How to Develop Highly Useable CMMI® Documentation

Presenter:
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SEI Authorized
- CBA IPI Lead Assessor (CMM®)
- SCAMPI Lead AppraiserSM (CMMI®)
- Introduction to CMMI® Instructor

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- **Capability Maturity Model® Integration (CMMI®), Version 1.1 (CMMI℠-SE/SW/IPPD/SS, V1.1) Staged Representation**, CMU/SEI-2002-TR-012, (c) 2002 by Carnegie Mellon University


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About Cooliemon, LLC

The mission of Cooliemon, LLC is:

“helping organizations achieve excellence through process improvement”

Our goal is to focus your process improvement efforts to:

• improve quality and productivity
• reduce operating costs
  \(i.e.,\text{ reduce rework, waste and duplicate effort}\)
• capture the market with high quality products and services
• help you become the industry standard by which your competitors measure themselves
Agenda

**CMMI® Model Structure**

SEI’s Operational Framework

CMMI® and Policy Documents

CMMI® and Standard Documents

CMMI® and Process/Procedure Documents

Summary & Questions
<table>
<thead>
<tr>
<th>Level</th>
<th>Focus</th>
<th>Process Areas Including IPPD</th>
</tr>
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| 5 Optimizing | Continuous Process Improvement | Organizational Innovation and Deployment  
Causal Analysis and Resolution |
| 4 Quantitatively Managed | Quantitative Management | Organizational Process Performance  
Quantitative Project Management |
| 3 Defined   | Process Standardization       | Requirements Development  
Technical Solution  
Product Integration  
Verification  
Validation  
Organizational Process Focus  
Organizational Process Definition  
Organizational Training  
Integrated Project Management (2 IPPD Goals)  
Risk Management  
Decision Analysis and Resolution  
Organizational Environment for Integration (IPPD)  
Integrated Teams (IPPD)  
Integrated Supplier Management (SS) |
| 2 Managed   | Basic Project Management      | Requirements Management  
Project Planning  
Project Monitoring and Control  
Supplier Agreement Management  
Measurement and Analysis  
Process and Product Quality Assurance  
Configuration Management |
| 1 Initial   |                                |                                                                                              |
Process Area Contents (1)

Major contents of each PA in the CMMI® Staged Representation:

Purpose
Introductory Notes
Related Process Areas
Practice-to-Goal Relationship Table
Specific Goals and Specific Practices
Generic Goals and Generic Practices
Typical Work Products
Subpractices
Notes
Discipline Amplifications
Generic Practice Elaborations
Model Components in the Staged Representation

Maturity Levels
- Process Area 1
  - Specific Goals
    - Commitment to Perform
  - Specific Practices
- Process Area 2
  - Generic Goals
    - Ability to Perform
  - Generic Practices
    - Directing Implementation
  - Verifying Implementation
- Process Area n
  - Common Features
Generic Practices

GP 2.1: Establish an Organizational Policy
GP 2.2: Plan the Process
GP 2.3: Provide Resources
GP 2.4: Assign Responsibility
GP 2.5: Train People
GP 2.6: Manage Configurations
GP 2.7: Identify and Involve Relevant Stakeholders
GP 2.8: Monitor and Control the Process
GP 2.9: Objectively Evaluate Adherence
GP 2.10: Review Status with Higher Level Management

GP 3.1: Establish a Defined Process
GP 3.2: Collect Improvement Information
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Summary & Questions
Operational Framework

- **POLICIES**
  - "Laws" or "regulations" that govern operations

- **STANDARDS**
  - "Operational definitions" & "acceptance criteria"

- **Processes**
  - "What happens over time" to build products

- **Implemented by**
  - **PROCEDURES**
    - "How to" or step by step instructions

- **Supported by**
  - **TRAINING**
    - Provides the needed knowledge and skills

- **Supported by**
  - **TOOLS**
    - Supports and automates operations

- Slide adapted from "A Software Process Framework for the SEI Capability Maturity Model", CMU/SEI-94-HB-01
Example: Project Planning PA

**Policy:**
“All projects will establish and maintain plans that define project activities.”

**Standards:** Project Plan Template

**Process:**

```
Develop Estimates -> Develop Project Plan(s) -> Obtain Commitment to Plan(s)
```

**Procedure:** Size Estimation Procedure (e.g., Wide Band Delphi)

**Training:** Project Planning Training

**Tools:** Size Estimation tools (e.g., SEER; COCOMO II)

*Slide adapted from the SEI Software Engineering Symposium, 1993*
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GP 2.1: (CO 1) Establish an Organizational Policy

Establish and maintain an organizational policy for planning and performing the process.

The purpose of this generic practice is to define the organizational expectations for the process and make these expectations visible to those in the organization who are affected.

In general, senior management is responsible for establishing and communicating guiding principles, direction, and expectations for the organization.
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Example: CMMI® Standard

GENERIC PRACTICES (GP)

GP 2.1: Establish an Organizational Policy

**GP 2.2: Plan the Process**

GP 2.3: Provide Resources

GP 2.4: Assign Responsibility

GP 2.5: Train People

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  - **Constraints on**
    - **Processes**: “What happens over time” to build products
      - **Implemented by**
        - **Procedures**: “How to” or step by step instructions
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Slide adapted from "A Software Process Framework for the SEI Capability Maturity Model", CMU/SEI-94-HB-01
Model Components: SG & SP

- Maturity Levels
  - Process Area 1
  - Process Area 2
  - Process Area n

- Specific Goals
- Generic Goals

- Specific Practices
- Common Features
  - Commitment to Perform
  - Ability to Perform
  - Directing Implementation
  - Verifying Implementation
  - Generic Practices
Fundamental Building Blocks

**Agent:** the accomplisher or performer that carries out the action to achieve or create the product, service, or result (e.g., Stakeholder, Relevant Stakeholders in CMMI®)

**Artifact:** any product, service or result (e.g., Standards, Typical Work Products in CMMI®)

**Activity:** the action taken to create or achieve the product, service, or result (e.g., Processes, Procedures, SP’s in CMMI®)

*”Generic” Definitions from past work in process definition field*
Applying the Building Blocks

1. Why is this activity performed? (purpose)
2. Who does what activity? (roles)
3. What are the inputs? (inputs)
4. When does the activity begin? (Entry criteria)
5. How is the activity implemented? (Tasks; subactivities)
6. When does the activity end? (exit criteria)
7. What are the outputs? (outputs)
8. How can you measure the performance of this activity?
9. Sequence (What activity is performed prior & after this one?)
Example: CMMI® Process
(Entry/Exit Criteria)

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- TOOLS
  Supports and automates operations

Slide adapted from "A Software Process Framework for the SEI Capability Maturity Model", CMU/SEI-94-HB-01
Questions?
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