



N65236-ENGOPS-BRIEF-0023-1.0

TurboTax® for Systems Engineering The Sequel 2006

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Approved for release to the public - 2 Oct 2006



Presentation Outline

- CMMI® and Project Plans
- TurboTax® style of application design
- ePlan Builder
- Summary



CMMI® and Project Plans

- CMMI® Planning of a Project
- Documentation Pitfalls



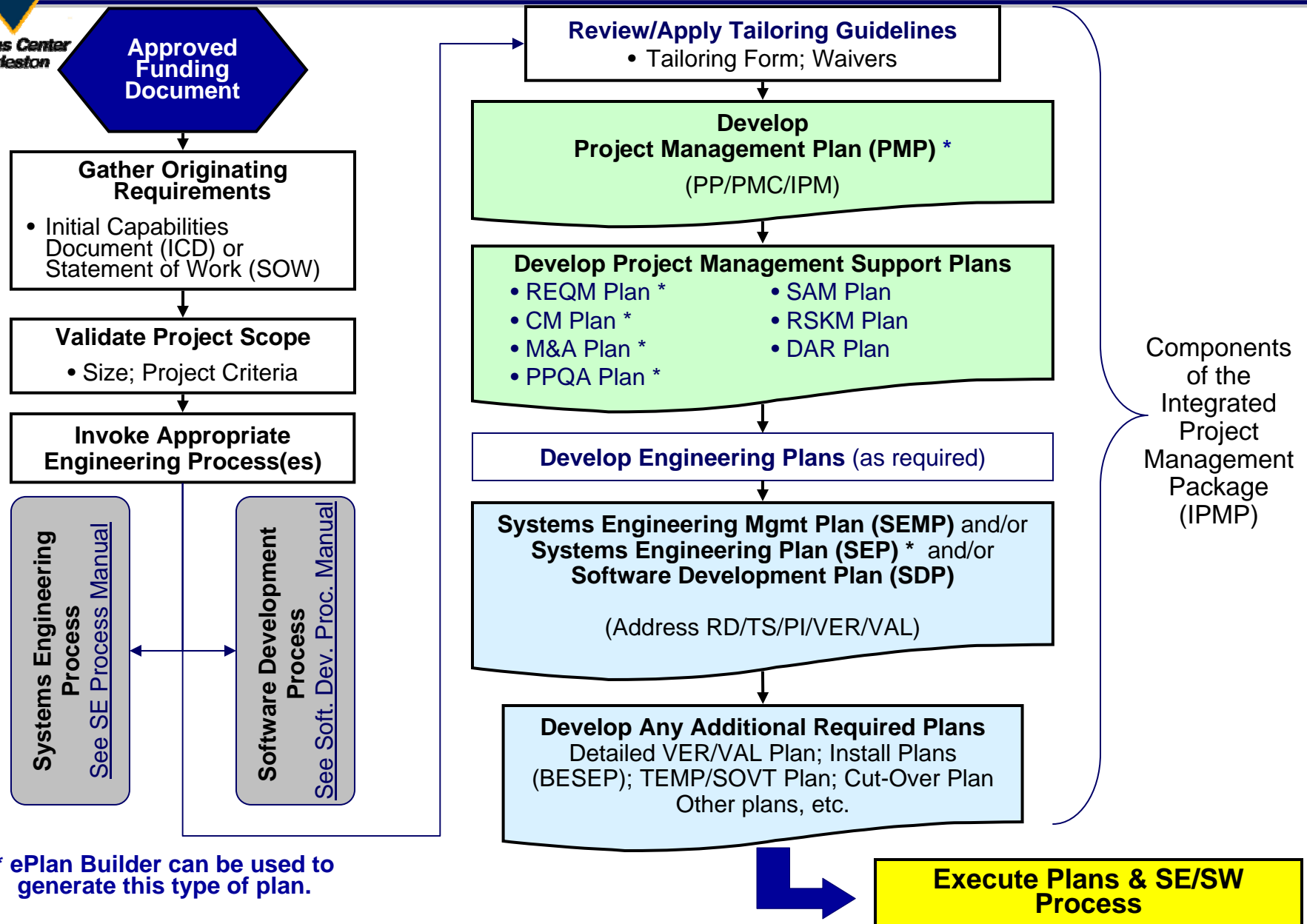
- **Significant emphasis in CMMI® best practices on Planning**
 - Plan the Planning
 - Plan the Process
 - Integrate and Maintain the Plans
 - Manage the Project using the Plans
- **Projects have numerous plans**
 - Project Mgmt Plan, Systems Engineering Mgmt Plan, Software Development Plan, CM, QA, Supplier Mgmt Plan, Test, Verification, Validation, Install, Support ...

