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TurboTax® for Systems Engineering
The Sequel 2006

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Presentation Outline

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

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CMMI® and Project Plans

- CMMI® Planning of a Project
- Documentation Pitfalls

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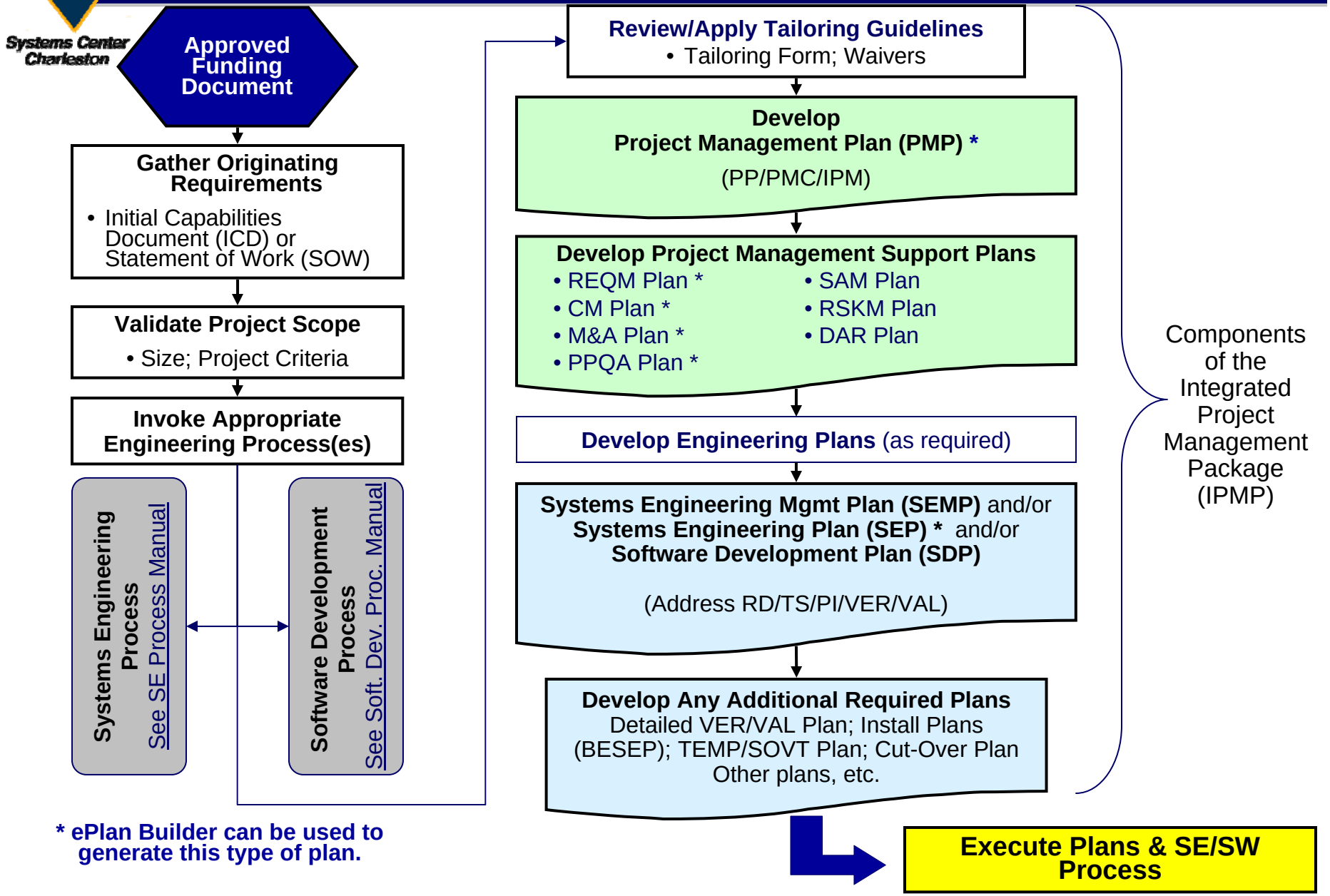
CMMI® – Plan the Process

- **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?

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TurboTax® style of application design

- TurboTax® Usability
- Application as a Document Builder

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TurboTax® Usability

- **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

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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**

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ePlan Builder

- Functionality/Capabilities
- Application in Action
- Technical Specifications

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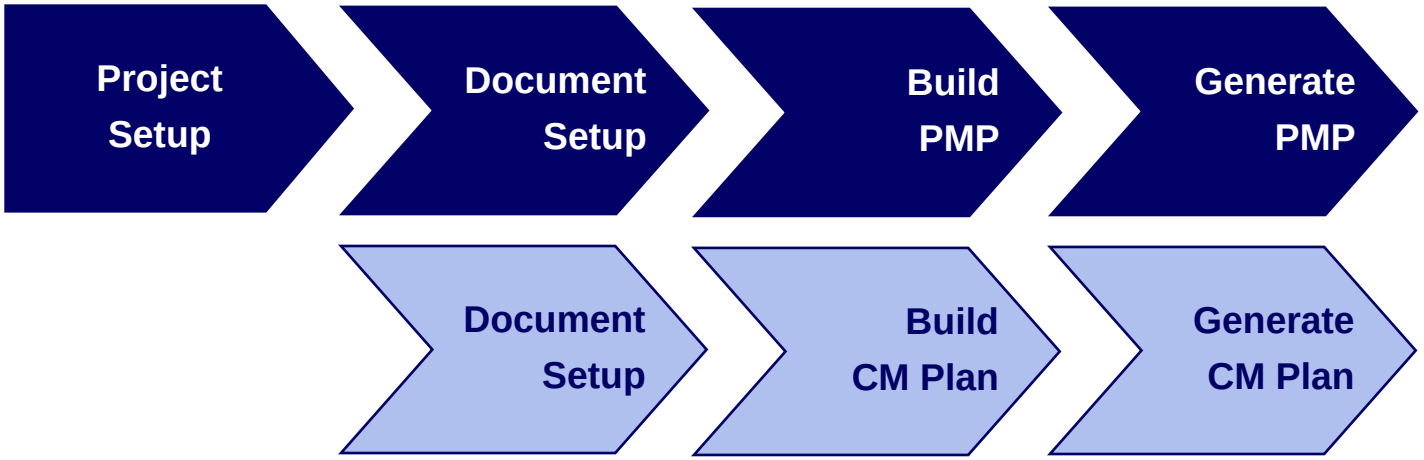
ePlan Builder (EPB) Functionality

