.5 Conduct of PDR

Recommended Agenda

a. Introduction/agenda/administrative

b. Purpose/Overview of Project

    1. Problem statement

    2. 'As Is' and 'To Be' Models

c. PDR overview

    1. Entrance and Exit Criteria

d. Technical Presentation

    1. Software requirements review

        a. SRS review including a CSCIs breakdown

        b. Issue review, as necessary

        c. Software requirement management

        d. Requirement traceability

    2. Design review

        a. High-level concept diagrams (ex. architecture, database, interfaces, etc.)

        b. Proposed architecture

        c. Key Performance Parameters (if applicable)

        d. Design Issues, as necessary

    3. Test planning review

    4. Logistics review

    5. Information Assurance review

    6. Configuration Management review

    7. Enterprise Change Management review

8. Communications review

e. Programmatic Presentation

1. PDR documentation status review
2. DOTMLPF-P Analysis
3. Risk mitigation review
4. Schedule review
5. Staffing analysis
6. Cost review
7. Outstanding Action Items review
8. Next steps

f. Request to Proceed

<u>Event Deliverables/Products</u>

The following post-PDR items must be completed prior to authorizing review closeout:

a. Meeting minutes – to include list of attendees (name, functional area represented, and code) and any recorded Action Items.

b. Technical Assessment (responsibility of the PMW 240 TD) to include technical recommendations to the MDA.

c. Programmatic assessment (responsibility of the PMW 240 DPM) to include programmatic recommendations to the MDA.

5.3.6 PDR Completion/Exit Criteria

a. The PDR is considered complete when:

1. All PDR Entrance and Exit Criteria have been met.
2. The PDR action items have been satisfied as follows:
    a. Closed / Resolved.
    b. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution.
3. MDA has issued approval to proceed.

b. Typical PDR Exit Criteria will address and answer the following:

1. Has the system allocated baseline, as documented in the SRS, IRS, and supporting design documents, been established and documented to enable detailed design to proceed with proper configuration management?

2. Have measures for software requirements management been defined and documented across the software development life cycle (revised SEP)?

3. Is the project schedule executable (technical/cost risks)?

4. Does the updated cost estimate fit within the existing budget?

5. Is the preliminary design producible within the production budget?

6. Is the project properly staffed? Have required personnel been identified to support test schedule? Can the identified personnel support need dates and be sustained throughout the schedule?

7. Has agreement been reached pertaining to the list of ECM tasks (with the assigned responsible parties) to be executed between the end of this technical review event and the next technical review event or other project event which requires an ECM review?

8. Does the status of the technical effort and design indicate the solution is operationally suitable and effective?

9. Have HSI design factors been reviewed and included, where needed, in the overall system design?

10. Have the external interfaces for all software items and their components been identified and adequately defined in the top-level design? Can the level of information support detailed design of all interfaces?

11. Have the document deliverables identified in the project's IMP been provided in the status indicated for the PDR event?

12. Are adequate processes and metrics in place for the project to succeed? (In terms of fulfilling requirements, adhering to project budget costs, and meeting scheduled milestones?)

13. Has the ILS documentation been updated/approved in accordance with the PDR Checklist? Have the NTSP, ULSS and other documents been updated in accordance with the PDR Checklist? (Reference Appendix A: Guidance Documents & Templates: PDR Checklist.)

14. Is the updated CARD or equivalent consistent with the approved allocated baseline? (Reference Appendix A: Guidance Documents & Templates: Spend Plan Soft Controls)

15. Are the risks known and manageable for DT/OST?

16. Are software integration risks/issues identified clearly? Are the risks ranked correctly? Is the likelihood and consequence of each risk assessed correctly? Is the mitigation plan for each risk actionable and does it include a schedule of completion?

17. Has a process for defect identification, assessment, prioritization, and remediation been developed (and if appropriate, does it account for builds at differing maturities with potentially different classes of defects)?

18. Does the identified test approach for each major group of features or feature combinations, ensure that these feature groups are adequately tested? Does the identified test scope contain sufficient detail to permit identification of the major testing tasks and estimation of the time required to do each one?

19. Have all software CI's, including features and combinations of software features to be tested, been identified? Have the test design specifications associated with each feature and each combination of features been identified?

5.4 CDR – Critical Design Review

The Critical Design Review (CDR) is a review conducted to evaluate the completeness of the design, its interfaces, and its suitability to finalize development. The CDR establishes the product baseline, and validates project cost, schedule, and performance for the purpose of supporting Milestone or equivalent approvals.

5.4.1 CDR Purpose

The CDR is a multi-disciplined product and process assessment to ensure the system under review can proceed into modification, demonstration, and test, and can meet the stated performance requirements within cost (project budget), schedule (project schedule), risk, and other system constraints. Generally this review assesses the system final design as captured in product specifications for each configuration item in the system (product baseline). The product baseline is defined as the item detail specification for each end product, internal interface specifications, and allocated external interface specifications. For PMW 240 projects, the product baseline is documented in the design documents and DoDAF artifacts. A successful CDR is predicated on determining whether the final detail designs for hardware and software are complete. In addition, the CDR ensures each item in the product baseline as well as the overall system are captured in the detailed design documentation.

The following CDR guidance attempts to address 'generic' concepts and requirements for conducting a 'typical' PMW 240 CDR. The APM(E) tailors the review to the technical scope and risk of the system, and address the CDR elements in the project's SEP and IMP. Details of any tailoring are described in the project SEP. The APM is encouraged to assess the project's unique aspects, and tailor the CDR presentation to address any project-specific items requiring resolution or decision, any concerns, and any successes. Notwithstanding successful completion of the CDR, the developer remains responsible for the system design/performance requirements within the terms of the contract.

5.4.2 CDR Timing

The CDR is typically conducted in the Development and Acquisition phase. CDR generally occurs when development is approximately 80% complete, and prior to system testing. The CDR should not be scheduled at a particular number of months after contract award; rather, CDR should occur relative to the maturity of the system technical baseline as described above.

The CDR consists of a review period, a meeting and a close-out. The review begins when the first CDR document is released for review. The APM determines when the meeting will take place, based on completion of the entry criteria and the guidance in the sections below. The close-out lasts until the exit criteria are met and approval to proceed is granted (per the PMW 240 PM).

5.4.3 CDR Entry Criteria

Typical CDR Entrance Criteria will address and answer the following:

a. Have the PDR action items and exit criteria have been satisfied per the following:

1. Closed / Resolved; or

2. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution?

b. Has a preliminary agenda has been coordinated (nominally) 10 business days prior to the CDR?

c. Does the software design and software work products reflect the software development process as defined within the project SDP? Have updates been made to the systems specification and functional specification?

d. Have product specifications for each hardware and software configuration item, along with supporting trade-off analyses and data, been provided? Has the rationale for all changes in the software architecture since PDR been clearly articulated?

e. Have all system requirements been analyzed, refined, and decomposed to assure complete functional allocation to hardware and software?

f. Do all software requirements trace to a design element? Do all design elements have a parent software requirement? Do all design elements trace to a code component(s)? Do all code components have a parent design element(s)?

g. Has a current risk assessment been conducted?

h. Have changes been made to the project SEP if necessary? Have specific management processes been defined to account for the chosen software development methodologies and implementation languages selected? If applicable, have all functional, performance, and verification requirements for each incremental system or software block/build been allocated to planned increments prior to the design and development of the increment?

i. Have changes been performed to the CARD? (See Appendix A: Guidance Documents & Templates: Spend Plan Soft Controls).

j. Have all deliverables identified in the project's IMP for CDR been made available to all participants prior to conducting the review?

k. Have any updates / status changes to the ILS documentation such as LCSP, NTSP, and ULSS been documented, in accordance with the CDR Checklist? (Reference Appendix A: Guidance Documents & Templates: CDR Checklist.)

l. Is the Software Design Description (SDD) Final? Is the description of how the software units satisfy the requirements clearly articulated in the final detailed design? Is the input/output description for each software unit clearly articulated in the detailed design?

m. Has the SDP been updated since PDR, including any new processes or tools, constraints and assumptions, restrictions?

n. If applicable, are the preliminary Test Procedures for Software Integration and Systems Testing available for review? Have the proposed necessary test resources been identified and procured, including training of test personnel, test tools (including education/analysis tools), test equipment, and test environment?

o. Have all information assurance requirements been adequately addressed? Has the DIACAP Package been finalized and submitted for IATT/IATO/ATO?

p. Has the CDR checklist review been conducted? And have action item(s) (AIs) from the checklist review been documented?

5.4.4 CDR Planning

a. Planning for the CDR should start nominally six weeks prior to conduct of the review. The assigned APM(s) hold responsibility for how the CDR is conducted, including:

1. Coordinating with the APM(E) to determine if the project is ready for a CDR.

2. Developing a preliminary agenda for the planned review meeting. This agenda should be made available to the review participants 10 business days prior to the meeting.

3. Ensuring all documents requiring formal approval are provided at least 20 business days prior to the meeting, and other review documents are provided to reviewers at least 10 business days prior to the CDR meeting. Documents provided are to be in the status defined in the project's IMP for the event.

4. Ensuring the required leads have provided any supporting data for addressing specific entry and exit criteria, and other project issues and concerns.

5. Coordinating with PMW 240 Operations to schedule the review and send out meeting invitations.

6. Completing the project's CDR slide deck.

b. CDR event participants (typical composition, include roles as applicable): refer to Table 1 - Event Attendee Matrix.

c. Location – The facility chosen should be adequate to ensure complete participation by all required organizations and competencies. The intent is to minimize travel and travel costs.

d. Conduct of Review - All participants are to assess the review materials provided to them, document any concerns by the means of document deliverable comment matrices, and submit these documented concerns to the project document owner prior to the event (APM-specified deadline).

5.4.5 Conduct of CDR

Recommended Agenda

a. Introduction/agenda/administrative

b. Purpose/Overview of Project

1. Problem statement

2. 'As Is' and the 'To Be' Models

c. CDR overview

1. Entrance and Exit Criteria

d. Technical Presentation

1. Software specifications review

a. Issue(s) review, as necessary

b. Specifications requirements management

c. Requirements traceability

2. Final Design Review

a. Initial Product Baseline

a) Architecture

b) Hardware

c) Interfaces

d) Trade-off analyses (if applicable)

b. Key Performance Parameters

c. Issues review, as necessary

3. Test planning review

4. Logistics review

5. Information Assurance review

6. Configuration Management review

7. Enterprise Change Management review

8. Communications review

e. Programmatic Presentation

1. CDR documentation status review

2. DOTMLPF-P analysis

3. Risk mitigation review

4. Schedule review

5. Staffing analysis

6. Cost review

7. Outstanding Action Items review

8. Next Steps

f. Request to Proceed

Event Deliverables/Products

The following post-CDR meeting items must be completed prior to review closeout:

a. Meeting minutes – to include list of attendees (name, functional area represented, and code) and any recorded Action Items.

b. Technical Assessment (responsibility of the PMW 240 TD) to include technical recommendations to the MDA prior to entering the TRR.

c. Programmatic assessment (responsibility of the PMW 240 DPM) to include programmatic recommendations to the MDA prior to entering the TRR.