“A good plan, violently executed now, is better than a perfect plan next week.” George S. Patton

“It is a bad plan that admits of no modification.” Publilius Syrus (~100 BC)



SSC-C Project Process - Planning



* ePlan Builder can be used to generate this type of plan.



Pitfalls in Developing Plans

- **Generating from scratch**
 - Author specific
 - What did I forget?
 - Time – “Re-inventing the wheel”
- **Copy from “good” example**
 - Is it good?
 - Cut and Paste errors – old project data
 - What did they forget or intentionally leave out?
 - Is my project really the same?
- **Document Outlines/Templates**
 - Provide placeholders; not explanation/examples
 - Don’t handle branching
 - No validation
- **General issues with all above alternatives**
 - Consistency from Plan to Plan
 - Formatting
 - What belongs in this section?



TurboTax[®] style of application design

- TurboTax[®] Usability
- Application as a Document Builder





- **TurboTax[®] (and other income tax software)**
 - Simplifies the process for completing income tax returns
 - Uses an “interview” format with the user to collect information
 - Provides common defaults (that can be changed)
 - Branches to necessary sections based on input collected; skips unnecessary sections
 - Information entered once, but used in several places
 - Validates information for gaps and inconsistencies
 - Provides page/field specific help text
 - Automatically generates final forms



Apply Concept to Building Plans

- **Collect common project information once**
 - Ensures consistency from plan to plan
- **Acts as on-line template**
 - Ask questions, give choices, prompt for input
 - Application logic ensures full coverage of required sections (from standard process manuals)
 - Logic permits skipping / branching as appropriate
 - Provide on-line, section sensitive help
- **Standard content can be included in all plans**
- **Automatically generate initial draft of plan**