- **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

EPB Application Process



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

ePlan Builder - Home

EPB – Project Setup

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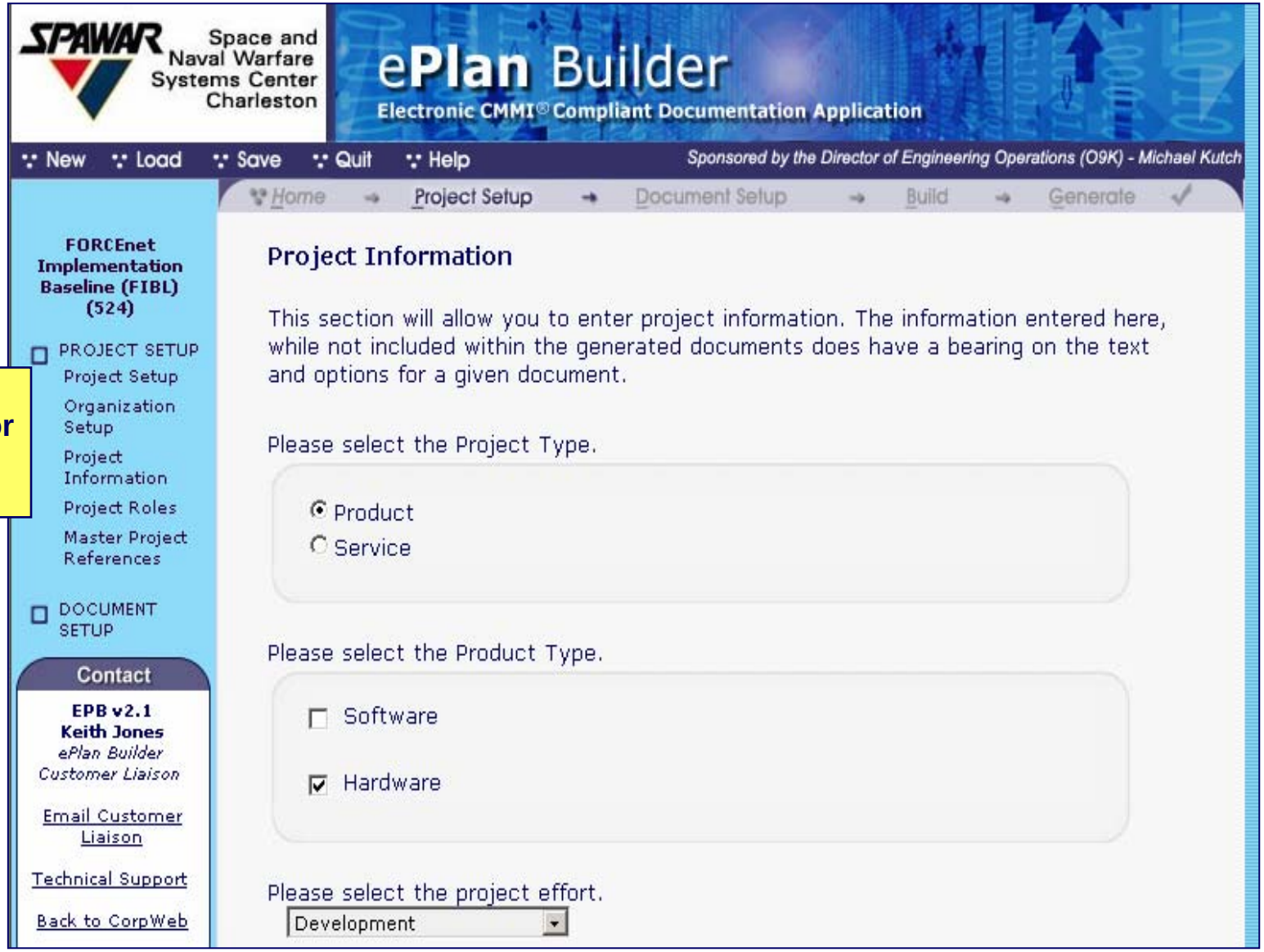
1 of 5 sections for Project Setup



