Implementing Acquisition and System Engineering Processes in a Maintenance Organization

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Agenda

˝ Cryptologic Systems Group (CPSG)
˝ Electronic Systems Center CMMI Focus
˝ CPSG CMMI Implementation
  . Process Guide
  . Implementation Guides
˝ CPSG CMMI Compliance
˝ CPSG Training

Agenda

˝ **Cryptologic Systems Group (CPSG)**

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...ptologic Systems Group (CPSG)

- ˝ Mission
  - . *Ensuring Information Superiority and Agile Combat Support; Providing a Wide Range of Acquisition and Sustainment Services to the Warfighter — Through Teamwork, Innovation and Technological Excellence*

- ˝ Organization
  - . 800+ personnel
  - . Lackland AFB (San Antonio), Texas

CPSG

˝ Programs

- . Air Force Public Key Infrastructure
- . Air Force Common Access Card (CAC)
- . Air Force cryptologic equipment depot and maintenance
- . Air Force Cryptographic Modernization Program Office

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CMMI Process Areas

Category	ESC Process Areas	
Project Management	**Risk Management**	**Technical Project Planning**
Support	**Configuration Management** **Life-Cycle Logistics**	**Quality Assurance**
Engineering	**Requirements Dev & Mngt** **Integrated Testing**	**Enterprise Integration** **System Safety**
Process Management	**No process areas identified**	

Red text . New ESC process areas

C/EN Process Areas by Maturity Level

Process Areas	SP Level	GP Level	CMMI Focus
Enterprise Integration	2	2	Basic Project Management
Quality Assurance	2	2	
System Safety	2	2	
Technical Project Planning	2	2	
Life-Cycle Logistics	2	2	
Configuration Management	2	3	Process Standardization
Requirements Dev/Mngt	3	5	Continuous Process Improvement
Risk Management	2	5	
Integrated Testing	2	5	

ESC CMMI Support (Toolkits)

EN Process Improvement

Welcome to the EN Process Improvement Resource Center

Since 1998, a government-industry-Software Engineering Institute (SEI) collaboration has been under way to develop a product suite of models, training, and assessment methodology that support integrated process and product improvement across the enterprise. These products are intended to replace legacy maturity models, including SW-CMM and Electronics Industries Association Interim Standard (EIA/IS) 731, the Systems Engineering Capability Model (SECM) in December 2003.

Toolkits

- Configuration Management Toolkit *
- Enterprise Integration Toolkit
- Integrated Testing Toolkit *
- Life-Cycle Logistics Toolkit
- Partnering Toolkit
- Quality Assurance Toolkit
- Requirements Process Toolkit *
- Risk Management Toolkit *
- System Safety Process Toolkit
- Technical Project Planning Toolkit