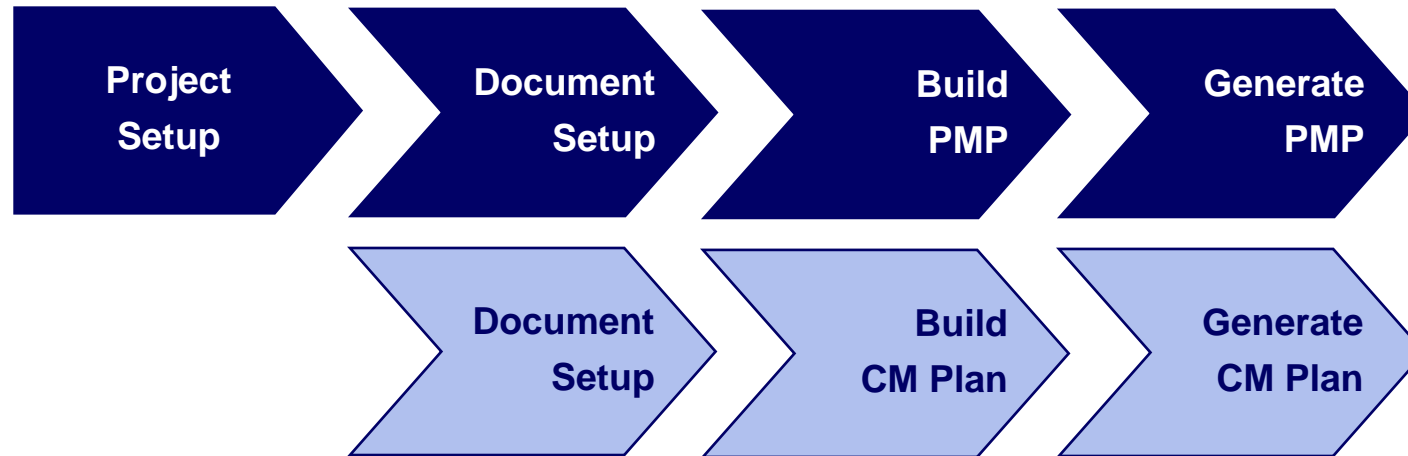
ePlan Builder

- **Functionality/Capabilities**
- **Application in Action**
- **Technical Specifications**



- **Currently builds CMMI[®]-compliant (Maturity Level 3)**
 - Project Management Plan
 - Configuration Management Plan
 - Process and Product Quality Assurance Plan
 - Requirements Management Plan
 - Measurement and Analysis Plan
 - Systems Engineering Plan
- **Generates plan in Rich Text Format (rtf)**
 - For further editing and updating
- **Can generate plan-specific standard lists for:**
 - Definitions
 - Acronyms
 - References
 - Roles/Responsibilities

*Project-specific content
can also be added to
these sections*



- **Generally, the Project Management Plan (PMP) would be built first**
- **Subsequent plans can then be built, using the same project setup information**



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ePlan Builder

Electronic CMMI[®] Compliant Documentation Application

⌵ New ⌵ Load ⌵ Save ⌵ Quit ⌵ Help *Sponsored by the Director of Engineering Operations (O9K) - Michael Kutch*

⌵ Home → Project Setup → Document Setup → Build → Generate ✓

Contact

EPB v2.1
Keith Jones
ePlan Builder
Customer Liaison

[Email Customer Liaison](#)

[Technical Support](#)

[Back to CorpWeb](#)

WELCOME to the SSC-Charleston ePlan Builder (EPB)

Version 2.1

This application will guide you through the process of creating documentation for your project that is compliant with the CMMI[®] and SSC-C policy and process manuals.

This release of ePlan Builder will now support the Systems Engineering Plan (SEP), click [here](#) to see the other documents that EPB supports.

Documents that are in the process of being built will be held for 90 days. Afterward that, they will be purged from EPB. Once a document is generated, it will be held for 24 hours to allow the user to store it in the appropriate CM repository. After this 24-hour period, EPB will purge the document.

PROJECT SETUP >>

Another product of excellence developed by TECHSOFT, Inc.



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EPB – Project Setup

The screenshot displays the ePlan Builder web application interface. At the top left is the SPAWAR logo and the text "Space and Naval Warfare Systems Center Charleston". The main header area contains the "ePlan Builder" title and "Electronic CMMI® Compliant Documentation Application". Below the header is a navigation bar with menu items: "New", "Load", "Save", "Quit", "Help", and "Sponsored by the Director of Engineering Operations (O9K) - Michael Kutch". A breadcrumb trail shows "Home" → "Project Setup" → "Document Setup" → "Build" → "Generate".

The left sidebar contains a navigation menu with the following items:

- FORCEnet Implementation Baseline (FIBL) (524)
- PROJECT SETUP
 - Project Setup
 - Organization Setup
 - Project Information
 - Project Roles
 - Master Project References
- DOCUMENT SETUP
- Contact
 - EPB v2.1
 - Keith Jones
 - ePlan Builder
 - Customer Liaison
 - [Email Customer Liaison](#)
 - [Technical Support](#)
 - [Back to CorpWeb](#)

The main content area is titled "Project Information" and contains the following text and form elements:

This section will allow you to enter project information. The information entered here, while not included within the generated documents does have a bearing on the text and options for a given document.

Please select the Project Type.

Product
 Service

Please select the Product Type.

Software
 Hardware

Please select the project effort.

Development

1 of 5 sections for Project Setup



EPB - Project Roles

SPAWAR Space and Naval Warfare Systems Center Charleston

ePlan Builder

Electronic CMMI® Compliant Documentation Application

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Save Quit Help

Home → Project Setup → Document Setup → Build → Generate ✓

Project Roles

The project has primary personnel that comprise the Management, Development and Testing team. Please enter the following roles for this project.