EPB - Project Roles

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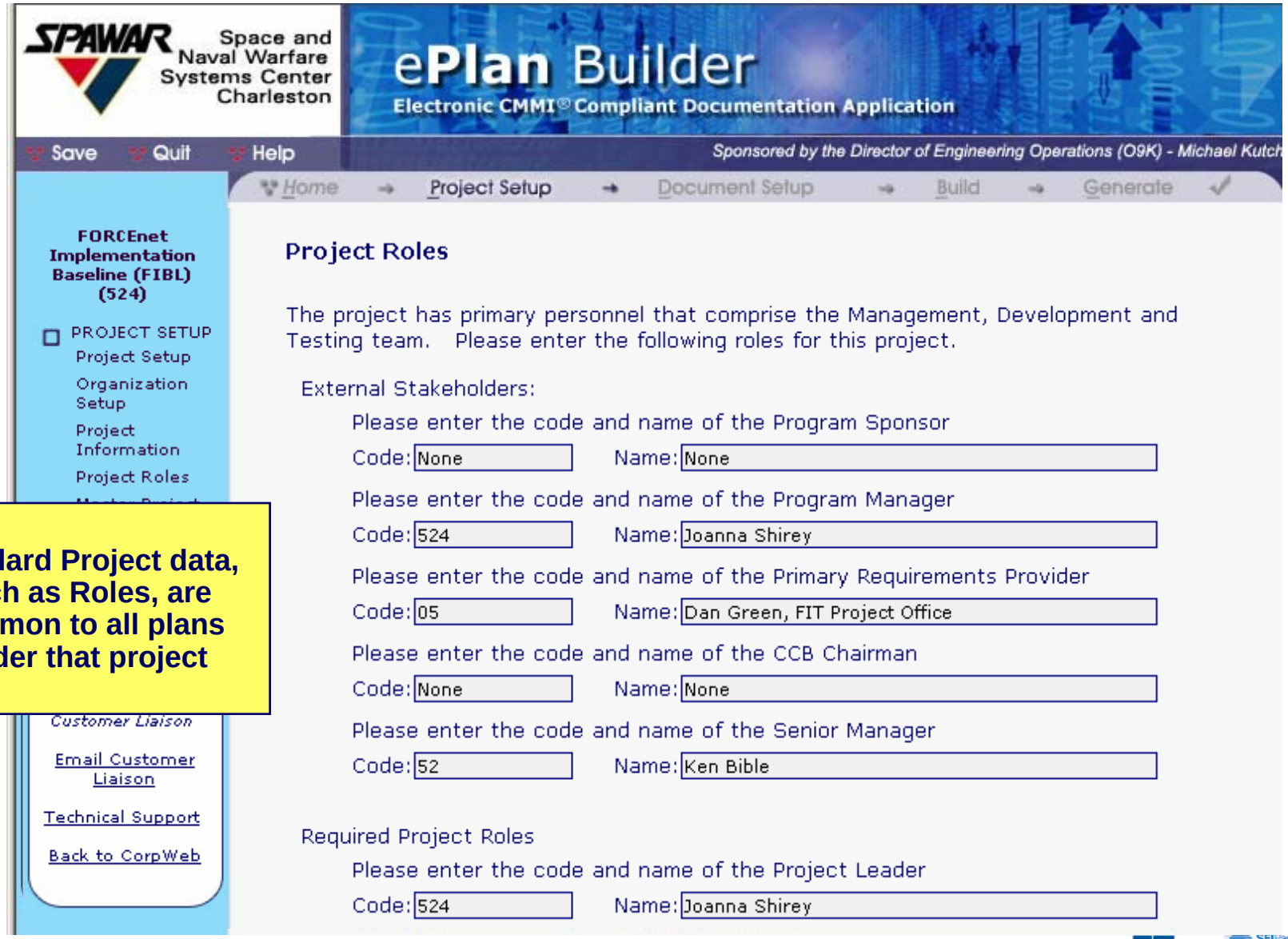