5.4.6 CDR Completion/Exit Criteria

a. The CDR is considered complete when:

1. All CDR Entrance and Exit Criteria have been met.

2. The CDR action items have been satisfied in the following:

a. Closed / Resolved.

b. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution.

c. MDA has issued approval to proceed.

b. Typical CDR Exit Criteria will address and answer the following:

1. Does the software design and software work products reflect the software development process as defined at PDR?

2. Has the detailed design satisfied Human Systems Engineering requirements?

3. Has the ILS documentation been updated/approved in accordance with the CDR Checklist? (Reference Appendix A: Guidance Documents & Templates: CDR Checklist.)

4. Are adequate processes and metrics in place for the project to succeed? If applicable, is size trending and actuals versus planned size being tracked, analyzed, and reported?

5. Are the risks known and manageable?

6. Is the project schedule executable (technical/cost risks)?

7. Is the project properly staffed?

8. Is the project executable with the existing budget and the approved product baseline?

9. Is the detailed design producible within the production budget?

10. Is the updated CARD or equivalent consistent with the approved product baseline? (Reference Appendix A: Guidance Documents & Templates: Spend Plan Soft Controls)

11. Does the updated cost estimate fit within the existing budget?

12. Is the software functionality in the approved product baseline consistent with the updated software metrics?

13. If applicable to the project, has agreement been reached pertaining to the list of ECM tasks (and assigned responsible parties) to be executed between the end of this technical review event and the next technical review event or other project event which requires an ECM review?

14. Have the document deliverables identified in the project's IMP been provided in the status indicated for the CDR event?

5.5 ATRR – Application Test Readiness Review

The Application Test Readiness Review (ATRR) is a project level review designed to evaluate a project's readiness to proceed into AFT. In addition, the ATRR will focus specifically on test objectives, test methods and procedures, scope of tests, and available resources.

5.5.1 ATRR Purpose

The ATRR will focus specifically on test objectives, test methods and procedures, scope of tests, and available resources.

5.5.2 ATRR Timing

ATRR is typically scheduled after completion of Application Unit Testing (AUT). Like other technical reviews the ATRR is event driven (based on the readiness of the sub systems under test). Scheduling of the ATRR is the responsibility of the PD or APM and should be reflected within the project's master schedule.

5.5.3 ATRR Planning

Planning for the ATRR begins during requirement elaboration. The SRS is required to be mature in order to create test scripts.

a. ATRR Participants: refer to Table 1 - Event Attendee Matrix.

b. ATRR Elements.

1. SRS Verification Test Results

2. Test Scripts

3. Requirements Traceability Matrix (maps all requirements in the SRS to the SRS Verification Scripts).

4. AFT Plan (including RTM generated by DOORS®, resources and schedule)

5. ASIT Plan
6. System Operational Verification Test (SOVT) Plan
7. If appropriate, Business Process Model Diagrams and/or Use Cases

5.5.4 ATRR Entry Criteria

a. AUT Actions Items and Exit Criteria are satisfied.

b. ATRR technical products are made available to the ATRR participants prior to conducting the ATRR as identified in the project's IMP for ATRR prior to conducting the review.

c. Configuration of system under test is defined and agreed to. All interfaces are in Final status or are defined in accordance with an agreed to plan.

5.5.5 Conduct of ATRR

<u>ATRR Review Elements</u>

a. Introduction/agenda
    1. Entrance criteria
b. Program Schedule
c. Testing Review
    1. SRS verification test results review
    2. AFT Plan review
    3. ASIT Plan review
d. Training
e. Risks
f. Technical Discussion
    1. Release planning
        1. Build status
        2. Government environment status
    2. SOVT/PCA Status
g. Exit Criteria Review
    1. Recommendations

5.5.6 ATRR Completion/Exit Criteria

a. An acceptable level of project risk is ascertained

b. Approved AFT Plan

c. Approved ASIT Plan

d. Adequate identification and coordination of required test resources is completed

e. An AFT/ASIT environment is available.

5.6 TRR – Test Readiness Review

The Test Readiness Review (TRR) is a review of the system's/project's readiness to begin developmental testing, by either the developer or government. The TRR determines the completeness of test procedures and their compliance with test plans and descriptions. Decision Point B (ref Figure 2) is combined with TRR unless otherwise directed by the PMW 240 PM.

5.6.1 TRR Purpose

The TRR is a multi-disciplined product and process assessment to ensure the subsystem, system, or systems of systems under review is ready to proceed into formal test. The TRR assesses test objectives, test methods and procedures, scope of tests, and determines if required test resources have been properly identified and coordinated to support planned tests. The TRR verifies the traceability of planned tests to project requirements, determining the completeness of test procedures and their compliance with test plans and descriptions. In addition, the TRR assesses the system under review for development maturity, cost/schedule effectiveness, and risk to determine readiness to proceed to formal testing.

The foundation for TRR is assessing the system by a Test and Evaluation (T&E) methodology: a process for comparing the system under review against the requirements and/or components, through the means of testing. The TRR's T&E results ensures a) the system's design is satisfactory and all technical specifications and contract requirements are met; b) validating the system, under test, can satisfactorily execute its mission within a 'realistic' operational environment.

A successful TRR is predicated on determining that preliminary testing, functional testing, operational testing, and pre-qualification testing results form a satisfactory basis for proceeding into the formal testing environment.

The following TRR guidance attempts to address 'generic' concepts and requirements for conducting a 'typical' PMW 240 TRR. Each project is different in terms of purpose, scope, size, risks, and delivered solutions. The APM is encouraged to assess the project's unique aspects, and tailor the review to address any project specific TRR issues and concerns. Details of the tailoring of the review are described in the project SEP and Test and Evaluation Master Plan (TEMP). Notwithstanding successful completion of the TRR, the developer remains responsible for the system design/system requirements within the terms of the contract.

5.6.2 TRR Timing

The TRR is conducted at the end of Development & Acquisition Phase and prior to the Testing Phase of the AAP life cycle. The TRR should not be scheduled at a particular number of months after contract award or project kick-off; rather, the TRR occurs when the developer can ensure the system has successfully met the entrance criteria, described below.

5.6.3 TRR Entry Criteria

Typical TRR Entrance Criteria will address and answer the following:

a. Have the CDR action items and exit criteria been satisfied per the following:

1. Closed / Resolved; or,

2. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution?

b. Has a preliminary agenda for the TRR meeting been coordinated (nominally) 10 business days prior to the meeting?

c. Has the configuration of system ready for test been defined and agreed to? Have all interfaces been defined in accordance with an agreed to plan?

d. Have all applicable functional, unit level, subsystem, system, security, and qualification testing been conducted successfully?

e. Have all deliverables identified in the project's IMP for TRR been made available to all participants prior to conducting the review?

f. Have all known system discrepancies been identified and disposition provided in accordance with an agreed to plan?

g. Have updates to the following ILS documentation been provided: LCSP, NTSPULSS and others as identified by the TRR Checklist? (Reference Appendix A: Guidance Documents & Templates: TRR Checklist.)

h. Have all previous design review exit criteria and key issues been satisfied in accordance with an agreed to plan?

i. Have all required test resources (people, facilities, test articles, test instrumentation) been identified and are available to support required tests?

j. Have life cycle logistics costs been included in the project cost estimate?

k. Have all roles and responsibilities of all test participants been defined and agreed to?

l. Have all information assurance requirements been adequately addressed? Have the IATT/IATO/ATO and PPP been approved?

m. Has the TRR checklist review been conducted? And have action item(s) (AIs) from the checklist review been documented?

5.6.4 TRR PLANNING

a. Planning for a technical review should start roughly six weeks prior to conduct of the review. The assigned APM(s) hold responsibility for how the review is conducted, including:

1. Coordinating with the APM(E) to determine if the project is ready for a TRR.

2. Developing a preliminary agenda for the planned review meeting. This agenda should be made available to the review participants 10 business days prior to the meeting.

3. Ensuring all documents requiring formal approval are provided at least 20 business days prior to the meeting, and other review documents are provided to reviewers at least 10 business days prior to the TRR meeting. Documents provided are to be in the status defined in the project's IMP for the event.

4. Ensuring the required leads have provided any supporting data for addressing specific entry and exit criteria, and other project issues and concerns.

5. Coordinating with PMW 240 Operations to schedule the review and send out meeting invitations.

6. Completing the project's TRR slide deck.

b. TRR event Participants (typical composition, include roles as applicable): refer to Table 1 - Event Attendee Matrix.

c. Location – The facility chosen should be adequate to ensure complete participation by all required organizations and competencies. The intent is to minimize travel and travel costs.

d. Conduct of Review – All participants are to assess the review materials provided to them, document any concerns by the means of document deliverable comment matrices, and submit these documented concerns to the project document owner prior to the event (APM-specified deadline).

5.6.5 Conduct of TRR

TRR Review Elements

a. Introduction/agenda
    1. Entrance criteria
b. Program Schedule
c. Testing Review
    1. AFT results review
    2. ASIT results review
    3. Performance testing results
    4. DT Plan review
d. Training
e. Risks
f. Technical Discussion
    1. Release planning
        a) Build status
        b) Government environment status
    2. SOVT/PCA status
    3. COOP planning
g. Exit Criteria Review
h. Recommendations

TRR Event Deliverables/Products

The following post-TRR meeting items must be completed prior to authorizing review closeout:

a. Meeting minutes – to include list of attendees (name, functional area represented, and code) and any recorded Action Items.

b. Technical Assessment (responsibility of the PMW 240 TD) to include technical recommendations to the MDA.

c. Programmatic assessment (responsibility of the PMW 240 DPM) to include programmatic recommendations to the MDA.

5.6.6 TRR Completion/Exit Criteria

a. The TRR is considered complete when:

1. All TRR Entrance and Exit Criteria have been met.

2. The TRR action items have been satisfied as follows:

   a. Closed / Resolved.

   b. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution.

3. MDA has issued approval to proceed.

b. Typical TRR Exit Criteria will address and answer the following :

1. Are the test plans completed and adequate enough to be approved for the system under test? Are size trending and actuals versus planned size being tracked, analyzed, and reported?

2. Have the applicable personnel names and functions for team members involved in Developmental Testing (DT) been identified?

3. Do all previous component, subsystem, system test results form a satisfactory basis for proceeding into planned tests?

4. Have changes to the allocation of software requirements to software components since PDR been approved? Have all delivered source code for all CSCIs involved in system testing been placed under configuration control?

5. Has the risk level been identified and accepted by Program leadership?

6. Have the LCSP and other documents been updated/approved in accordance with the TRR Checklist? (Reference Appendix A: Guidance Documents & Templates: TRR Checklist.)

7. Have the document deliverables identified in the project's IMP been provided in the status indicated for the TRR event?