PROCESS:
- CMMI In Depth
- Dictionary
- Acronyms

COMPLIANCE:
- Checklists
- Process

INFORMATION:
- Training
- Links

CONTACT US
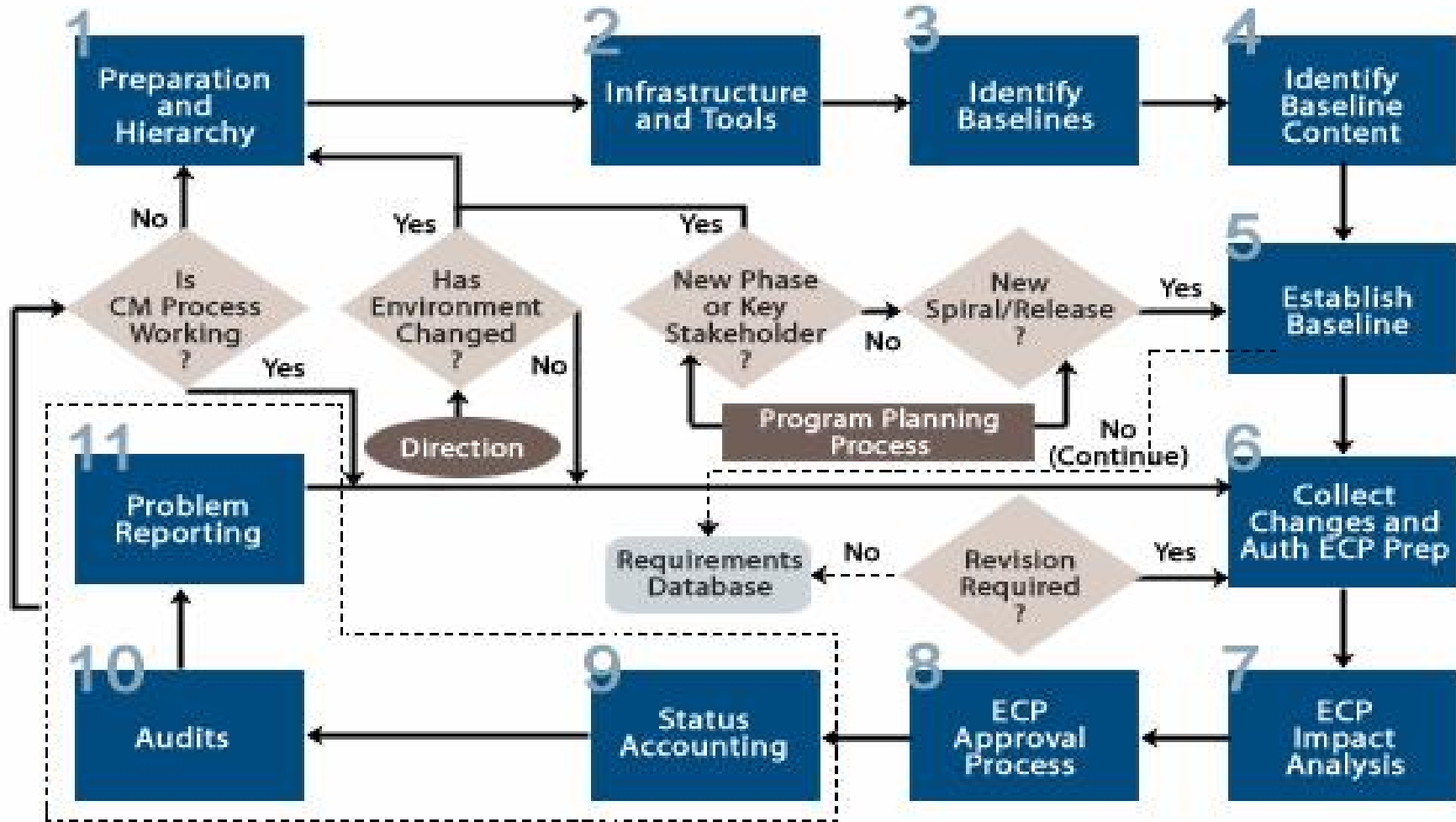
* CPSG Focus Areas

ESC Toolkits
(Contents)

˝   Process Diagram

˝   Definitions

˝   Process Steps

.   Required

.   Optional

.   Suggested

˝   Tailoring Guidance

˝   Training

˝   Policies and References

˝   Tool Reviews

˝   Checklists

˝   Examples

ESC Toolkit
Configuration Management Process

ESC Toolkit
Step 1 - CM Process

1 Preparation and Hierarchy

ESC Major Step (required)

Action: Appoint an Enterprise Configuration Manager and Component System CMs and Develop Implementation Strategy

A Configuration Manager needs to be appointed for the program as well as a support team to handle the Integrated Digital Environment and any automated configuration management tools to be used on the program. An implementation strategy needs to be developed that addresses the requirements for the configuration management effort .

Sub Steps:
  Strategy
  Hierarchy
  Control
  Stakeholders
  Buy-in

ESC Actions (Optional)

C Tailoring Guidance

Required

The major steps are the goals of each process. All organizations are required to implement each process that achieves these goals.

Optional

The actions (e.g., 1a, 1b, etc) for each step are considered best practices and are expected to be performed by each organization to implement satisfactory processes. It is possible to satisfy the required goals without implementing the expected practices but the burden of proof is on the organization using an alternative set of practices.

Suggested

All material covered in the training sessions and resources provided in the toolkit are suggested approaches to implementing the expected practices. This material is optional and may be used at the discretion of the organization.

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PSG Process Areas

˝Six Process Areas for Program Implementation

. Life-Cycle Logistics

. Technical Project Planning

CPSG Process Guide

˝ All Mandatory Steps from ESC Process Area

˝ Some ESC "Optional" and "Suggested" Steps are Mandatory CPSG Steps

˝ Process Guide

- . Contain the "What". Required Steps
- . No program tailoring allowed

ESC Required Steps

CPSG Required Steps

ESC Required Steps

3.2. Configuration Management Practices

Using the ESC provided guidance, CPSG/EN has developed a Configuration Management Implementation Guide which provides additional guidance when developing a program specific CM process. The ten areas described below must be implemented.