Standard Project data, such as Roles, are common to all plans under that project

EPB – Select Tasks for each Role

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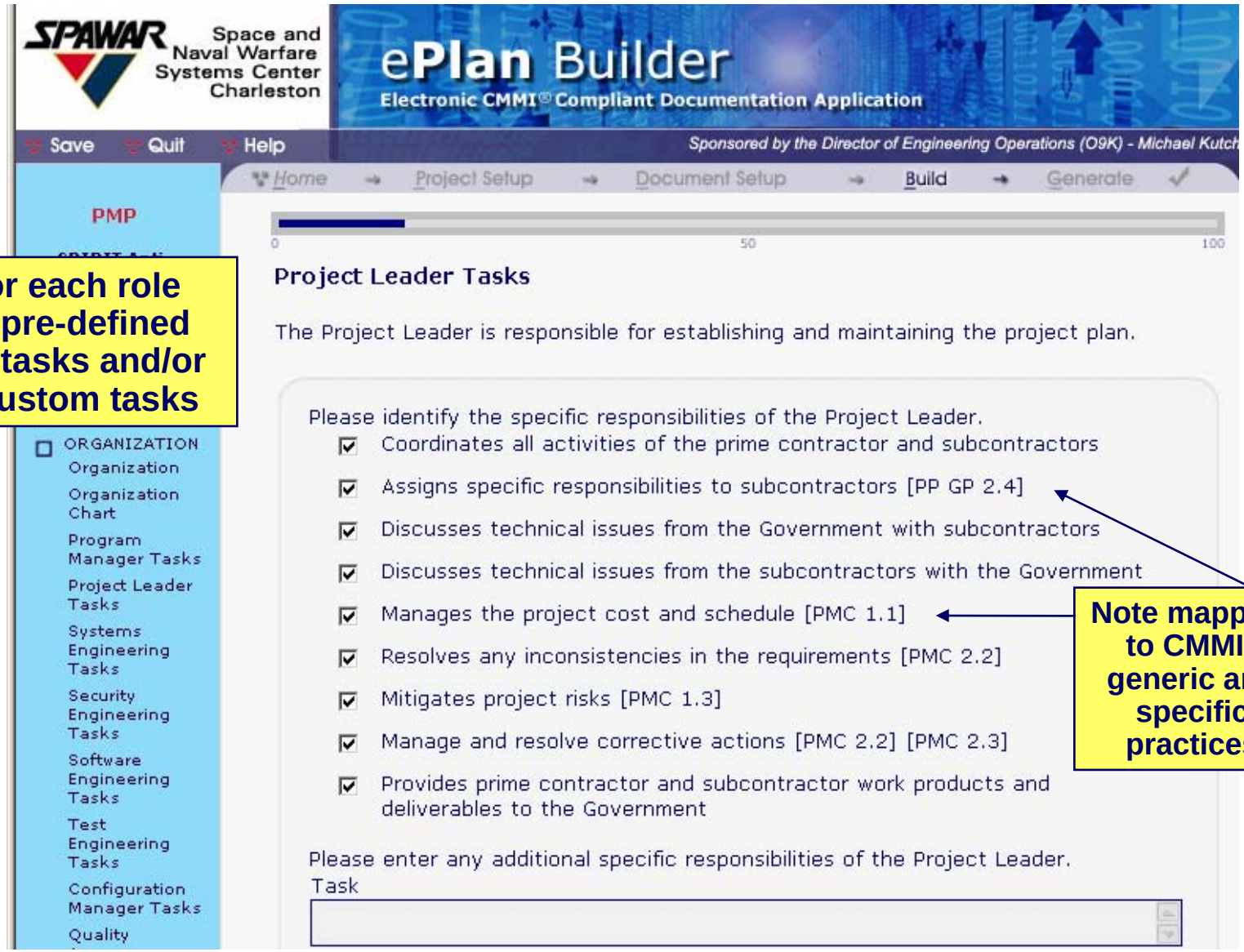
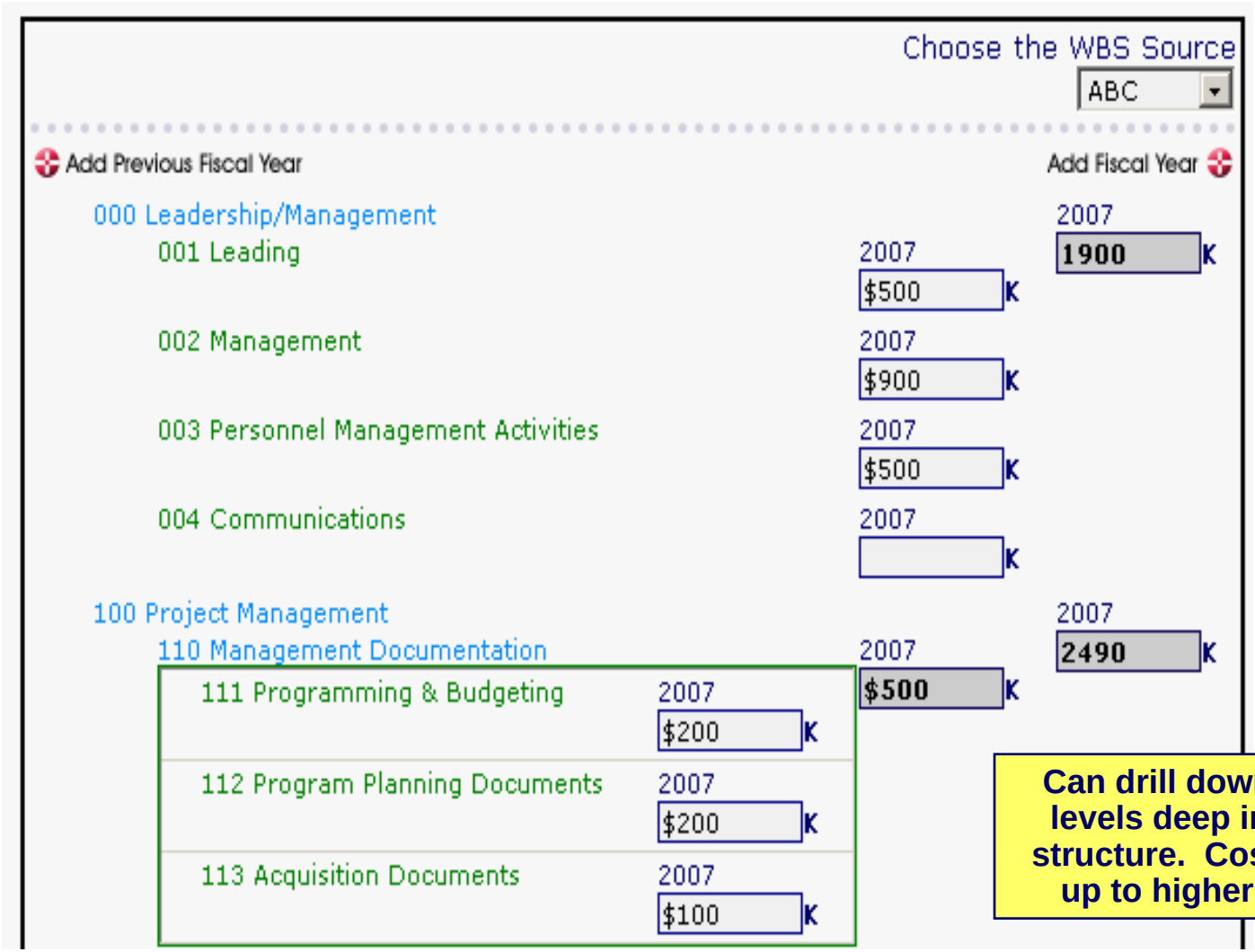
Tailor each role from pre-defined list of tasks and/or add custom tasks