5.7 PRR – Production Readiness Review

The Production Readiness Review (PRR) is an examination of a project to determine if the design is ready for production and the producer has accomplished adequate production planning without incurring unacceptable risks that will breach thresholds of schedule, performance, or cost, and that delivery will meet or exceed the customer's established criteria. Decision Point C (ref Figure 2) is combined with PRR unless otherwise directed by the PMW 240 PM.

5.7.1 PRR Purpose

The PRR is an examination of a project to determine if the release design is ready for production, and adequate production planning has been established without incurring unacceptable risks that could breach thresholds of schedule, performance, and cost.

A successful PRR is predicated on determining the system requirements are fully met in the final release configuration, and this final system release forms a satisfactory basis for proceeding into production. At this review, the following will be evaluated:

- Production planning (e.g. facilities, tooling and test equipment capacity)
- Personnel training and certification
- Process documentation (e.g., system test reports and certification, Information Assurance certification and accreditation, and test procedures)
- Completeness of inventory management, supplier management, and logistics support planning

The following PRR guidance attempts to address 'generic' concepts and requirements for conducting a 'typical' PMW 240 PRR. Each project is different in terms of purpose, scope, size, risks, and delivered solutions. The APM(E) should tailor the review to the technical scope and risk of the system, and address the PRR elements in the project's SEP and IMP. Details of any tailoring should be described in the project SEP. The APM is encouraged to assess the project's unique aspects, and tailor the PRR presentation to address any project-specific items requiring resolution or decision, any concerns, and any successes. Notwithstanding successful completion of the PRR, the developer remains responsible for the system design/system requirements within the terms of the contract.

5.7.2 PRR Timing

The final PRR is typically conducted at the conclusion of the PMW 240 AAP Testing phase, and as the first major review of the Deployment and Sustainment phase. The PRR should not be scheduled at a particular number of months after contract award or project kick-off; rather, the PRR should occur when the developer can ensure the system has successfully met the entrance criteria, described below.

The PRR consists of a review period, a meeting and a close-out. The review begins when the first PRR document is released for review. The APM determines when the meeting will take place, based on completion of the entry criteria and the guidance in the sections below. The close-out lasts until the exit criteria are met and approval to proceed is granted (per the PMW 240 PM).

5.7.3 PRR Entry Criteria

Typical PRR Entrance Criteria will address and answer the following:

a. Have the TRR and DT action items and exit criteria been satisfied per the following:

   1. Closed/Resolved; or,

   2. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution?

b. Has a preliminary agenda been coordinated (nominally) 10 business days prior to the meeting?

c. If applicable, has the status of the execution on the event specific ECM tasks as agreed to by the initiating APM and ECM leads been updated?

d. Have updates to the ILS documentation been performed, in accordance with the PRR Checklist? (Reference Appendix A: Guidance Documents & Templates: PRR Checklist.)

e. Have all deliverables identified in the project's IMP for PRR been made available to the participants prior to the review?

f. Have all system performance specification qualification test requirements been successfully completed which include, but are not limited to, the following:

1. System Design/Performance deficiencies have been resolved?

2. Baseline software test report completed and deficiencies corrected?

g. Has the PRR checklist review been conducted? And have action item(s) (AIs) from the checklist review been documented?

5.7.4 PRR Planning

a. Planning for the PRR should start roughly six weeks prior to conduct of the review. The assigned APM(s) hold responsibility for how the PDR is conducted, including:

1. Coordinating with the APM(E) to determine if the project is ready for a PRR.

2. Developing a preliminary agenda for the planned review meeting. This agenda should be made available to the review participants 10 business days prior to the meeting.

3. Ensuring all documents requiring formal approval are provided at least 20 business days prior to the meeting, and other review documents are provided to reviewers at least 10 business days prior to the PRR meeting. Documents provided are to be in the status defined in the project's IMP for the event.

4. Ensuring the required leads have provided any supporting data for addressing specific entry and exit criteria, and other project issues and concerns.

5. Coordinating with PMW 240 Operations to schedule the review and send out meeting invitations.

6. Completing the project's PRR slide deck.

b. PRR event Participants (typical composition, include roles as applicable): refer to Table 1 - Event Attendee Matrix.

c. Location – The facility chosen should be adequate to ensure complete participation by all required organizations and competencies. The intent is to minimize travel and travel costs.

d. Conduct of Review – All participants are to assess the review materials provided to them, document any concerns by the means of document deliverable comment matrices, and submit these documented concerns to the project document owner prior to the event (APM-specified deadline).

5.7.5 PRR Conduct of Review

All PRR participants are to assess the materials at the review, document concerns by means of Action Items, and submit Action Items to the event Recorder.

Recommended Agenda

a. Introduction/agenda/administrative

b. Purpose/Overview of Project

c. PRR overview

    1. Entrance and exit criteria

d. Technical Presentation

    1. Software requirements review

        a. Final source code, to include status, condition, location

        b. Issue review, as necessary

        c. Software requirement management

        d. Software transition planning

    2. Design Review

        a. Production concept diagrams (ex. architecture, database, interfaces, etc.)

        b. Final fielded architecture

        c. Key Performance Parameters (if applicable)

        d. Final design issues, as necessary

    3. Testing review

        a. DT results review

        b. Performance testing results (if applicable)

        c. OST Plan review (if applicable)

        d.

    4. Logistics review

        a. Hardware and software support and maintenance plans

        b. Proposed training

    5. Information Assurance review

    6. Configuration Management review

    7. Enterprise Change Management review

    8. Communications review

e. Programmatic Presentation

1. PRR documentation status review
2. DOTMLPF-P Analysis
3. Risk mitigation review
4. Schedule review
5. Staffing analysis
6. Cost review
7. Outstanding Action Items review
8. Next steps (if necessary)

f. Request to Proceed (Move into Production)

Event Deliverables/Products

The following post-PRR items must be completed prior to authorizing review closeout:

a. Meeting minutes – to include list of attendees (name, functional area represented, and code) and any recorded Action Items.

b. Technical Assessment (responsibility of the PMW 240 TD) to include technical recommendations to the MDA.

c. Programmatic assessment (responsibility of the PMW 240 DPM) to include programmatic recommendations to the MDA.

5.7.6 PRR Completion/Exit Criteria

a. The PRR is considered complete when:

1. All PRR Entrance and Exit Criteria have been met.
2. The PRR action items have been satisfied as follows:
   a. Closed/Resolved.
   b. If Open (not fully resolved), a mitigation strategy has been defined, with an estimated date for resolution.
3. MDA has issued approval to proceed.

b. Typical PRR Exit Criteria will address and answer the following:

1. Are adequate processes and metrics in place for the project to succeed?
2. Are the risks known and manageable?

3. Is the project schedule executable and does the delivery or fielding plan meet the customer's established criteria? The following deliverables are the minimum required to be delivered as exit criteria from the final PRR:

   a. If applicable, for delivery afloat, draft Ship Change Document (Phase II or III as applicable) for submission. For those afloat platforms not under SHIPMAIN, the governing Selected Acquisition Report (SAR), Engineering Change Order (ECO) or Engineering Change Proposal (ECP) shall be provided in lieu of the Ship Change Document (SCD). A successful final PRR is required prior to submission.

   b. Project WBS detailing the fielding plan to include key events (i.e., anticipated delivery dates for software and hardware) for each installation, ILS certification as applicable per class or hull, Preferred Product List / System/Subsystem Interface List (PPL/SSIL) certification if applicable, IATO/ATO approval, if applicable.

4. Have the document deliverables identified in the project's IMP been provided in the status indicated for the PRR event?

5. Has the ILS documentation been updated/approved in accordance with the PRR Checklist? (Reference Appendix A: Guidance Documents & Templates: PRR Checklist.)

6. Is the project properly staffed?

7. Is the detailed design producible within budget? Has required funding been identified and budgeted, and is appropriation for the software sustainment consistent with the proposed system maintenance life cycle?

8. Has documentation been provided detailing the system's maintenance of software and hardware, to include versioning control?

9. Has the final source code for all CSCIs in the system to be deployed been validated to ensure the generated software build(s) provide the same executable code as that delivered by the developer?

10. Has all 'as built' design information necessary for the life cycle maintenance been delivered? Have all compilation, build, and modification procedures necessary for life cycle maintenance been delivered?

5.8 PCA – Physical Configuration Audit

The Physical Configuration Audit (PCA) verifies the product baseline as reflected in the early production configuration item. The PCA formalizes the product baseline, so that future changes can only be made through full Configuration Management procedures.

5.8.1 PCA Purpose

The purpose of a PCA is to examine the actual configuration of an item being produced in order to verify that the related design documentation matches the item as specified in the contract. It is also used to validate many of the supporting processes used by the contractor in the production of the item and to verify other elements of the item that may have been impacted or redesigned.

5.8.2 PCA Timing

The PCA is conducted prior to final acceptance (DD 250) of the deliverable item(s) and is prior to the PRR. The schedule must be compatible with availability of items being reviewed as well as applicable information, personnel, etc. Supporting Contract Data Requirements List (CDRL)/DD Form 1423 or equivalent must also be scheduled to correspond with planned timing. The PCA will be conducted in concert with the SOVT prior to the ATRR, TRR, and PRR events in order to capitalize on opportunities to verify the configuration baseline is traceable and documented.

5.8.3 PCA Entry Criteria

A new production contract or an ECP may call for the development of a new item and incorporation of the new item into a system via a modification program. The expected configuration of the new item will be verified by the conduct of a PCA. Depending on whether the acquisition strategy was based on a detail design or performance design specification could influence whether the PCA is to be conducted by the contractor or government. The below items will be provided in support of the PCA/SOVT:

a. SVD
b. CM Baseline Report (Allocated and/or Production Baseline)
c. SOVT Plan
    a. SOVT Plan should be developed by the contractor IAW SPAWARINSTR 3084.1 and PMW 240 SOVT Template
d. System Administration User Guide

The following is entry criteria for the PCA. It should be tailored for application to a specific program. The APM may decide for programmatic reasons to proceed with the PCA prior to completing all of the Entry Criteria listed below. This APM decision should be based on a risk assessment, identification of risks and their acceptance.

a. A preliminary agenda has been coordinated (nominally) 10 days prior to the PCA

b. PCA technical products have been made available to the participants prior to the review:

c. ATRR, TRR, and/or PRR event has been scheduled

d. PCA/SOVT is conducted in real time as the system is loaded to the applicable hosting environment.

e. All previous ATRR, TRR, and/or PRR exit criteria key issues have been satisfied, if applicable

f. Updated ILS documentation in accordance with the project's Integrated Master Plan (IMP)

5.8.4 PCA Planning

PCA requirements should be included in the Statement of Work (SOW) tasking. A specific plan (whether done incrementally or in whole) should be targeted at least 60 days prior to the planned review, and based upon availability of the item and its associated documentation. The review should be planned well in advance of the test environment delivery and production delivery schedule so as to allow sufficient time for correcting any deficiencies found during the PCA that could compromise the contract delivery schedule. A PCA applicable to software items may be delayed until after integration testing.

a. Planning for a technical review should start nominally 45 days prior to conduct of the review. Typically, the assigned APM should have coordinated requirements with the PMW 240 TD and contractor program managers. Assignments should be reflective of program scope and risk. The role of the APM includes:

1. Coordinate with the PMW 240 TD to develop a preliminary agenda for the planned review. This agenda should be made available to the review participants 10 days prior to conduct of the review.