3.2.1. Preparation and Hierarchy

In this area, each acquisition program, system, and end item is required to:

a. Appoint, in writing, a configuration manager

b. Develop a CM plan

c. Identify the configuration items (CI's)

d. Identify the internal and external stakeholders

e. Determine the CM structure and hierarchy

f. Establish a Configuration Control Board (CCB)

3.2.2. Infrastructure and Tools

In this area, each acquisition program, system, and end item is required to:

a. Identify tool requirements

b. Coordinate tool requirements with CPSG/EN

c. Train their CM workforce

d. Update CM information on ENWeb

Implementation Guides

˝ Implementation Guides

. Contain the "How"

. Allowable program tailoring identified

. Templates provided for each process area

. Provide Program Managers/Lead Engineers with an "80%" solution

. Ensure consistency across CPSG

. Example: Configuration Management Process

Plan Development and Tailoring Guidance

4.1.4 Determine Configuration Management Structure and Hierarchy

A government configuration management program needs to be established for each program to handle the user requirements, system requirements, and external interfaces. For each development contract awarded under the program, the contractor will probably be required to establish a configuration management program to handle the system requirements, allocated requirements, product requirements, and support requirements. Once the system is fielded, a sustainment configuration management program needs to be established. In a system of systems program or one involving multiple development contracts, a configuration management hierarchy must be established.

Implementation:

CM Plan Template: Configuration Management Organization

Tailoring Guidance:

This is always required, but the actual structure is left to the program.

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ESC/EN Web

CPSG CMMI Responses

ESC CMMI Process Areas

▶ Requirements Development and Management	Level 2: Complete	Status: Ⓑ	Updated: 30 Nov. 06
▶ Configuration Management	Level 2: Complete	Status: Ⓑ	Updated: 16 Nov. 06
▶ Risk Management	Level 2: Complete	Status: Ⓑ	Updated: 30 Nov. 06
▶ Enterprise Integration	Level 2: 11 Mar. 07	Status: Ⓖ	Updated: 30 Nov. 06
▶ Integrated Testing	Level 2: 04 Feb. 07	Status: Ⓖ	Updated: 30 Nov. 06
▶ Technical Project Planning	Level 2: Complete	Status: Ⓑ	Updated: 30 Nov. 06
▶ Quality Assurance Process	Level 2: 04 Feb. 07	Status: Ⓖ	Updated: 30 Nov. 06
▶ System Safety Process	Level 2: 07 Jan. 07	Status: Ⓖ	Updated: 30 Nov. 06
▶ Life-Cycle Logistics	Level 2: Complete	Status: Ⓑ	Updated: 06 Nov. 06

ESC CMMI (ENWeb) Generic Goals

ESC CMMI Generic Goals

Part II: Generic Practices

GG 1: Achieve Specific Goals

▶ GP 1.1: Perform Development Base Practices	Lev: 2	● Yes	
▶ GP 1.2: Perform Management Base Practices	Lev: 2	● Yes	

GG 2: Institutionalize a Managed Process

GG 2.1: For Requirements Development

GP 2.1.1: Establish an Organizational Policy	Lev: 2	○ No	28 Feb. 07
▶ GP 2.1.2: Plan the Process	Lev: 2	● Yes	
▶ GP 2.1.3: Provide Resources	Lev: 2	● Yes	
▶ GP 2.1.4: Assign Responsibility	Lev: 2	● Yes	
▶ GP 2.1.5: Train People	Lev: 2	● Yes	
GP 2.1.6: Manage Configurations	Lev: 2	○ No	28 Feb. 07
▶ GP 2.1.7: Identify and Involve Relevant Stakeholders	Lev: 2	◒ Partial	31 Jan. 07
▶ GP 2.1.8: Monitor and Control the Process	Lev: 2	● Yes	
GP 2.1.9: Objectively Evaluate Adherence	Lev: 2	○ No	01 Jun. 07
GP 2.1.10: Review Status with Higher-Level Management	Lev: 2	○ No	01 Mar. 07
GP 2.1.11: Perform Base Practices	Lev: 2	○ No	01 Jun. 07

ESC CMMI (ENWeb)
Requirements Process Specific Goals

ESC CMMI Specific Goals

Requirements Development and Management		Level 2: 01 Jun. 07	Status: (G)