Note mapping to CMMI® generic and specific practices

Work Breakdown Structure (WBS) in a Project Management Plan

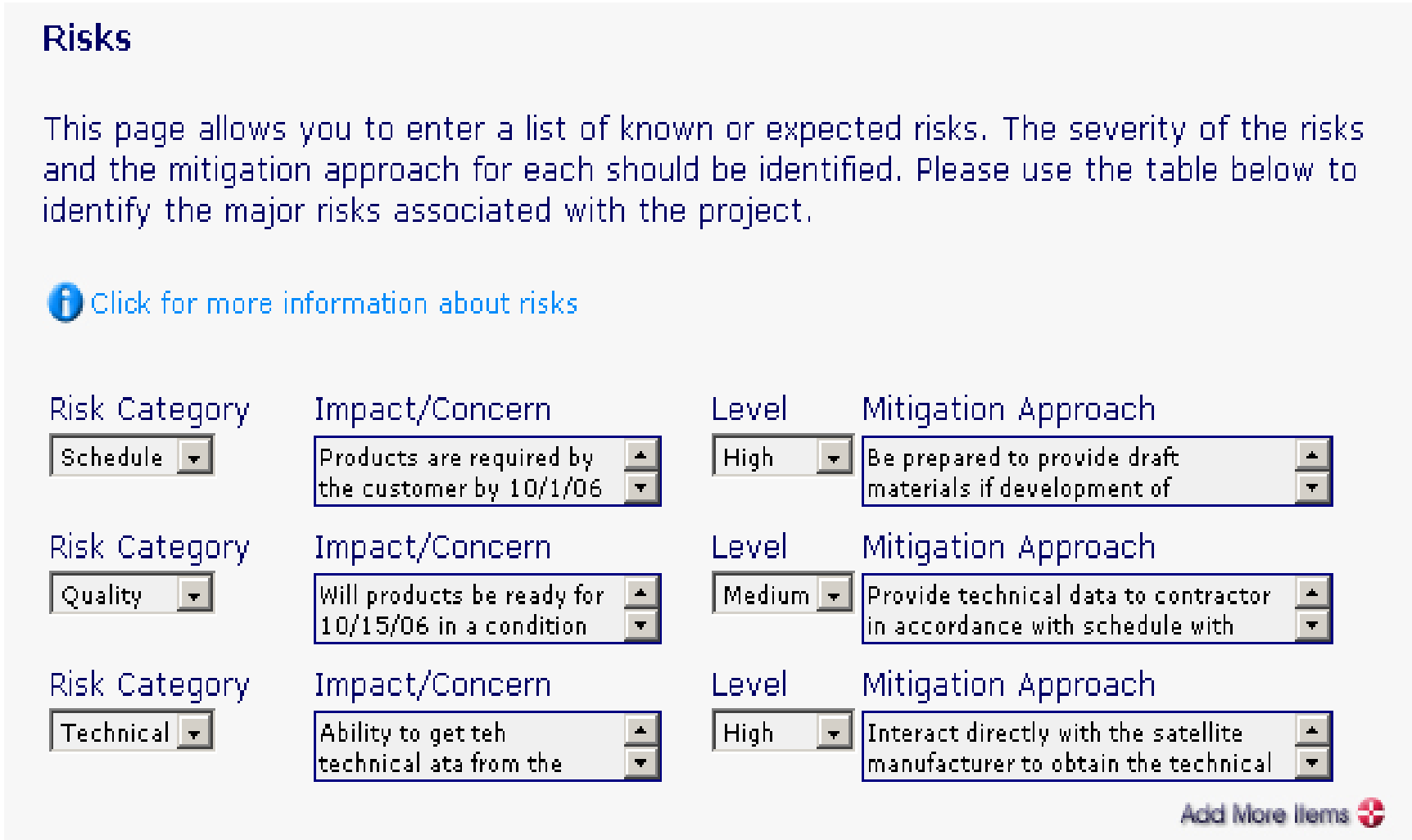


Cost estimates entered using the SPAWAR global WBS or the SSC-C Activity Based Costing WBS