2. Coordinate with the PMW 240 TD and contractor program manager to determine PCR membership

3. Ensure the performing activity provides the supporting data

4. Facilitate the technical review

5. Oversight of the Request for Action or Action Item process

6. Issuance of the PCA Summary Report

b. PCA Elements –The following areas should be addressed in the PCA:

1. Software (Production software verification will be done by data center personnel. Results will be provided to PMW 240 CM for verification and included in PCA results.)

2. Training

3. Measurement and Test Equipment

4. Hardware / Data Center Environment (as applicable)

c. Location – Unless otherwise specified, the PCA is generally performed at the Prime or Sub Contractor's facility where the item to be reviewed is developed or where the test/verification data is located.

5.8.5 PCA Conduct of Review/Review Process

All PCA participants are to assess the materials at the review, document concerns by means of action items, and submit action items to the event Recorder.

PCA Review Elements:

a. Purpose of review

1. Action Item procedures overview

2. Risk Assessment procedures overview

3. Project overview

PCA Products:

a. PCA Summary Report including approved issue/problem write-ups and assigned actions

b. Approved Product Baseline (formal PCA close out)

c. Updated Risk Assessment, including risks and mitigation options

5.8.6 PCA Completion/Exit Criteria

a. The PCA is considered complete when all action items are signed off, and an acceptable level of project risk is ascertained.

b. The product matches the item as specified in the contract

c. Has the ILS documentation been updated/approved in accordance with the project's Integrated Master Plan (IMP)?

d. Results approved by the APM

5.9 BR – Baseline Review

The BR is a review (or reviews) with the intent to assess the project's progress against the established project baselines (for example, schedule baseline, requirements baseline, etc.), to identify and evaluate risks, assess impact, and agree on a plan of action. A BR may be employed by PMW 240 PM, DPM, or TD throughout the life of a project.

5.9.1 BR Purpose

The Baseline Review (BR) process is employed by the PMW 240 PM, DPM, or TD throughout the life of projects. The process is composed of four steps: (1) the PM's assessment of their understanding of the risks, (2) preparation for an BR, (3) execution of the BR, and (4) the management process (the source of on-going mutual understanding). The key step in the process is execution of the BR. The BR establishes a mutual understanding of the project baseline(s) and provides for an agreement on a plan of action during project execution. Completion of the review should result in the assessment of risk and the degree to which the following have been established:

a. Technical scope of work is fully included and is consistent with authorizing documents.

b. Project schedule key milestones are identified and supporting schedules reflect a logical flow to accomplish the work.

c. Resources (budgets, facilities, personnel, skills, etc.) are available and are adequate for the assigned tasks.

d. Tasks are planned and can be measured objectively relative to the technical progress.

e. Rationales underlying the baseline(s) are reasonable.

f. Management processes support successful execution of the project.

5.9.2 BR Timing

PMs are encouraged to utilize the management process to maintain their understanding of risks. However, changes over the life of a project are expected, and PMs must determine whether to perform an additional BR or continue to rely on the management process to provide the necessary information relating to risk. Changes in risks may result from contract award, authorization to proceed, contract modification, funding, re-planning scope/schedule, new Program Management, acquisition plan, and higher-level authority direction.

5.9.3 BR Entry Criteria

Since the purpose of the BR is to assess the project baselines, the baselines must be established by the performing organization (Contractor or Government) and should reflect the entire scope of work documented at the appropriate level of detail before the formal BR can be conducted. The Project Teams must be familiar with the project scope of work, e.g., Statement of Work (SOW) or Statement of Objectives (SOO), before the start of BR. There needs to be an understanding of management processes including management of subcontractors.

5.9.4 BR Planning

Preparation is the process step that establishes a foundation for a successful BR. A plan should be developed for conducting an BR consistent with the PM, DPM, or TD's expectations and project dynamics. Project dynamics that have an impact on planning include changes in funding, scope of work, acquisition plan, subcontracting, key personnel, and any pending higher authority decisions.

Preparation for the BR focuses on those risks that may impact the project baselines. Risks include technical, schedule, cost, resource, or management processes. The Risk Management Plan (RMP) is essential for identifying, analyzing, handling, monitoring, and documenting project risks. The RMP provides the basis for iterative assessment and management of risk.

a. Assistant Program Managers – APMs are responsible for the Baseline Review Process and for the following:

1. Planning and executing the BR.

2. Providing an adequate number of qualified technical personnel to serve as the principal BR team members, supplemented by members with applicable support skills (e.g., EVM specialists, subcontract managers, business managers, logistics managers (Assistant Program Manager – Logistics (APM(L)), and finance managers).

3. Documenting, in the risk tool, risk issues identified during an BR.

4. Reviewing progress on the actions until issues are resolved.

b. BR Team Participants – APMs should select individuals for the BR team who are experienced with the programmatic and technical disciplines under review. When appropriate, subcontractor personnel should be included on the team. Areas of discipline that should be included on the team are program management, business management, subcontract management, and technical management (e.g., system engineering, software engineering, manufacturing, integration and test engineering, and integrated logistics support (APM(L)). The size and composition of the team should reflect the APMs objectives, expectations, and risk assumptions.

c. Agenda. The BR Team Handbook will assist the team members with how the review should be conducted. Included in this handbook will be a description of the effort, layout of the team assignments, review agenda, discussion guidelines, travel arrangement details, sample documentation, sample discussion questions, risk evaluation criteria, and a glossary of terminology.

d. Training. Training is essential to ensure that the BR team can identify and adequately assess the project risk. The APMs should conduct joint training in which all members of the BR team participate. The training provides enough information so the team can mutually understand the cost, schedule, technical, and management processes used on the project. The essential elements of training include the following:

1. PMs Expectations

2. BR objectives

3. Risk identification and documentation

4. Management Processes

5. Baseline maintenance

6. Risk management

7. Business processes Integrated Logistics Support (ILS)

8. Project Management Aspects:

    a. Statement of work/statement of objectives

    b. Work breakdown structure dictionary/matrix

    c. Work authorization document

    d. Control account plans

    e. Terms and acronyms

    f. Funding

    g. Budget and schedule baselines

    h. Subcontractor management

    i. Management reserve

e. Location. The facility chosen should be adequate to ensure complete participation by all applicable competencies and organizations. The BR is typically conducted at a contractor or government facility to ensure availability of documentation, or as mutually agreed or specified in the contract. The intent is to minimize travel and travel costs.

5.9.5 BR Conduct of Review

The BR objectives are to confirm that the baselines capture the entire technical scope of work. Work is scheduled to meet project objectives, risks are identified, proper amount and mix of resources have been assigned to accomplish all requirements, and management processes are implemented in order to ensure PMs have an understanding of risk items. The key events during the BR are the APM discussions. These discussions focus on key risk areas and management processes. To be effective, the discussion group must remain small and focused, and be composed of knowledgeable participants who have participated in the preparation and training.

a. Risk Areas. Examining the baselines and planning processes determine risk. These risk areas generally can be grouped as technical, schedule, cost, resources, or management processes. It is important that any real or perceived risks identified in the planning stage be dealt with during preparation for the BR. The following are examples of risk areas:

1. Technical risk. The ability of the project's technical plan to achieve the objectives of the scope of work. This includes the effects of available technology, software development capability; human systems design options, design maturity, etc.

2. Schedule risk. The adequacy of the time allocated for performing the defined tasks to achieve successfully the project schedule objectives. This includes the effects on the schedule of the interdependency of scheduled activities to achieve project milestones and supports the APMs ability, when necessary, to identify critical path.

3. Cost risk. The ability of the baselines to execute successfully the project cost objectives recognizing the relationships of budget, resources, funding, schedule, and scope of work. This includes the effects of assumptions used, for both estimates and resource allocation, on budgets for work items.

4. Resource risk. The availability of personnel and facilities required for performing the defined tasks to execute the program successfully.

5. Integrated Logistics Support risk. The ability of the project's acquisition logistics support plan to achieve the objectives of the scope of work. This includes the effects of available technology, software development; human systems design options, and design maturity to achieving supportability requirements.

6. Management processes risk. The degree to which the management processes provide effective integrated cost/schedule/technical planning and baseline change control. This includes the ability of the processes to establish and maintain valid, accurate, and timely performance data, including that from subcontractors, for early visibility into risk.

b. Management Processes. Risks may change with contract modifications, funding changes, re-planning, scope/schedule changes, changes to the acquisition plan, and higher-level authority direction, or a new PM raising the question "Is another BR necessary?" However, the objective is to ensure that the management processes are used to provide the PMs an ongoing source of understanding on the project baseline maintenance, risk management, and business processes used by the project. Management processes necessary to support the Baseline Review Process include the following:

1. Risk Management Process. The risk management process documents and classifies risks associated with the baselines. Risks from the BR need to be documented in the risk tool. These risks should be classified as to their probability of occurrence, consequences, handling, and identification of the individuals responsible for mitigation of risk. This process must accommodate all changes in project risks including those resulting from changes in the baselines.

2. Baseline Maintenance Process. This process maintains the project baselines that represent the plan for accomplishing the remaining work. This process must accommodate changes to the baselines caused by contract modification, funding changes, re-planning scope/schedule changes, changes to the acquisition plan, higher level authority direction, etc.

3. Business Processes. Other business processes, such as scheduling, estimate to complete, earned value methodology, and managerial analysis, supports the management of the project. Inappropriate or inadequate use of these processes may add risks to the project.

5.9.6 BR Completion/Exit Criteria

After completing BR discussions, a review summary and a closure plan need to be documented. The PMs should agree on a plan of action and who is responsible for each risk item identified. Items identified as watch items represent concerns that may require future attention and inclusion in the RM tool if they become risks. Once the BR is completed, the emphasis shifts to the management processes as the source of ongoing mutual understanding of the project risks.

5.10 ISR – In-Service Review

A technical review that is a multi-disciplined product and process assessment to ensure that the system under review is operationally employed with well-understood and managed risk. This review is intended to characterize in-service technical and operational health of the deployed system by providing an assessment of risk, readiness, technical status and trends in a measurable form that will substantiate in-service support budget priorities.