Question	Answer	Planned Date	Status
Part I: Specific Practices			
SG 1: Develop Customer Requirements			
SP 1.1: Collect Stakeholder Needs	Lev: 2 ● Yes		(G) Edit
SP 1.2: Transform Stakeholder Needs, Expectations, Constraints, and Interfaces into Customer Requirements	Lev: 2 ● Yes		(G) Edit
SP 1.3: Elicit Needs	Lev: 2 ● Yes		(G) Edit
SG 2: Develop Product Requirements			
SP 2.1: Establish Product and Product Component Requirements	Lev: 2 ● Yes		(G) Edit
SP 2.2: Allocate Product Component Requirements	Lev: 2 ● Yes		(G) Edit
SP 2.3: Identify Interface Requirements	Lev: 2 ● Yes		(G) Edit

ESC/EN Web

CPSG CMMI Responses

Corporate Process Areas

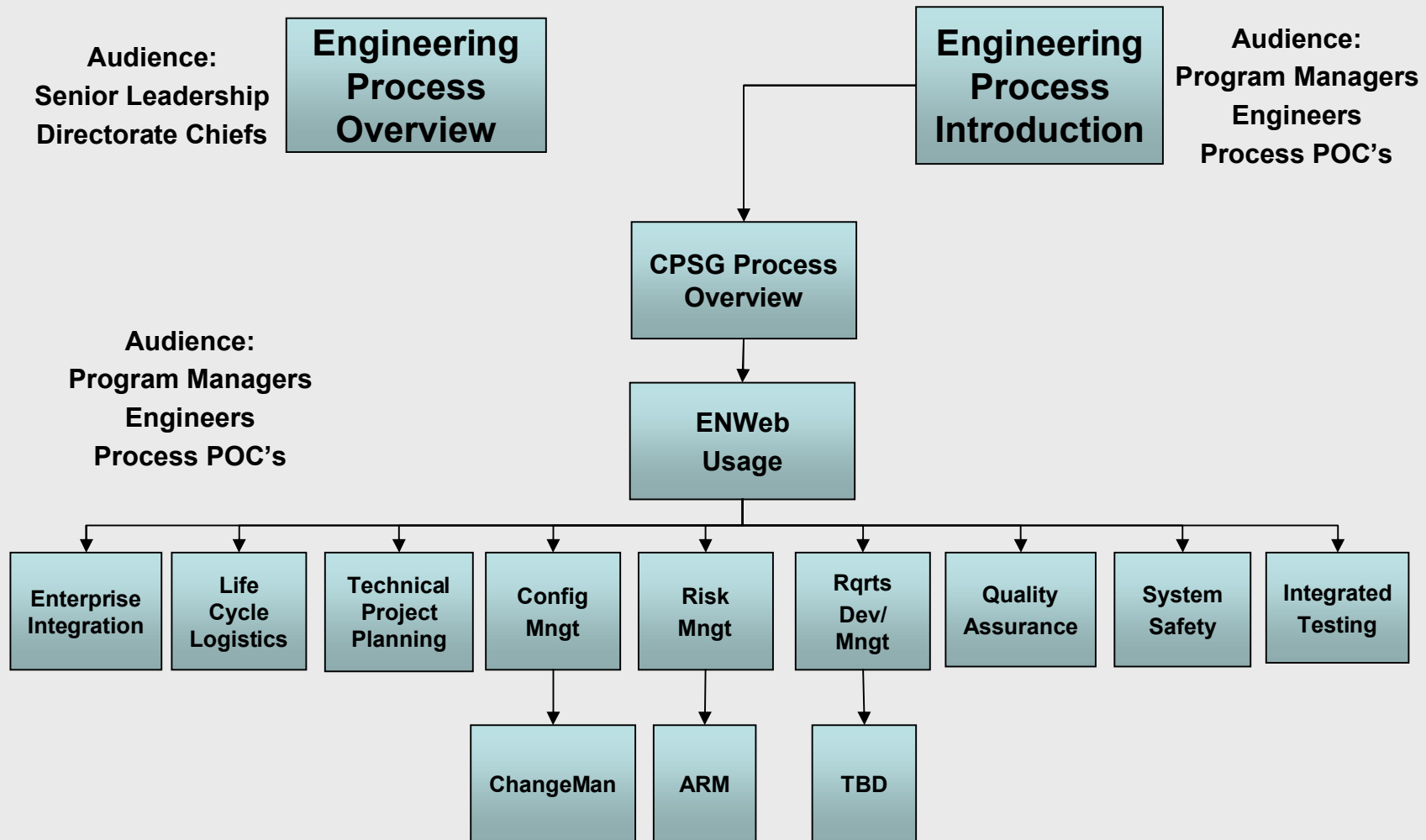| ▶ Requirements Development and Management | Level 2: Complete | Status: Ⓑ | Updated: 30 Nov. 06 |
▶ Configuration Management	Level 2: Complete	Status: Ⓑ	Updated: 16 Nov. 06
▶ Risk Management	Level 2: Complete	Status: Ⓑ	Updated: 30 Nov. 06
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▶ Life-Cycle Logistics	Level 2: Complete	Status: Ⓑ	Updated: 06 Nov. 06