ePB accommodates multi-year projects

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

Risk Identification in PMP



PMP may also reference a more comprehensive Risk Management Plan

Measurement & Analysis Plan

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

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

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

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

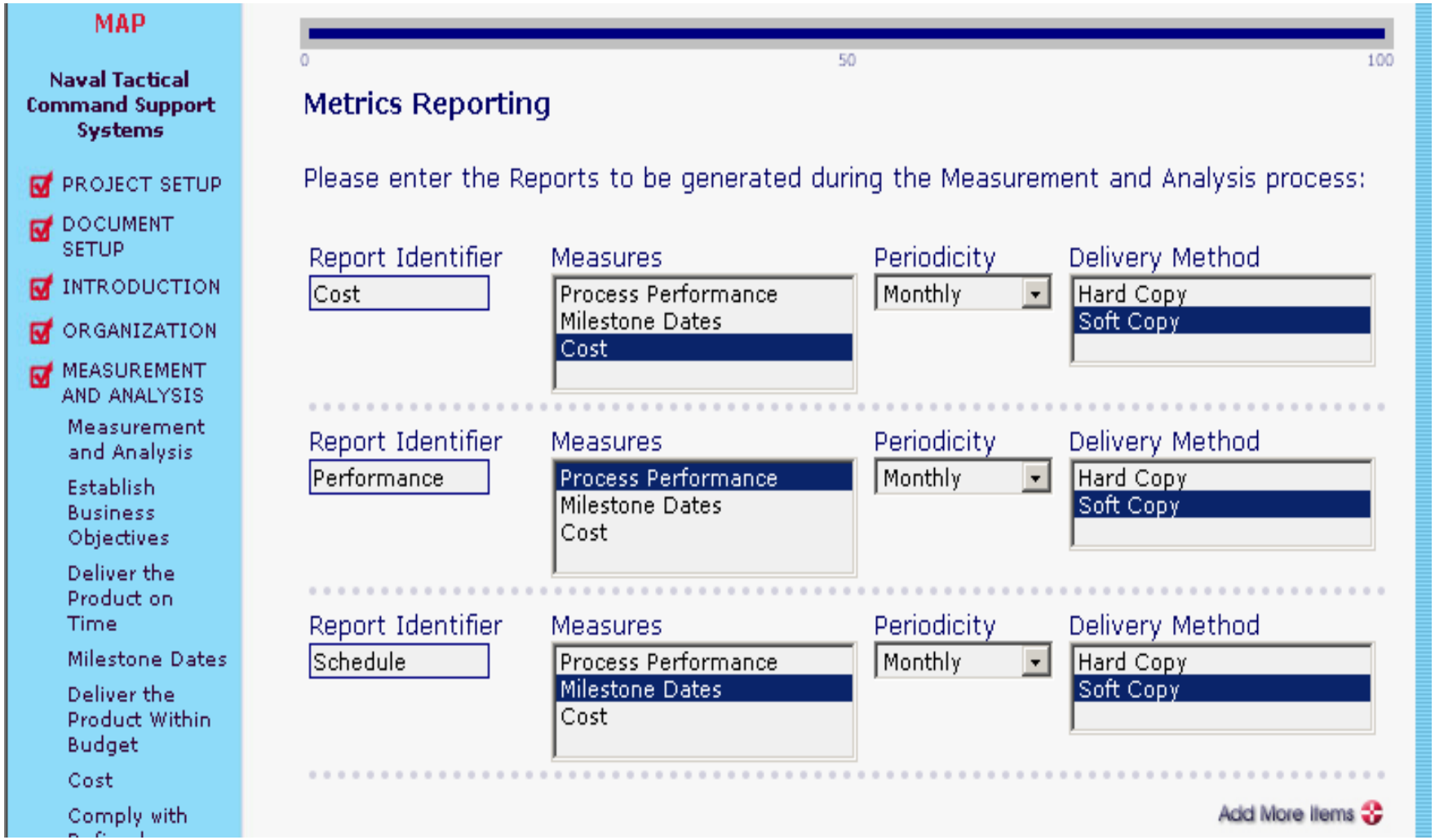
Identify how often the actual cost data will be collected:
Monthly