External Stakeholders:

Please enter the code and name of the Program Sponsor
Code: Name:

Please enter the code and name of the Program Manager
Code: Name:

Please enter the code and name of the Primary Requirements Provider
Code: Name:

Please enter the code and name of the CCB Chairman
Code: Name:

Please enter the code and name of the Senior Manager
Code: Name:

Required Project Roles

Please enter the code and name of the Project Leader
Code: Name:

FORCEnet Implementation Baseline (FIBL) (524)

- PROJECT SETUP
 - Project Setup
 - Organization Setup
 - Project Information
 - Project Roles

[Customer Liaison](#)
[Email Customer Liaison](#)
[Technical Support](#)
[Back to CorpWeb](#)

Standard Project data, such as Roles, are common to all plans under that project

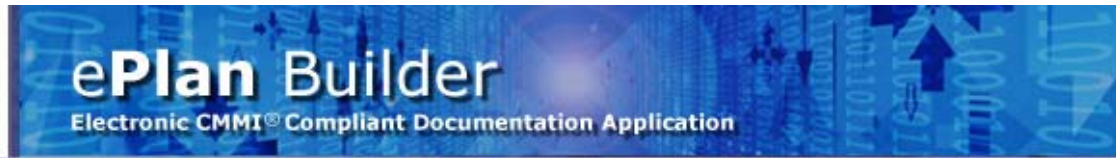


EPB – Select Tasks for each Role

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Space and
Naval Warfare
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Charleston



Save Quit Help

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Home Project Setup Document Setup Build Generate



Tailor each role from pre-defined list of tasks and/or add custom tasks

- ORGANIZATION
 - Organization
 - Organization Chart
 - Program Manager Tasks
 - Project Leader Tasks
 - Systems Engineering Tasks
 - Security Engineering Tasks
 - Software Engineering Tasks
 - Test Engineering Tasks
 - Configuration Manager Tasks
 - Quality

Project Leader Tasks

The Project Leader is responsible for establishing and maintaining the project plan.

Please identify the specific responsibilities of the Project Leader.

- Coordinates all activities of the prime contractor and subcontractors
- Assigns specific responsibilities to subcontractors [PP GP 2.4]
- Discusses technical issues from the Government with subcontractors
- Discusses technical issues from the subcontractors with the Government
- Manages the project cost and schedule [PMC 1.1]
- Resolves any inconsistencies in the requirements [PMC 2.2]
- Mitigates project risks [PMC 1.3]
- Manage and resolve corrective actions [PMC 2.2] [PMC 2.3]
- Provides prime contractor and subcontractor work products and deliverables to the Government

Note mapping to CMMI® generic and specific practices

Please enter any additional specific responsibilities of the Project Leader.

Task

Work Breakdown Structure (WBS) in a Project Management Plan

Cost estimates entered using the SPAWAR global WBS or the SSC-C Activity Based Costing WBS

ePB accommodates multi-year projects

Can drill down three levels deep in WBS structure. Costs sum up to higher level.

Choose the WBS Source

Add Previous Fiscal Year

000 Leadership/Management		2007	1900 K
001 Leading	2007	\$500 K	
002 Management	2007	\$900 K	
003 Personnel Management Activities	2007	\$500 K	
004 Communications	2007		
100 Project Management		2007	2490 K
110 Management Documentation		2007	\$500 K
111 Programming & Budgeting	2007	\$200 K	
112 Program Planning Documents	2007	\$200 K	
113 Acquisition Documents	2007	\$100 K	



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Risk Identification in PMP

Risks

This page allows you to enter a list of known or expected risks. The severity of the risks and the mitigation approach for each should be identified. Please use the table below to identify the major risks associated with the project.