5.10.1 ISR Purpose

The In-Service Review (ISR) is a key element of Sustaining Engineering, . Sustaining Engineering is the technical effort to support an in-service system in its operational environment. This effort spans

those technical tasks (engineering and logistics investigations and analyses) to ensure continued operation and maintenance of a system with managed (i.e. known) risk. This includes:

- Collection and triage of all service use and maintenance data;
- Analysis of safety hazards, failure causes and effects, reliability and maintainability trends, and operational usage profiles changes;
- Root cause analysis of in-service problems (including operational hazards, deficiency reports, parts obsolescence, corrosion effects, and reliability degradation);
- The development of required design changes to resolve operational issues; and
- Other activities necessary to ensure cost-effective support to achieve peacetime and wartime readiness and performance requirements over a system's life cycle.

Technical surveillance of critical safety items, approved sources for these items, and the oversight of the design configuration baselines (basic design engineering responsibility for the overall configuration including design packages, maintenance procedures, and usage profiles) for the fielded system to ensure continued certification compliance are also part of the sustaining engineering effort. Periodic technical review of the in-service system performance against baseline requirements, analysis of trends, and development of management options and resource requirements for resolution of operational issues should be part of the sustaining effort.

The ISR is a multi-disciplined product and process assessment to ensure that the system under review is operationally employed with well-understood and managed risk. This review is intended to characterize in-service technical and operational health of the deployed system by providing an assessment of risk, readiness, technical status, and trends in a measurable form that will substantiate in-service support budget priorities. The ISR objectives are met through the consistent application of sound programmatic, systems engineering and logistics management plans, processes, and sub-tier in-service stakeholder reviews and the effective use of available government and commercial data sources. In-Service safety and readiness issues are grouped by priority to form an integrated picture of in-service health, operational system risk, system readiness, and future in-service support requirements. Completion of this review should provide:

a. An overall System Hazard Risk Assessment

b. An operational readiness assessment in terms of system problems (hardware, software, security, and production discrepancies)

c. Status of current system problem (discrepancy) report inflow, resolution rate, and trends and updated metrics as required for prioritizing budget requirements

Successful completion of this review should provide the PM, the APM, APM(L), In-Service Support and Readiness Officer representatives, and other stakeholders with the integrated information they need to establish priorities and to develop execution and out year budget requirements.

5.10.2 ISR Timing

The ISR is typically conducted prior to, and in support of, the initiation of the following FY Operation and Maintenance, Navy (O&M,N) requirements determination process. Since the O&M,N requirements data calls typically occur in early second quarter timeframe of any given FY, the ISR should be conducted in the prior months.

5.10.3 ISR Entry Criteria

a. A preliminary agenda has been coordinated (nominally) 30 days prior to the ISR

b. ISR technical products for the operational system have been made available to the appropriate ISR participants prior to the review:

1. Program Risk Assessment:
2. Configuration Management (CM) Status:
    a. Technical Directive Status Accounting (TDSA) Status
    b. ECPs Status
3. Software Management Status:
    a. Software Trouble Reports (STRs) Status
4. Operational Advisory Group (OAG) Priorities Status; PM actions relative to Top 10 OAG Priorities
5. Operational Requirements Status and Assessment
    a. Fielded Systems:
        i) Number of Systems
        ii) Permanent Sites
        iii) Unclassified Deployed Sites
    b. New Mission Capability
    c. Interoperability
6. System Readiness and Maintenance Program Status
    a. Technical Feedback Reports (TFBR)
    b. Deploying Group Systems Integration Testing (DGSIT)
    c. Fleet Systems Engineering Team (FSET)
    d. Technical Assistance Visit Reports (TAVR)
    e. Distance Support Tickets
    f. SPAWAR System Concern Index
    g. (SOVT Status
    h. INSURV Reports
    i. Security (e.g. IAVM/POA&M)

c. Integrated Logistics Support Management Team (ILSMT) Status.

1. ILS Element Issues & Priorities
2. APM actions relative to ILSMT priorities

d. Program budget requirements tied to system metrics and prioritized in accordance with PEO-C4I/SPAWAR requirements determination priority categories, including the delta between requirements and funding.

1. Current Execution Year
2. Pending Execution Year
3. Future Years Defense Program (FYDP)

e. Program Staffing Status.

1. Organization structure/chart supporting program management, technical and logistics requirements
2. Key government/contractor interfaces
3. Planned versus actual resource curve
4. Open Action Items from previous reviews

5.10.4 ISR PLANNING

a. In-Service Review Board (ISRB) – Planning for a technical review should start nominally 45 days prior to conduct of the review. Typically the PM, assigns an IPT leader, or assigned APM as the TRB chairperson. Prior to this assignment, the APM should have coordinated requirements with the appropriate SPAWAR 5.0 CSE. Chairperson assignments should be reflective of program scope and risk.

b. In-Service Review Elements – The APM, APM(L), In-Service Support and Readiness Officer representatives, and the assigned ISRB Chairperson shall coordinate with the development of a preliminary agenda for the planned review. This agenda should be made available to the ISR participant's 30 days prior to conducting the review. Review elements are shown below in paragraph 6.a.

c. In-Service Review Participants.

1. In-Service Review Board (required membership):
   a. In-Service Review Board Chairperson
   b. Government PM
   c. Industry PM (as applicable)
   d. APM
2. Representatives for Logistics:
   a. APM(L)
   b. In-service Support and Readiness Officers
3. Fleet Support Team Leader
4. Resource Sponsor (ex. Office of the Chief of Naval Operations (OPNAV), Department of the Navy / Assistant for Administration (DON/AA))

5. Requirements Officer, as applicable

6. User representatives

7.PMW 240 Cyber Security Manager

8. Subject Matter Experts (SMEs) as determined by the APM, APM(L), In-Service Support and Readiness representative, and ISRB Chairperson

9. Counsel, if required

10. Contracting Officer, if required

11. Support personnel as required by the ISR agenda, at a minimum to include the event Recorder

d.Location. The facility chosen should be adequate to ensure complete participation by all appropriate competencies and organizations. The ISR is typically conducted at a contractor or government provided facility, as mutually agreed upon, or specified in the contract. The intent is to minimize travel and travel costs.

5.10.5 ISR Conduct of Review

All ISRB participants are to assess the materials at the review, document concerns by means of action items, and submit action items to the event Recorder.

a. ISR Review Elements:

1. Introduction/agenda/administrative:

    a. Purpose of review

    b. Action item procedures overview

    c. Risk Assessment procedures overview

2. Program Overview:

    a. Production Overview, Status

    b. Fielded Status

    c. Modification Program Status

    d. Engineering and Logistics Overview

    e. Program Staffing Status

    f. Budget Overview

3. Program Risk Assessment:

    a. Operational System Hazard Risk Index (HRI) status

    b. Risk items and mitigation options and/or actions

    c. Cost and schedule impacts of risk and/or mitigation options

    d. Information Assurance Review

4. In-Service Management Metrics:
    a. Safety Program Status
    b. NAMDRP Program Status
    c. Configuration Management Program Status
    d. Software Program Status
    e. OAG Status
    f. Readiness and Maintenance Status
    g. ILSMT Status
    h. Funding Status
    i. ISR Action Items Status
5. Process Review (Provide Status of following to ensure plans and processes are current):
    a. Program Management Plan
    b. Operational Requirements Management Plan
    c. System Safety Management Plan
    d. Risk Management Plan
    e. Configuration Management Plan
    f. Data collection and Analysis process:
        1. Service Use data
        2. User Feedback
        3. Failure Reports
        4. Discrepancy reports.

b. Event deliverables/Products:

1. In Service Review Summary Report, with the following attachments:
    a. List of attendees, to include: name, functional area represented, code, phone number, and email address
    b. Completed action items
    c. Meeting minutes
    d. Recommendation to PM as to the technical health (system operational risk and system readiness) of the program
    e. Assessment of program O&M,N budget requirements tied to system metrics and prioritized in accordance with PEO/SPAWAR requirements determination priority categories, including the delta between requirements and funding

2. Updated Operational System Hazard Risk Assessment, including risks and mitigation options and/or actions

3. Summary report due within 20 days of review

5.10.6 ISR Completion/Exit Criteria

a. The ISR is considered complete when all draft action items are signed off, and program operational risk, and relation of this risk to O&M,N budgets is ascertained.

b. Typical Exit Criteria includes:

1. System problems have been categorized to support the O&M,N requirements determination process

2. Required budgets (in terms of work years) have been established to address all system problems in all priority categories

3. Required staffing (in terms of skills) has been established to address all system problems in all priority categories

4. Current levels of System Operational Risk and System Readiness have been quantified and related to current O&M,N and OP,N budgets

5. Future levels of System Operational Risk and System Readiness have been quantified and related to future year O&M,N and OP,N budgets

6 TESTING

The following sections define the test phases. Each project's IMP and TEMP document the required test phases, deliverables and success criteria for each test phase. The IMP documents which team is responsible for creating and maintaining each test phase's deliverables including the test plans, test scripts, weekly summary reports, and final summary report. The IMP also identifies the individuals who approve these deliverables. This TEP section also defines the roles and their associated descriptions used throughout the testing phases. The TEMP contains a mapping of these roles to the various stakeholders participating in the different test phases.

6.1 TEST PHASE ROLES

In order to establish responsibilities for resource and execution planning, it is important to assign key testing participants to different roles for each test phase as early in the process as possible. In Table 1 – Test Phase Role Definitions, the roles in each test phase are defined. Table 2 shows a sample mapping between the testing participants and the test phase roles.

Symbol	Role	Definition
L	Lead	Manage and lead phase. Responsible for any deliverables for that particular phase.
S	Support	Provide test support activities that do not include hands on testing in the GAT environment (i.e., create test scripts, assist with planning, fix defects, deliver builds, build installation, etc.)
P	Participate	Perform test execution to verify or validate functionality at various levels and to increase knowledge of the system
O	Observation	Over the shoulder observation of testing process to increase knowledge of system
F	Facilitate	Coordinates test activities, planning and deliverables.
T	Test Script	Responsible for the creation of all test scripts.

Table 2 – Test Phase Role Definitions

Participant	AUT	AFT/ASIT	DT	OST
Functional Representatives		P, S	L, T	
PMW 240 Test Lead	O	L, T	F	
PMW 240 Test Team	O	S	S	
Development Team	P	S	S	
Development Test Team	L, T	S	S	
Data Center	S	S	S	S
FIT		O	P	L, T
Information Assurance		P		

Table 3 – Test Phase Participants / Roles

6.2 Test Phase Tasks

In addition to the TEMP, each test phase's test plan (AUT Plan, AFT Plan, ASIT Plan, DT Plan, and OST Plan) will define the test phase's tasks and assign roles to each testing participant.