Analysis Procedures

Identify how often the cost data will be analyzed:
Monthly

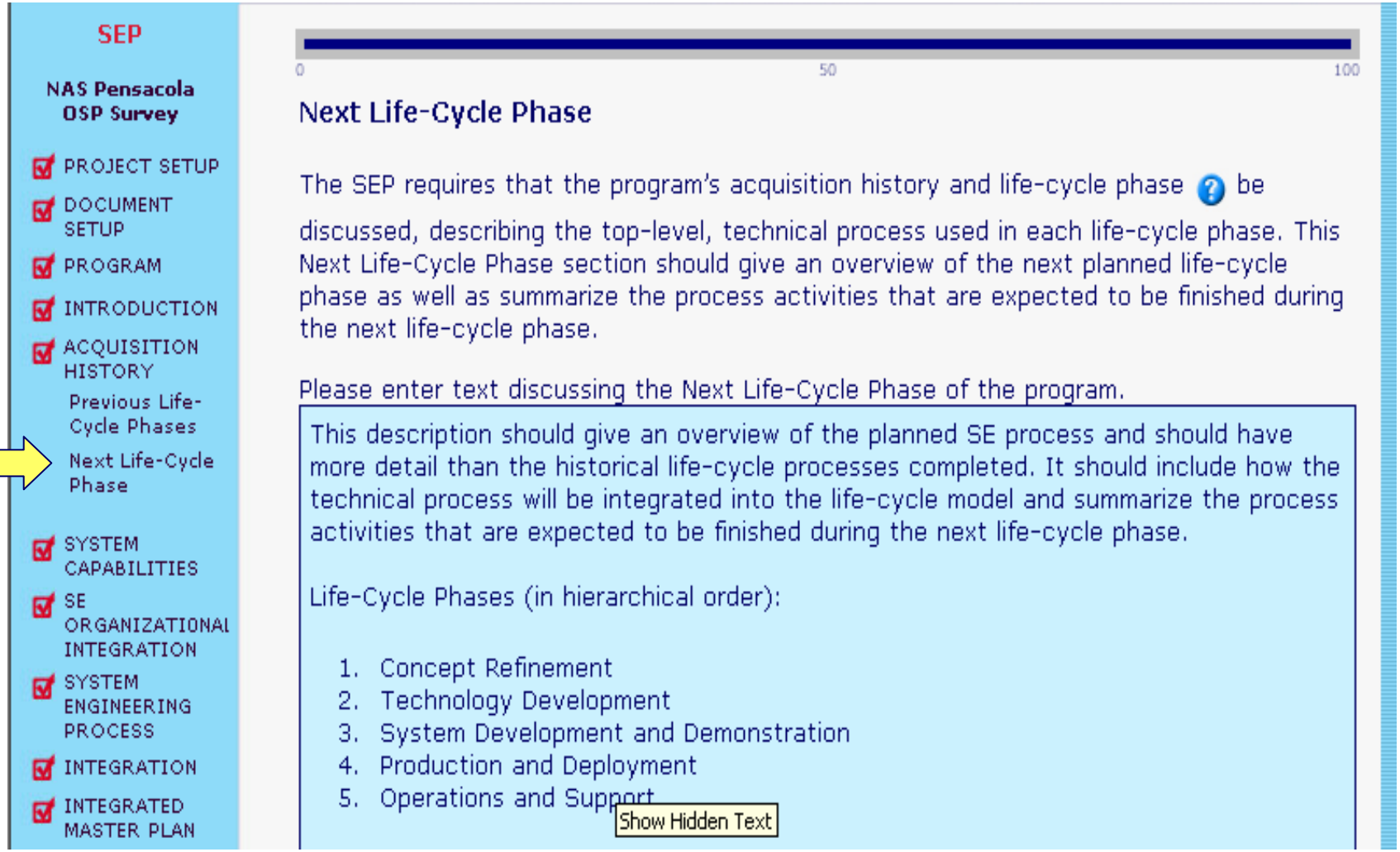
Identify the cost alert threshold:
95%

Measurement & Analysis Plan

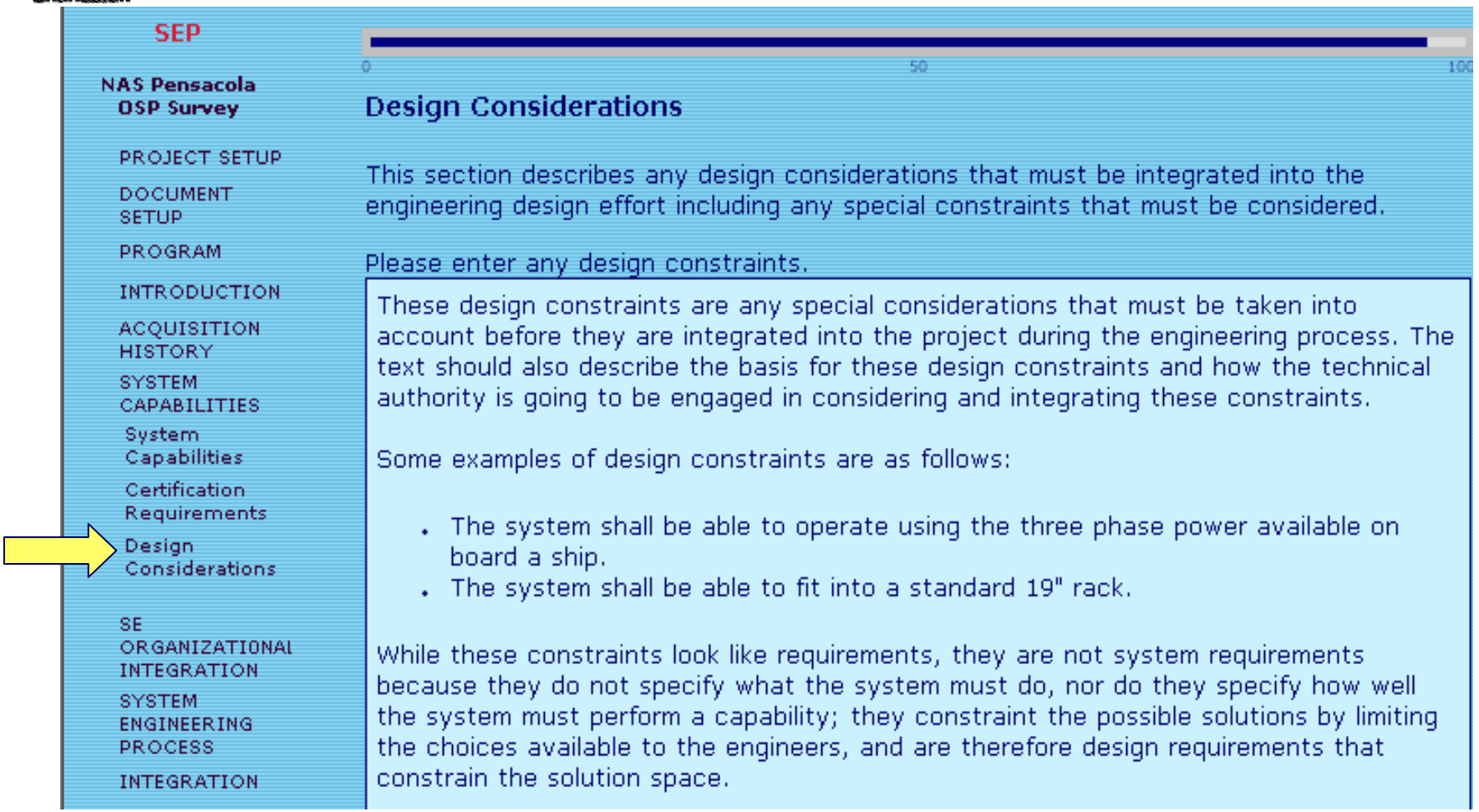


Systems Engineering Plan (SEP)