 [Click for more information about risks](#)

Risk Category	Impact/Concern	Level	Mitigation Approach
Schedule	Products are required by the customer by 10/1/06	High	Be prepared to provide draft materials if development of
Quality	Will products be ready for 10/15/06 in a condition	Medium	Provide technical data to contractor in accordance with schedule with
Technical	Ability to get teh technical ata from the	High	Interact directly with the satellite manufacturer to obtain the technical

Add More Items 

PMP may also reference a more comprehensive Risk Management Plan



Measurement & Analysis Plan

Cost, Schedule, and Process Performance are standard categories of measures

Collection, Storage, and Analysis is defined for each Project measure

Cost is a measure within the Financial Performance category that measures the cost for activities, events, and products. The measure provides an easy-to-understand view of the budget. Comparison of planned and actual cost data provides insight into significant and repetitive cost changes at the activity level.

While more detailed cost information provides more insight into the project's total cost, until the project personnel have achieved a certain level of proficiency in estimating costs, it is recommended that the cost data should be captured at a level commensurate with this level of experience.

Collection and Storage

Identify the level of detail for capturing cost data

Project Level

Please select how the Project Leader will report contract costs from the list below. If the Project Leader is not responsible for managing contracts, select "Project".

Project

Identify who will provide the actual cost data:

Project Leader

Identify the tool to be used to collect cost data:

BSA and PMACS

Identify how often the actual cost data will be collected:

Monthly

Analysis Procedures

Identify how often the cost data will be analyzed:

Monthly

Identify the cost alert threshold:

95%



Measurement & Analysis Plan

MAP

Naval Tactical Command Support Systems

- PROJECT SETUP
- DOCUMENT SETUP
- INTRODUCTION
- ORGANIZATION
- MEASUREMENT AND ANALYSIS
 - Measurement and Analysis
 - Establish Business Objectives
 - Deliver the Product on Time
 - Milestone Dates
 - Deliver the Product Within Budget
 - Cost
 - Comply with

0 50 100

Metrics Reporting

Please enter the Reports to be generated during the Measurement and Analysis process:

Report Identifier	Measures	Periodicity	Delivery Method
Cost	<ul style="list-style-type: none"> Process Performance Milestone Dates Cost 	Monthly	<ul style="list-style-type: none"> Hard Copy Soft Copy
Performance	<ul style="list-style-type: none"> Process Performance Milestone Dates Cost 	Monthly	<ul style="list-style-type: none"> Hard Copy Soft Copy
Schedule	<ul style="list-style-type: none"> Process Performance Milestone Dates Cost 	Monthly	<ul style="list-style-type: none"> Hard Copy Soft Copy

Add More Items

SEP format follows the DoD SEP Preparation Guide

SEP

**NAS Pensacola
OSP Survey**

- PROJECT SETUP
- DOCUMENT SETUP
- PROGRAM
- INTRODUCTION
- ACQUISITION HISTORY
- Previous Life-Cycle Phases
- Next Life-Cycle Phase
- SYSTEM CAPABILITIES
- SE ORGANIZATIONAL INTEGRATION
- SYSTEM ENGINEERING PROCESS
- INTEGRATION
- INTEGRATED MASTER PLAN

0
50
100

Next Life-Cycle Phase

The SEP requires that the program's acquisition history and life-cycle phase ? be discussed, describing the top-level, technical process used in each life-cycle phase. This Next Life-Cycle Phase section should give an overview of the next planned life-cycle phase as well as summarize the process activities that are expected to be finished during the next life-cycle phase.

Please enter text discussing the Next Life-Cycle Phase of the program.

This description should give an overview of the planned SE process and should have more detail than the historical life-cycle processes completed. It should include how the technical process will be integrated into the life-cycle model and summarize the process activities that are expected to be finished during the next life-cycle phase.

Life-Cycle Phases (in hierarchical order):

1. Concept Refinement
2. Technology Development
3. System Development and Demonstration
4. Production and Deployment
5. Operations and Support

SEP
0 50 100

NAS Pensacola
OSP Survey

PROJECT SETUP

DOCUMENT
SETUP

PROGRAM

INTRODUCTION

ACQUISITION
HISTORY

SYSTEM
CAPABILITIES

System
Capabilities

Certification
Requirements

**Design
Considerations**

SE
ORGANIZATIONAL
INTEGRATION

SYSTEM
ENGINEERING
PROCESS

INTEGRATION

Design Considerations

This section describes any design considerations that must be integrated into the engineering design effort including any special constraints that must be considered.