The individual test plans map the key testing participants to tasks that can be tailored for each test phase. A sample list is included in the table below:

Test Phase Task	Definition
Environment Setup	Configuration of development/test environment to prepare for manual/performance testing.
Test Plan Development	Creation of Test Plan (deliverable) for the particular test phase.
Test Script Development	Creation of Test Scripts for the particular test phase.
Test Script Delivery	Distribution of Test Scripts to appropriate testers and stakeholders.
Test Scripts Approval	Signoff of Test Scripts for the particular test phase.
Resource Allocation	Estimate and secure the appropriate resources (personnel, hardware, software, etc.) to complete the particular test phase.
Test Execution	The execution of the test scripts for that particular test phase.
Performance Test Execution	The performance execution of the test scripts for that particular test phase.
Defect Logging	Logging Test Defect Reports (TDRs) into Serena Dimensions for defects found during manual or performance test execution.
Defect Hot Wash	Review and discuss outstanding TDRs found during test execution.
Defect Remediation	Process to fix approved TDRs.
Generate/Distribute Weekly Summary Report	Create weekly summary report that shows planned/actual test scenario/script execution and the number of open/closed defects; distribute to appropriate stakeholders.
Generate/Distribute Final Report	Generate and distribute final report (deliverable) for the particular phase.

Table 4 – Test Phase Task definitions

6.3 AUT – Application Unit Testing

The Application Unit Testing (AUT) is the development testing phase that verifies that the developed application is free from defects and is a candidate for software release. The AUT should adhere to the development organization's standard practices and procedures. It is recommended, that testing during AUT should represent a complete systems test performed by a Quality Assurance (QA) or Test team,. AUT results will be presented during the Application Test Readiness Review (ATRR) as verification of internal testing.

The Software Development Plan (SDP), per ref d, documents the processes, methods and approach for the development and testing of all requirements. The level of detail in the SDP should be sufficient to define all processes, activities and tasks to be conducted. This includes specific standards, methods, tools, actions, strategies and responsibilities for both the development activities and the testing activities. The test procedures and practices employed during AUT should be fully documented in the SDP.

6.3.1 AUT Purpose

The AUT is an internal testing phase that verifies that that each requirement is tested, newly developed software is free from major defects and is a potential candidate for software release. AUT shall consist of functionality testing and load testing (if applicable).

The following sections under AUT are recommendations only.

6.3.2 AUT Timing

AUT is typically performed during each project/subproject's scheduled development cycle and systems testing cycle. Each project/subproject will account for testing within their allotted development and systems testing schedules.

6.3.3 AUT Participants

Since AUT is an internal phase, the government test team will observe the test phase. In addition, the Data Center will provide support. When an Agile approach is used, testing will be iterative in accordance with the Agile process (Figure 10 - Agile Life Cycle). When the full life cycle approach is used, observation will be performed at incremental build deliveries or as agreed upon with PMW 240 Test Lead.

a. AUT Participants.

1. Development Test Team (Lead)
2. PMW 240 Test Lead (Observation)
3. PMW 240 Test Team (Observation)
4. Development Team (Participate)
5. Data Center (Support)
6. Functional Representatives (Observation or Participate as agreed upon)

6.3.4 AUT Entry Criteria

a. AUT technical products have been made available to the AUT participants prior to conducting the AUT:

1. Development of applicable source code to meet requirements set forth in the System/Sub-system Specification, the application's Software Requirement Specification and any accepted ECPs
2. Development of automated or manual test scripts verifying SRS requirements
3. Completed PDR exit criteria
4. SRS verification test scripts delivered to government

5. Traceability matrix mapping test scripts to SRS requirement(s) delivered to government

b. Available configured test environment

6.3.5 AUT Completion/Exit Criteria

a. Zero open or non-deferred Severity 1, Severity 2, or Severity 3 defects

b. 100% of all SRS verification test scripts executed

c. AUT Final Summary Report completed

d. Final SRS verification test scripts delivered to government

e. Final traceability matrix mapping test scripts to SRS requirement(s) delivered to government

6.4 AFT – Application Functional Testing

Application Functional Testing (AFT) is a project level system testing phase that ensures the candidate application's functionality meets the intent of the requirements levied in the project's Software Requirements Specification, verifies that the developed application is free from defects and is a candidate for software release. If applicable, a project's functional representative will participate in testing and provide implementation related feedback and defect reporting. AFT completion signifies the end of feature level and functionality level changes.

6.4.1 AFT Purpose

AFT is project level system testing intended to allow the government test team to validate that the candidate application's functionality meets the intent of all requirements levied in the project's SRS. AFT is also the opportunity for functional representatives for each project to review the software implementation and make functional change recommendations. This is a system test and therefore includes regression testing as well as validation of new functionality.

If applicable, load testing should be performed within this phase of testing to ensure the application will be able to support the required operational loads. The parameters used for load testing should be driven by defined Measure of Effectiveness / Measure of Suitability (MOEs/MOS), or in the case where these parameters are undefined, current production metrics with some predictive modeling can be used to obtain desired performance parameters.

Each project will also produce an AFT weekly summary report (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT Weekly Summary PMW 240 AFT-ASIT Weekly Summary Report Template). The purpose of this report is to identify the current status of testing and the maturity of the software product on a weekly basis. In addition, at the end of the test phase, each project will produce an AFT Final Summary report (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT Final Summary PMW 240 AFT-ASIT Weekly Summary Report Template) that summarizes the results of the test phase and the maturity of the software product.

6.4.2 AFT Timing

AFT typically follows ATRR and can be simultaneous with or prior to ASIT. AFT precedes code freeze and represents the final phases for making functional application changes.

6.4.3 AFT Planning

AFT planning should begin no later than six weeks prior to the ATRR. Additional time should be considered based on the scope of the AFT testing effort. The project's SEPIMP and TEMP define the required test events, deliverables and criteria for success. The government test team will be responsible for creating the AFT plan and AFT scripts. All AFT scripts must be successfully executed during the AFT phase.

a. AFT Elements – The test phases for the AFT are defined in the project's TEMP. Phases may include:

1. Regression Testing
2. Load Testing
3. Functional Testing
4. Security Testing

b. AFT Participants.

1. PMW 240 Test Lead (Lead)
2. PMW 240 Test Team (Support)
3. Functional Representative(s) (Participate, Support)
4. Development Team (Support)
5. Development Test Team (Support)
6. Data Center (Support)
7. FIT (Observe)
8. PMW 240 Cyber Security Representative (Participate)
9. Project Team Cyber Security Representative (Participate)

c. AFT Deliverables/Products:

1. AFT Weekly Summary Report due COB Monday for previous week's testing.
2. AFT Final Summary Report (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT Weekly Summary Report Template)
3. Defects (Recorded in approved defect tracking system)

6.4.4 AFT Entry Criteria

a. Approved AFT Plan

b. Successful completion of ATRR

c. Available configured test environment

d. Successful execution of the Data Migration Plan (DMP)

6.4.5 AFT Completion/Exit Criteria

a. All defects reported in an approved defect tracking system

b. Successful execution of all AFT test scripts

c. Zero open or non-deferred Severity 1, Severity 2, or Severity 3 defects

d. Approved AFT Final Summary Report, to include (where applicable) regression, load, and functional testing.

e. No unmitigated Category 1 or Category 2 vulnerabilities

6.5 ASIT – Application System Integration Testing

Application System Integration Testing (ASIT) is a project level test phase that ensures the candidate application's functionality meets the interface, system integration, and load testing requirements levied in the project's MOEs, MOSs, KPPs and system requirements. This integrated test phase should occur within the target integrated AFT environment and consists of external applications as well as afloat and replication related testing if applicable. AFT and ASIT can be combined in most instances to consolidate test phases but is represented as separate events in order to provide enterprise level applications a longer time for integration specific testing.

6.5.1 ASIT Purpose

ASIT is project level testing intended to allow the government test team to validate application integration points (if applicable), application regression testing, load testing, afloat and data replication testing (if applicable). Functionality should be locked when entering ASIT as it is designed as one of the final phases of testing ensuring an application is ready for release.

6.5.2 ASIT Timing

ASIT typically follows AFT but can be performed simultaneously. In most cases ASIT will follow an application level code freeze and should only support modifications to the application resulting from defect fixes.

6.5.3 ASIT Planning

ASIT planning should begin no later than six weeks prior to the ATRR. Additional time should be considered based on the scope of the ASIT testing effort. The project's SEP, IMP and TEMP define the required test events, deliverables and criteria for success. The PMW 240 test team will be responsible for creating the ASIT Plan and ASIT scripts.

a. ASIT Elements – The test phases for the ASIT are defined in the project's TEMP. Phases may include:

1. Regression Testing
2. Load Testing
3. Replication Testing

4. Integration Testing
5. End to End Testing
6. Security Testing

b. ASIT Participants.

1. PMW 240 Test Lead (Lead)
2. PMW 240 Test Team (Support)
3. Functional Representative(s) (Participate, Support)
4. Development Team (Support)
5. Development Test Team (Support)
6. Data Center (Support)
7. FIT (Observation)
8. PMW 240 Cyber Security Representative (Participate)
9. Project Cyber Security Representative (Participate)

c. ASIT Deliverables/Products:

1. ASIT Weekly Summary Report due COB Monday for previous week's testing (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT PMW 240 AFT-ASIT Weekly Summary Report Template) (Weekly AFT/ASIT Summary Report if AFT and ASIT are executed as a combined phase)

2. ASIT Final Summary Report (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT PMW 240 AFT-ASIT Final Summary Report Template) (AFT/ASIT Final Summary Report if AFT and ASIT are executed as a combined phase)

3. Defects (Recorded in approved defect tracking system)

6.5.4 ASIT Entry Criteria

a. Approved ASIT Plan

b. Approved Interface Requirements Documents

c. Approved SRS, to include all approved ECPs for the release

d. Approved AFT Final Summary Report (not required if AFT and ASIT are executed as a combined phase)

6.5.5 ASIT Completion/Exit Criteria

a. Zero open Severity 1, Severity 2 and Severity 3 defects

b. All defects recorded in the approved project defect tracking system

c. Approved ASIT Final Summary Report, to include (where applicable) regression, load, and functional testing

d. No unmitigated Category 1 or Category 2 vulnerabilities

6.6 DT – Developmental Testing

DT is a project level test phase designed to reduce the number of defects found and subsequent risks associated with an extended Operational System Test (OST). DT should be a test run of OST and focus on the verification of Measure of Effectiveness (MOEs) and Measure of Suitability (MOSs). The DT phase will verify all aspects of the candidate application including:

- Installation
- Training delivery
- User help
- User testing
- Technical support
- User evaluation

If applicable, the DT also covers afloat testing and associated data replication. This phase of testing is managed by the functional teams. The results of DT feed into the PRR as a basis for the request to move into production.

6.6.1 DT Purpose

The Developmental Testing (DT) testing phase is designed to allow the functional representatives to verify the complete system prior to OST. The DT phase shall verify all aspects of the software release including application functionality, application interfaces, training, and software deployment. If applicable, afloat testing and data replication testing will occur within this phase of testing. This phase of testing is managed by the functional representatives. This phase of testing will serve as the End-To-End Testing and length of testing will vary depending on the testing requirements.

In order to simulate real world scenarios, various operational scenarios will be incorporated into the test event to simulate the stresses of normal operation. These scenarios will be generated as part of the DT Plan and performed throughout this phase of testing. Test of applicable training material will also occur during this phase of testing. The training test will consist of user level testing of effectiveness and accuracy of training material as it relates to the functionality being tested for the build release.