SEP format follows the DoD SEP Preparation Guide

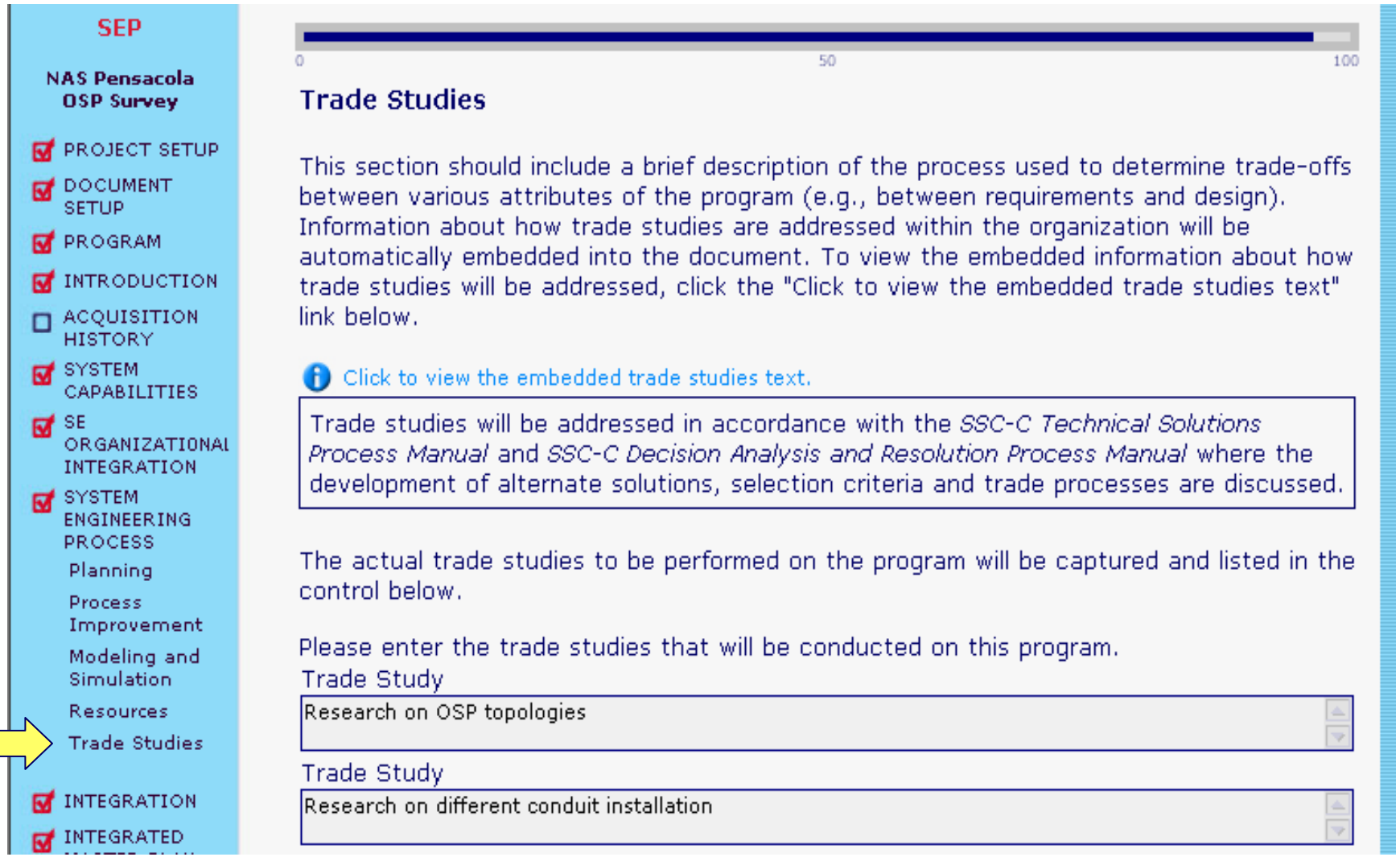


Systems Engineering Plan (SEP)



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

SEP – Planned Trade Studies



EPB Output – a Plan

N65236-593-PMP-0001-v1
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

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

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

EPB – Technical Specs

- **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**

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Summary

- Results
- Going Forward

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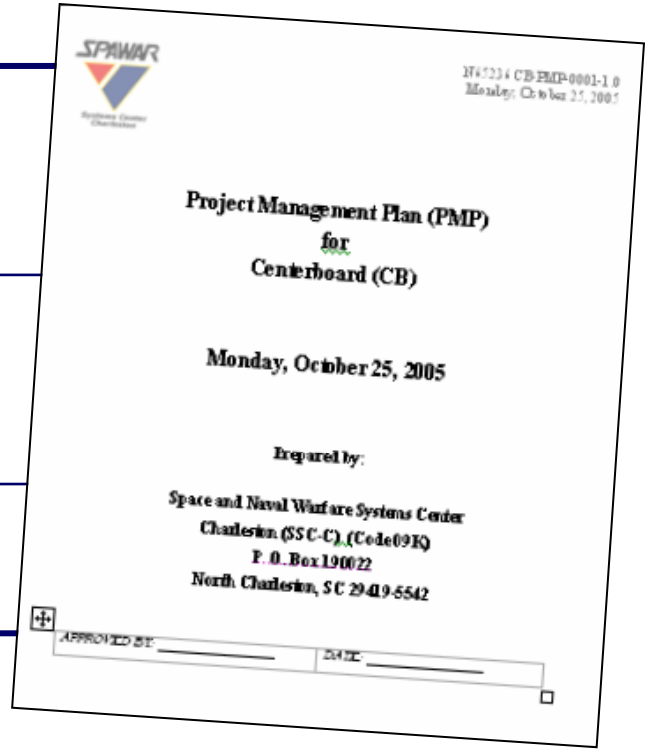
Usage of EPB

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**

Going Forward

- **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**

CMMI LEAN SIX SIGMA ISO 9001

- **Automated Tools**
  - ePlanBuilder
  - eWBS
- **Training – 1,600+**
  - SE Fundamentals - 305
  - Web-Based Training courses
    - SSC-C PI; Intro to SE; Arch. Dev.

corpweb2.spawar.navy.mil/cmmi/

- **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

Any Questions?

Thank you!

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