Please enter any design constraints.

These design constraints are any special considerations that must be taken into account before they are integrated into the project during the engineering process. The text should also describe the basis for these design constraints and how the technical authority is going to be engaged in considering and integrating these constraints.

Some examples of design constraints are as follows:

- The system shall be able to operate using the three phase power available on board a ship.
- The system shall be able to fit into a standard 19" rack.

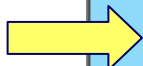
While these constraints look like requirements, they are not system requirements because they do not specify what the system must do, nor do they specify how well the system must perform a capability; they constraint the possible solutions by limiting the choices available to the engineers, and are therefore design requirements that constrain the solution space.

The nature of the SEP requires more open input text fields, but EPB helps by providing elaborations and examples for the user

SEP

NAS Pensacola OSP Survey

- PROJECT SETUP
- DOCUMENT SETUP
- PROGRAM
- INTRODUCTION
- ACQUISITION HISTORY
- SYSTEM CAPABILITIES
- SE ORGANIZATIONAL INTEGRATION
- SYSTEM ENGINEERING PROCESS
 - Planning
 - Process Improvement
 - Modeling and Simulation
 - Resources
 - Trade Studies
- INTEGRATION
- INTEGRATED



0 50 100

Trade Studies

This section should include a brief description of the process used to determine trade-offs between various attributes of the program (e.g., between requirements and design). Information about how trade studies are addressed within the organization will be automatically embedded into the document. To view the embedded information about how trade studies will be addressed, click the "Click to view the embedded trade studies text" link below.

 [Click to view the embedded trade studies text.](#)

Trade studies will be addressed in accordance with the *SSC-C Technical Solutions Process Manual* and *SSC-C Decision Analysis and Resolution Process Manual* where the development of alternate solutions, selection criteria and trade processes are discussed.

The actual trade studies to be performed on the program will be captured and listed in the control below.

Please enter the trade studies that will be conducted on this program.

Trade Study

Research on OSP topologies

Trade Study

Research on different conduit installation



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EPB Output – a Plan



N65286-993-PMP-0001#1
August 18, 2006

**Project Management Plan (PMP)
For
MARSOC West SCAMPI CER (593)**

August 18, 2006

Prepared by:

**Space and Naval Warfare Systems Center, Charleston
(SSC-C)
(593)
P. O. Box 190022
North Charleston, SC 29419-5542**

Approved by: Mark Renaud (593)

Date: August 23, 2006

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EPB Output – CMMI® Compliance Matrix

N65236-593-PMP-0001-v1
August 18, 2006

PROJECT PLANNING

CMMI®-SE/SW Goal/Practice Number	CMMI®-SE/SW Level 2 Process Area Project Planning (PP)	SSC-C PP Process Manual Paragraph	593 PMP Paragraph
PP 1	Establish Estimates. Estimates of project planning parameters are established and maintained.	3.2	1.2.1
PP 1.1	Estimate the Scope of the Project. Establish and maintain a top-level work breakdown structure (WBS) to estimate the scope of the project.	3.2	1.2.1 3 Appendix A
PP 1.2	Establish Estimates of Project Attributes. Establish and document estimates of the attributes of the work products and tasks.	3.2	1.2.1 1.3
PP 1.3	Define Project Life Cycle. Define the project life cycle phases upon which to scope the planning effort.	3.2	1 1.2.1
PP 1.4	Determine estimates of Effort and Cost. Estimate the project effort and cost for the attributes of the work products and tasks based on estimation rationale.	3.2	1.3 1.2.1 Appendix A
PP 2	Develop a Project Plan. A project plan is established and maintained as the basis for managing the project.	3.3	1 1.2.1

Compliance matrix cross references CMMI® practices with associated SSC-C Process Manual and Project-specific plan

• Architecture

- Web-based application, with supporting database
 - MS SQL Server® 2000 Relational Database Management System (RDBMS)
- Web architecture: Active Server Page, MS .NET Framework® 1.1 (ASP.NET)
- Programming Language: MS Visual Basic® .NET (VB.NET)
- Scripting Language: HTML, Javascript
- Master Page engine that uses only one Active Server Page (ASP) that dynamically retrieves required information (questions, client answers, document template text, etc.)