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Training Plan

Audience:
Senior Leadership
Directorate Chiefs

Engineering Process Overview

Engineering Process Introduction

Audience:
Program Managers
Engineers
Process POC's

CPSG Process Overview

Audience:
Program Managers
Engineers
Process POC's

ENWeb Usage

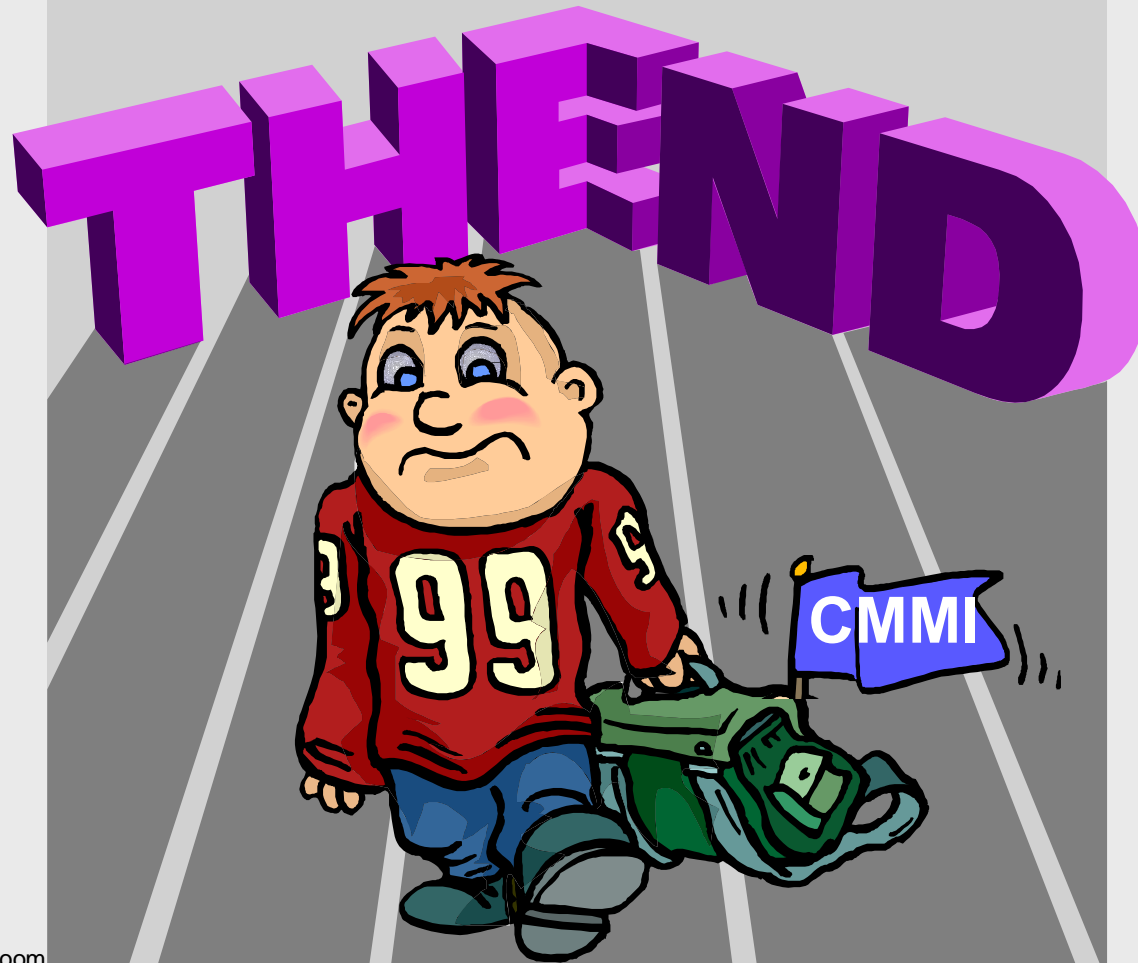| Enterprise Integration | Life Cycle Logistics | Technical Project Planning | Config Mngt | Risk Mngt | Rqrts Dev/ Mngt | Quality Assurance | System Safety | Integrated Testing |

ChangeMan

ARM

TBD

Wrap - Up

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Any Questions?

Thank You for Your Time

*Source . MITRE . Mike Bloom