The only changes that will be permitted within this phase are fixes to severity 1, 2, or 3 defects, system configuration modifications, and integration level changes. During a life cycle where DT is required, DT is the final testing phase and serves as the phase of testing to which its result will dictate whether the application is ready for release or continue in testing. If OST is required, DT will act as a preparatory test for OST. If OST is not required, DT will act as UAT.

6.6.2 DT Timing

DT follows TRR. The DT results feed into the PRR as a basis for the request to move into production.

6.6.3 DT Planning

DT planning begins during the initial phases of the project. The project's SEP, IMP and TEMP define the required test events, deliverables and criteria for success. The functional representatives are responsible for creating the DT plan and DT scripts. The DT scripts should be role-based and should validate any available use cases.

a. DT Elements – The test phases for the DT are defined in the project's TEMP. Phases may include:

1. Regression Testing
2. Functional Testing
3. End to End Testing

b. DT Participants.

1. Functional Representative(s) (Lead)
2. PMW 240 Test Lead (Support)
3. PMW 240 Test Team (Support)
4. Development Team (Support)
5. Development Test Team (Support)
6. Data Center (Support)
7. FIT (Participate)

c. DT Deliverables/Products:

1. Weekly DT Summary Report due COB Monday for previous week's testing (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT Weekly Summary Report Template)
2. DT Final Summary Report (see Appendix A: Guidance Documents & Templates: PMW 240 AFT-ASIT Weekly Summary Report Template)
3. End to End Log (see Appendix A: Guidance Documents & Templates: End To End Logging Template)
4. Defects (Recorded in approved defect tracking system)

6.6.4 DT Entry Criteria

a. Approved DT Plan

b. Successful TRR

c. Signoff of ASIT Final Summary Report (or AFT/ASIT Final Summary report if applicable) with agreement to proceed in testing

d. Completion of Test Event Readiness Checklist

6.6.5 DT Completion/Exit Criteria

a. Zero open or non-deferred Severity 1, Severity 2, or Severity 3 defects

b. 100% execution of test scripts

c. DOORS® Test POC (PMW 240 Test Lead) will upload finalized test scripts into DOORS® as a system of record.

d. Approved DT Final Summary Report, to include (where applicable) regression, load, and functional testing

6.7 OST – Operational System Testing

Operational System Testing (OST) testing phase will focus on the verification of the MOE/MOS and high level verification of the functionality in the Production environment. User feedback testing will be performed during OST

6.7.1 OST Purpose

The OST phase is designed to verify the system's MOEs and MOSs as well as a high level verification of the functionality in the Production environment.

A key portion of the TEMP is the establishment of Critical Operational Issues (COI), Measures of Effectiveness/Suitability and Critical Technical Parameters (CTP) these measures are traceable to KPP and other attributes defined in the Capability Production Document (CPD), if the CPD does not exist refer to the SSS or FRD for guidance depending on which document has the appropriate references.

OST will validate each of the COIs, MOEs, and MOSs with the execution of a mapped test procedure which will inherently validate all of the KPPs through the established traceability.

OST is required to be performed in the Operational Environment and in most instances will occur after the final release of the product.

No software or configuration changes will be permitted within this phase and any detected defects or change request will be submitted utilizing the establish change request process and will constitute a separate release.

6.7.2 OST Timing

OST follows the PRR. The OST results are provided to the project team in support of sustainment.

6.7.3 OST Planning

The Fleet Introduction Team (FIT) will lead the OST test phase with the Data Center providing support.

a. OST Participants.

   1. FIT (Lead)

   2. Data Center (Support)

b. OST Deliverables/Products:

   1. OST Final Summary Report

6.7.4 OST Entry Criteria

a. Approved OST Plan

b. Completed PRR

c. System successfully deployed to Production

6.7.5 OST Completion/Exit Criteria

a. Functional and User Community Acceptance

b. Approved OST Final Summary Report

APPENDIX A: GUIDANCE DOCUMENTS & TEMPLATES

Name	Location
a. PMW 240 AFT-ASIT Weekly Summary Report Template	PEO-EIS Portal → Corporate Operations/Program Control >System Engineering> Testing> Testing Documentation> PMW 240 AFT-ASIT Weekly Summary Report Template
b. PMW 240 AFT-ASIT Final Summary Report Template	PEO-EIS Portal → Corporate Operations/Program Control >System Engineering > Testing > Testing Documentation >PMW 240 AFT-ASIT Final Summary Report Template
c. PMW 240 DT Weekly Summary Report Template	PEO-EIS Portal → Corporate Operations/Program Control >System Engineering > Testing > Testing Documentation >PMW 240 DT Weekly Summary Report Template
d. PMW 240 DT Final Summary Report Template	PEO-EIS Portal → Corporate Operations/Program Control >System Engineering > Testing > Testing Documentation >PMW 240 DT Final Summary Report Template
e. ATRR Template	PEO-EIS Portal→ Program Operations/Program Control > System Engineering >Testing >Testing Documentation>SWP ATRR Template
f. End To End Logging Template	PEO-EIS Portal→ Corporate Operations/Program Control >System Engineering >Testing >Testing Documentation> SWP End to End Logging Template
g. SEP Annotated Outline (Final)	PEO-EIS Portal→ Corporate Operations/Program Control/Program Control >System Engineering>Systems Engineering Templates – Checklists
h. AAP SETR Checklist	PEO-EIS Portal→ Corporate Operations/Program Control >System Engineering>Systems Engineering Templates – Checklists >AAP SETR Checklist
i. Event Slide Templates	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Systems Engineering Templates – Checklists>Technical Review Slides Templates
j. ERP (FY11 Initial) Budget Structure	PEO-EIS Portal→ Corporate Operations/Program Control >System Engineering>Spend Plan Review Guidance
k. Spend Plan	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Spend Plan Review Guidance
l. SPAWAR GWBS Mode (rev 1)	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Spend Plan Review Guidance
m. Spend Plan Soft Controls (FY 11)	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Spend Plan Review Guidance
n. ISP Text and Context Checklist	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Systems Engineering Templates – Checklists
o. PMW 240 CM Plan	PEO-EIS Portal→ Corporate Operations > System Engineering > Configuration Management > CM Program Documents > PMW 240 CMP Approved
p. FRCB Brief (2010)	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > FRCB Information

Name	Location
q. SRR/SFR Checklist r. PDR Checklist s. CDR Checklist t. TRR Checklist u. PRR Checklist	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Systems Engineering Templates – Checklists > AAP SETR Checklists
v. PMW 240 IMP Template	PEO-EIS Portal→ Corporate Operations/Program Control > System Engineering > Systems Engineering Templates – Checklists

APPENDIX B: DODAF MAPPING V 1.5 TO 2.0

The following table provides mapping of DoDAF 1.5 to 2.0 artifacts. DoDAF documents/artifacts to be provided for each project are included in the project's Integrated Master Plan (IMP).

Table 3.2-1: Mapping of DoDAF V1.5 Products to DoDAF V2.0 Models

DoDAF V2.0 / DoDAF V1.5	Operational Viewpoint	Systems Viewpoint	Services Viewpoint	All Viewpoint	Standards Viewpoint	Data & Information Viewpoint
AV-1				AV-1		
AV-2				AV-2		
OV-1	OV-1					
OV-2	OV-2					
OV-3	OV-3					
OV-4	OV-4					
OV-5	OV-5a, OV-5b					
OV-6a	OV-6a					
OV-6b	OV-6b					
OV-6c	OV-6c					
OV-7						DIV-2
SV-1		SV-1	SvcV-1			
SV-2		SV-2	SvcV-2			
SV-3		SV-3	SvcV-3a, SvcV-3b			
SV-4a		SV-4				
SV-4b			SvcV-4			
SV-5a		SV-5a				
SV-5b		SV-5b				
SV-5c			SvcV-5			
SV-6		SV-6	SvcV-6			
SV-7		SV-7	SvcV-7			
SV-8		SV-8	SvcV-8			

APPENDIX C: DODAF PRODUCT NAMES AND DESCRIPTIONS

Product	Product Name	General Description
AV-1	Overview and Summary Information	Describes a Project's Visions, Goals, Objectives, Plans, Activities, Events, Conditions, Measures, Effects (Outcomes), and produced objects.
AV-2	Integrated Dictionary	An architectural data repository with definitions of all terms used throughout the architectural data and presentations.
DIV-1	Conceptual Data Model	The required high-level data concepts and their relationships.
DIV-2	Logical Data Model	The documentation of the data requirements and structural business process (activity) rules. In DoDAF V1.5, this was the OV-7.
DIV-3	Physical Data Model	The physical implementation format of the Logical Data Model entities, e.g., message formats, file structures, physical schema. In DoDAF V1.5, this was the SV-11.
OV-1	High-Level Operational Concept Graphic	The high-level graphical/textual description of the operational concept.
OV-2	Operational Resource Flow Description	A description of the Resource Flows exchanged between operational activities.
OV-3	Operational Resource Flow Matrix	A description of the resources exchanged and the relevant attributes of the exchanges.
OV-4	Organizational Relationships Chart	The organizational context, role or other relationships among organizations.
OV-5a	Operational Activity Decomposition Tree	The capabilities and activities (operational activities) organized in a hierarchal structure.
OV-5b	Operational Activity Model	The context of capabilities and activities (operational activities) and their relationships among activities, inputs, and outputs; Additional data can show cost, performers, or other pertinent information.
OV-6a	Operational Rules Model	One of three models used to describe activity (operational activity). It identifies business rules that constrain operations.
OV-6b	State Transition Description	One of three models used to describe operational activity (activity). It identifies business process (activity) responses to events (usually, very short activities).
OV-6c	Event-Trace Description	One of three models used to describe activity (operational activity). It traces actions in a scenario or sequence of events.
SvcV-1	Services Context Description	The identification of services, service items, and their interconnections.
SvcV-3a	Systems-Services Matrix	The relationships among or between systems and services in a given Architectural Description.
SvcV-3b	Services-Services Matrix	The relationships among services in a given Architectural Description. It can be designed to show relationships of interest, (e.g., service-type interfaces, planned vs. existing interfaces).
SvcV-4	Services Functionality Description	The functions performed by services and the service data flows among service functions (activities).