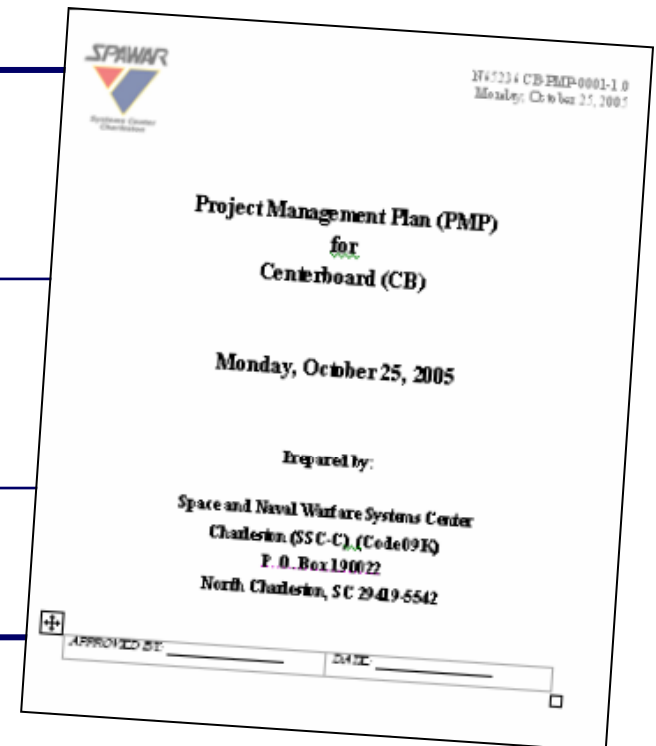
• Development - Incremental life-cycle model

Summary

- Results
- Going Forward



Projects started in EPB (Jan-Aug, 2006)	137
Documents generated (Jan-Aug, 2006)	103
Documents generated in August 2006	16



- **No mandate to use EPB**
 - Projects often must use customer format
- **PMPs are the most popular plans generated**



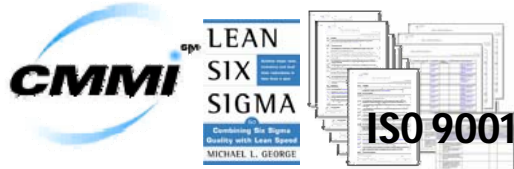
- **Increase usage of tool across departments/projects**
- **Add additional plans as needed**
 - Systems Engineering Management Plan (SEMP)
 - Verification & Validation Plan
 - Software Development Plan
- **Reviews of PMPs by management increasing**
 - Checklist/scoresheet for completeness of PMP
- **Command and Department Project Reviews looking at quality of plans and implementation of best practices (good SE & CMMI)**
- **EPB design can be applied to other organizational documents**
 - Procurement Process



Summary – EPB is only one tool in our process improvement efforts

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- Aggressive SE Program
- Industry Standards
 - Systems Engineering
 - Software Engineering
- Best Practices



• Successes

- April 2005 Command Achieved CMMI® Maturity Level 2 as certified by Software Engineering Institute
- June 2006 Common Information Centric Security (CICS) project achieved CMMI Level 3 in 16 of 18 Process areas
- 1st SPAWAR Systems Center to achieve these levels

• Goals

- World-Class SE Program
- Support Command Balanced Scorecard
- April 2007, Command to achieve CMMI® Level 3

• Automated Tools

- ePlanBuilder
- eWBS



corpweb2.spawar.navy.mil/cmmi/

• Training – 1,600+

- SE Fundamentals - 305
- Web-Based Training courses
 - SSC-C PI; Intro to SE; Arch. Dev.





Any Questions?

Thank you!

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