Policies, Processes, Procedures, Plans – What’s the Difference?

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Rick Hefner
Northrop Grumman Corporation
rick.hefner@ngc.com
Background

- Policies, processes, procedures, and plans are key to implementing the CMMI in an efficient and effective manner.
- Unfortunately, the CMMI offers little guidance on approaches for defining these critical process assets, and the open literature provides few examples.
- This presentation provides practical explanations of how these terms are used in the CMMI, and proven options for defining and structuring these documents.
- The focus is on creating usable documents that satisfy the CMMI, while providing value to customers, project managers, and engineers.
Topics

• A Top-Level Comparison
• Policies
• Processes ✓ Definition ✓ Usage
• Procedures ✓ Construction
• Plans
• Lessons Learned
A Top-Level Comparison

Policy
High-level “what” to do (organizational guidance)

Process
High-level “how” to do (organizational standard, tailored by projects)

Procedure
Low-level “how” to do (details needed to follow a strategy)

Plan
Instantiation of the process (how often, when, etc.)
(Organizational) Policies

“A guiding principle typically established by senior management that is adopted by an organization to influence and determine decisions.”
- Glossary, CMMI-DEV v1.2

- Policies provide guidance, to Project Managers and other functional groups, on required activities (what to do)

- Example:
  - “All projects shall establish and maintain a Risk Management Plan”

- Performers follow their plans, processes, and procedures, which must reflect the policies
  - Need not be familiar with the policies
Using Policies

GP 2.1 Establish an Organizational Policy

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

- “Establish and maintain” includes usage (see Glossary), suggests someone must audit for compliance with policies
  - Both projects and functional groups
Constructing Policies - Option 1

- Goals are required, so... Make each specific and generic goal in CMMI into a policy statement

**Risk Management**

**Policy 1** Projects shall conduct preparation for risk management.

**Policy 2** Projects shall identify and analyze risks to determine their relative importance.

**Policy 3** Projects shall handle and mitigate risks are handled and mitigated, where appropriate, to reduce adverse impacts on achieving objectives.

**Policy 4** Projects shall institutionalize Risk Management as a defined process.
Constructing Policies - Option 2

- **Practices are expected, so...** Make each specific and generic practice in CMMI into a policy statement

  **Risk Management**
  
  **Policy 1** Projects shall determine risk sources and categories.
  
  **Policy 2** Projects shall define the parameters used to analyze and categorize risks,

  Etc.

- **Since practices are only expected, must create an opportunity for the unexpected - a deviation!**
  - Does the approach still meet the CMMI goal?
“A documented expression of a set of activities performed to achieve a given purpose. A process description provides an operational definition of the major components of a process. The description specifies, in a complete, precise, and verifiable manner, the requirements, design, behavior, or other characteristics of a process.”

- Glossary, CMMI-DEV v1.2

- **Processes describe the steps to be taken**
  - Typical process established in the organizational standard process
  - Tailored by the project to fit their needs
Using Processes

GP 3.1 Establish a Defined Process
Establish and maintain the description of a defined process.

• “Defined process” means tailored from an organizational standard process
  – Both projects and functional groups must tailor

• The detail of the processes is driven by the similarities between project needs
  – If projects are similar, one size fits all
  – The more your project is different than the typical project in the organization, you more tailoring you need

• Tailoring does not require approval
  – Policies already define the acceptable limits (i.e., tailor as much as desired as long as you don’t violate policy)
Constructing Processes

Typical attributes of each process element (per CMMI):
- Process roles
- Applicable standards
- Applicable procedures, methods, tools, and resources
- Process-performance objectives
- Entry criteria
- Inputs
- Product and process measures to be collected and used
- Verification points (e.g., peer reviews)
- Outputs
- Interfaces
- Exit criteria

Constructing Processes - Option 1

- Practices are expected, so... Make each specific and generic practice in CMMI into a process description step

## Risk Management

**Step 1** Project determines risk sources and categories.

**Step 2** Project defines the parameters used to analyze and categorize risks, Etc.

- Tailoring may create a problem in meeting the goal
Constructing Processes - Option 2

If more detail is desired, add subpractices

Risk Management

Step 1  Project determines risk sources.

Step 2  Project determines risk categories.

Step 3  Project defines consistent criteria for evaluating and quantifying risk likelihood and severity risks.

Step 4  Project defines thresholds for each risk category.

Step 5  Project defines bounds on the extent to which thresholds are applied against or within a category.

Etc.

Note: subpractices only represent one way practices might be met

Related Process Areas

Refer to the Project Planning process area for more information about identification of project risks and planning for involvement of relevant stakeholders.

Refer to the Project Monitoring and Control process area for more information about monitoring project risks.

Refer to the Decision Analysis and Resolution process area for more information about using a formal evaluation process to evaluate alternatives for reduction and mitigation of identified risks.

Specific Goal and Practice Summary

Specific Practices by Goal

SP 1 Prepare for Risk Management
Preparation for risk management is conducted.

SP 1.1 Determine Risk Sources and Categories
Identification of risk sources provides a basis for systematically examining changing situations over time to identify circumstances that...
Constructing Processes - Considerations

Typical attributes of each process element (per CMMI)

- Process roles
- Applicable standards
- Applicable procedures, methods, tools, and resources
- Process-performance objectives
- Entry criteria
- Inputs
- Product and process measures to be collected and used
- Verification points (e.g., peer reviews)
- Outputs
- Interfaces
- Exit criteria

Risk Management

Step 1  Project manager determines risk sources.
Step 2  Project will use the XXX risk categories.
Step 3  Project defines consistent criteria for evaluating and quantifying risk likelihood and severity risks in the Risk Management Plan.
Step 4  Project defines thresholds for each risk category.
Step 5  Project defines bounds on the extend to which thresholds are applied against or within a category as per procedure YYY.

Etc.
Plan vs. Process Description

Plan
- Description of activities
- Resources (including funding, people, and tools)
- Schedule
- Assignment of responsibility and authority

Process Description
- Process roles
- Applicable process and product standards
- Applicable procedures, methods, tools, and resources
- Process performance objectives
- Entry criteria
- Inputs
- Product and process measures to be collected and used
- Verification points (e.g., peer reviews)
- Outputs
- Interfaces
- Exit criteria

At Level 2, plans describe what to do

At Level 3, the existence of a process description means that plans become much shorter

- Focus is on instantiating the process (e.g., how often a process executes)
GP 2.2  Establish and maintain the plan for performing the process.

- **Plan = description of activities + budget + schedule**
  - Description of activities is addressed in GP 3.1 (process description)
  - Budget is addressed in GP 2.3; resources in GP 2.4

- **Schedules for some process areas may be tied to program events**
  - E.g., DAR events may not be separately shown on a schedule, but plans should make clear the conditions under which a DAR is to be conducted