SvcV-5	Operational Activity to Services Traceability Matrix	A mapping of services (activities) back to operational activities (activities).
SvcV-6	Services Resource Flow Matrix	It provides details of service Resource Flow elements being exchanged between services and the attributes of that exchange.
SvcV-7	Services Measures Matrix	The measures (metrics) of Services Model elements for the appropriate time frame(s).
SvcV-10a	Services Rules Model	One of three models used to describe service functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.
SvcV-10b	Services State Transition Description	One of three models used to describe service functionality. It identifies responses of services to events.
SvcV-10c	Services Event-Trace Description	One of three models used to describe service functionality. It identifies service-specific refinements of critical sequences of events described in the Operational Viewpoint.
SV-1	Systems Interface Description	The identification of systems, system items, and their interconnections.
SV-3	Systems-Systems Matrix	The relationships among systems in a given Architectural Description. It can be designed to show relationships of interest, (e.g., system-type interfaces, planned vs. existing interfaces).
SV-4	Systems Functionality Description	The functions (activities) performed by systems and the system data flows among system functions (activities).
SV-5a	Operational Activity to Systems Function Traceability Matrix	A mapping of system functions (activities) back to operational activities (activities).
SV-6	Systems Resource Flow Matrix	Provides details of system resource flow elements being exchanged between systems and the attributes of that exchange.
SV-7	Systems Measures Matrix	The measures (metrics) of Systems Model elements for the appropriate timeframe(s).
SV-10a	Systems Rules Model	One of three models used to describe system functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.
SV-10b	Systems State Transition Description	One of three models used to describe system functionality. It identifies responses of systems to events.
SV-10c	Systems Event-Trace Description	One of three models used to describe system functionality. It identifies system-specific refinements of critical sequences of events described in the Operational Viewpoint.

APPENDIX D: DOCUMENT STATUS BY EVENT MATRIX

The table below includes the standard deliverables for a project and the status of the deliverable for each event.

Teams referenced:

SET – Systems Engineering
DEV – Development
PRJ – Project Team
IA – Information Assurance
TEST – PMW 240 Test Team
FIT – Fleet Introduction Team
PMO – PMW 240 TRIAD
FCT – Functional
ECM – Enterprise Change Management
IMS – IMS Team
LOG – Logistics

Status Terms:

D = Draft U = Update F = Final R = Revised C = Completed G = Generated B = Baseline

Document	Team	SRR/ SFR	PDR	CDR	ATRR	TRR	PRR
System Engineering Plan (SEP)	SET	F	R	R			
System/Sub-system Specification (SSS)	SET	F	R	R			
Integrated Master Plan (IMP)	SET	F	R	R		R	
Software Development Plan (SDP)	DEV	F	R	R			
Program Protection Plan (PPP)	IA	F	R				
Acquisition Information Assurance Strategy (AIAS)	IA	F	R	R		R	R
Acquisition Decision Memorandum (ADM)	PMO	C					
Integrated Master Schedule (IMS)	IMS	B	U	U	U	U	U
Configuration Management Functional Baseline Report	PRJ	C					
System Registered in eMASS	IA	C					
DoDAF Document: DIV-1	FCT	D	F				
FRCB Form	LOG	C					
Interface Requirements Specification (IRS)	DEV	D	F	R			
Software Requirements Specification (SRS)	PRJ	D	F	R			
System/Subsystem Design Description (SSDD)	DEV	D	F	R			
Enterprise Change Management Plan (ECM)	ECM	D	F				
Configuration Management Allocated Baseline Report	PRJ		C	C			
Privacy Impact Assessment (PIA)	IA		C				
Software Design Document (SDD)	DEV		D	F			
Computer Software Configuration Items (CSCIs) List	PRJ	D	U	F			

Document	Team	SRR/ SFR	PDR	CDR	ATRR	TRR	PRR
DIACAP C&A Package	IA	D	U	F		R	
DoDAF Documents: AV-2, SV-1 or SvcV-1, SV-4 or SvcV-4, SV-5a or SvcV-5, SV-6 or SvcV-6, SV-7 or SvcV-7	DEV	D	U	F			
DoDAF Documents: AV-1, OV-1, OV-2, OV-3, OV-4, OV-5a, OV-5b, OV-6c	FCT	D	U	F			
Test & Evaluation Master Plan (TEMP)	TEST		D	F		R	
Interface Design Description (IDD)	DEV		D	F			
Interface Control Document (ICD)	DEV		D	F			
Database Design Description (DBDD)	DEV		D	F			
DoDAF Documents: DIV-2, DIV-3, SV-3, SvcV3a, SvcV-3b, SvcV-10a, SvcV-10b, SvcV-10c	DEV		D	F			
DoDAF Documents: OV-6a, OV-6b	FCT		D	F			
Configuration Management Product Baseline Report	PRJ				C	C	
Software Version Description (SVD)	PRJ				F	R	
Data Migration Plan (DMP)	DEV		D	U	F		
Navy Training System Plan/mini-NTSP (NTSP)	LOG		D	U		F	
FRCB Package	DEV			D		F	
Software Requirements Traceability Matrix (RTM)	DEV	D (SSS to FRD)	U (SRS to SSS)	U (test script to SRS)	U	F	
Life Cycle Sustainment Plan (LCSP)	LOG		D	U		U	F
Users Logistics Support Summary (ULSS)	LOG					D	F
Software Transition Plan (STrP)	DEV					D	F
System Guides/ Technical Manuals	DEV				D	U	F
Training Curriculum	LOG				D	U	F
Human Systems Integration Plan (HSIP)	SET	D	U	U			F
Business Process Models "As Is" (optional)	FCT	F					
Business Process Model "To Be" (optional)	DEV			F			
PCA Results and Summary Report	SET						C (PCA)
SPAWAR CM Verification & Audit Checklist for PCA	LOG						C (PCA)
Cost Data	PRJ	F	R	R			
Risk Report	PRJ	C	C	C	C	C	C
Minutes & Action Items	PRJ	G	G	G	G	G	G
Programmatic Assessment Memo	PMO	C	C	C		C	C
Technical Systems Assessment Memo	PMO	C	C	C			
Technical Operations & Transition to	PMO					C	C

Document	Team	SRR/ SFR	PDR	CDR	ATRR	TRR	PRR
Production Assessment							
Action Items & Exit Criteria	PRJ	C	C	C	C	C	C
AAP SETR Checklist	SET	C	C	C		C	C
Software Test Plans							
AFT Plan	TEST				F		
ASIT Plan	TEST				F		
DT Plan	FCT					F	
OST Plan	TEST					D	F
SOVT Plan	DEV				F	R	R
Test Scripts							
SRS Verification Test Scripts	DEV				C(AUT)		
AFT Scripts	TEST			D	F		
ASIT Scripts	TEST			D	F		
DT Scripts	FCT					F	
Test Reports							
SRS Verification Test Report	DEV				C(AUT)		
AFT Final Summary Report	TEST					F	
ASIT Final Summary Report	TEST					F	
DT Final Summary Report	FCT						F (DT)
OST Assessment	FIT						F (OST)

APPENDIX E: ACRONYM LIST

AAP	Abbreviated Acquisition Programs
ACAT	Acquisition Category
ADM	Acquisition Decision Memorandum
AFT	Application Functional Test
AIRFOR	Air forces
APM(E)	Assistant Program Manager – Engineering
ASIT	Application System Integration Test
ASR	Alternative Systems Review
AT&L	Acquisition, Technology & Logistics
ATO	Authority to Operate
ATRR	Application Test Readiness Review
AUT	Application Unit Testing
BPMD	Business Process Model
BR	Baseline Review
CARD	Cost Analysis Requirements Description
CDD	Capability Development Document
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CHENG	Chief Engineer
CM	Configuration Management
CM&C	Change Management and Communications
COI	Critical Operational Issues
COMOPTEVFOR	Commander, Operational Test and Evaluation Force
CPD	Capability Production Document
CSCI	Computer Software Configuration Item
CSE	Command Standards Executive
CTP	Critical Technical Parameters
DBDD	Database Design Description
DGSIT	Deploying Group Systems Integration Testing
DIACAP	DoD Information Assurance Certification and Accreditation Process
DITSCAP	DoD Information Technology Security Certification and Accreditation Process
DoD	Department of Defense
DoDAF	DoD Architecture Framework
DOTMLPF-P	Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities Policy
DPM	Deputy Program Manager
DT	Developmental Testing
ECM	Enterprise Change Management
ECO	Engineering Change Order
ECP	Engineering Change Proposal
FRD	Functional Requirements Document
FoS	Family of Systems
FSET	Fleet Systems Engineering Team
FYDP	Future Years Defense Program

HRI	Hazard Risk Index
HSI	Human Systems Integration
HWCI	Hardware Configuration Item
IATO	Interim Authority to Operate
ICD	Interface Control Document
IDD	Interface Design Description
ILS	Integrated Logistic Support
ILSMT	Integrated Logistics Support Management Team
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
INSURV	Inspection and Survey
IRS	Interface Requirement Specification
ISP	Information Support Plan
ISR	In-Service Review
ISRB	In-Service Review Board
KPP	Key Performance Parameters
LCSP	Life Cycle Support Plan
MDA	Milestone Decision Authority
MOE	Measure of Effectiveness
MOS	Measure of Suitability
MPTE	Manpower, Personnel, Training, and Education
NAMDRP	Naval Aviation Maintenance Deficiency Reporting Program
NTSP	Navy Training System Plan
OAG	Operational Advisory Group
OPEVAL	Operational Evaluation
OPN	Other Procurement, Navy
OPNAV	Office of the Chief of Naval Operations
OST	Operational System Test
OSTRR	Operational System Test Readiness Review
OV	Operational View
O&M,N	Operation and Maintenance, Navy
PAO	Public Affairs Officer
PCA	Physical Configuration Audit
PD	Project Director
PDR	Preliminary Design Review
PEO-EIS	Program Executive Officer, Enterprise Information Systems
PM	Program Manager
PMW	Program Manager Warfare
PPL/SSIL	Preferred Product List / System/Subsystem Interface List
PPP	Program Protection Plan
PRR	Production Readiness Review
PSM	Product Support Manager
QA	Quality Assurance
RM	Requirements Management
RMP	Risk Management Plan
RRR	Release Readiness Review

SAMP	Single Acquisition Management Plan
SAR	Selected Acquisition Report
SCD	Ship Change Document
SDD	Software Design Description
SDP	Software Development Plan
SEP	Systems Engineering Plan
SET	Systems Engineering Team
SFR	System Functional Review
SID	Shipboard Installation Drawing
SME	Subject Matter Expert
SOO	Statement of Objectives
SoS	System of Systems
SOVT	System Operational Verification Test
SOW	Statement of Work
SPAWAR	Space and Naval Warfare Systems Command
SRR	System Requirement Review
SRS	Software Requirement Specification
SSDD	System/Subsystem Design Description
SSS	System/Subsystem Specification
STR	Software Trouble Reports
SUBFOR	Submarine Forces
SURFOR	Surface Forces
SV	System View
SWP	Sea Warrior Program
TAA	Team Assignment Agreements
TA (CSE)	Technical Authority Chief Systems Engineer
TAVR	Technical Assistance Visit Report
T&E	Test and Evaluation
TD	Technical Director
TDP	Technical Data Package
TDR	Test Defect Report
TDSA	Technical Directive Status Accounting
TEMP	Test and Evaluation Master Plan
TISP	Tailored Information Support Plan
TRR	Test Readiness Review
TWP	Team Work Plan
ULSS	Users Logistics Support Summary