Generic Practices – What Do They Really Mean?

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Agenda

- Overview Of Generic Practices
- Why Are GPs Difficult to Understand?
- GPs From a Project-Level Perspective
- GPs From an Organizational-Level Perspective
- Summary
CMMI Model Structure

**Staged**

- **Maturity Levels (1-5)**
  - **Process Area 1**
  - **Process Area 2**
  - **Process Area N**

**Generic Goals (2-3)**
- **Commitment To Perform**
- **Ability To Perform**
- **Directing Implementation**
- **Verification**

**Generic Practices (2.1-2.10 3.1-3.2)**

**Common Features**

**Continuous**

- **Process Area 1**
- **Process Area 2**
- **Process Area N**

**Generic Goals (1-5)**

**Specific Goals**

**Generic Practices (1.1, 2.1-2.10 3.1-3.2, 4.1-4.2 5.1-5.2)**

**Specific Practices**

**Capability Levels (0-5)**
What Is Institutionalization?

- Institutionalization Involves Implementing Practices That
  - Ensure the processes based on the practices in the Process Areas Are Effective, Repeatable and Lasting
  - Provide Needed Infrastructure Support
  - Ensure Processes Are Defined, Documented, and Understood
  - Enable Organizational Learning to Improve the Process
Why Is It Important?

- Without Institutionalization
  - Processes Are Not Likely to Be Executed or Managed Consistently
  - The Processes Are Not Likely to Survive Staff or Leadership Changes
  - Process Improvement May Not Relate to Business Goals
  - The Organization Will Most Likely Find Itself Continuously “Reinventing the Wheel”
  - There May Not Be the Commitment to Provide Resources or Infrastructure to Support or Improve the Processes
  - Historical Data Is Likely to Be Incomplete or Unreliable
Realizing Institutionalization In CMMI Models

- Continuous Representation
  - The Basis for Institutionalization Is Established Via the Capability Level 2 Generic Practices
  - This Basis Is Extended in the Capability Level 3, 4 and 5 Generic Practices

- Staged Representation
  - Institutionalization Is the Primary Focus of the Common Features
    - The Common Features Correspond to the Capability Level 2 and 3 Generic Practices
Generic Goals (GGs)

- Generic Goals Are Called “Generic” Because They Can Be Applied to All Process Areas

- Achievement of a Generic Goal in a Process Area Signifies Improved Control in Planning and Implementing the Processes Associated With That Process Area
Generic Practices (GPs)

- **Generic Practices** Are Activities That Ensure That the Processes Associated With the Process Area Will Be Effective, Repeatable, and Lasting

- **Generic Practices Contribute to the Achievement of the Generic Goal When Applied to a Particular Process Area**
### Generic Goals And Practices

<table>
<thead>
<tr>
<th>Capability Level</th>
<th>Generic Goals</th>
<th>Generic Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 1</td>
<td>GG1: Achieve Specific Goals</td>
<td>GP 1.1: Perform Base Practices</td>
</tr>
</tbody>
</table>
| CL 2             | GG2: Institutionalize a Managed Process | 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 |
| CL 3             | GG3: Institutionalize a Defined Process | GP 3.1: Establish a Defined Process  
GP 3.2: Collect Improvement Information |
| CL 4             | GG4: Institutionalize a Quantitatively Managed Process | GP 4.1: Establish Quantitative Objectives for the Process  
GP 4.2: Stabilize Subprocess Performance |
| CL 5             | GG5: Institutionalize an Optimizing Process | GP 5.1: Ensure Continuous Process Improvement  
GP 5.2: Correct Root Causes of Problems |

#### Common Features Mapping
- Commitment to Perform
- Ability to Perform
- Directing Implementation
- Verifying Implementation
Why Are They Difficult To Understand?

- There is overlap between some generic practices and some specific practices
  - GP 2.3 Provide Resources
  - PP SP 2.4 Plan for Project Resources

- Application of generic practices can lead to recursion
  - GP 2.2 “Plan the Process” applied to the project planning process area
  - GP 2.9 “Objectively Verify Adherence” applied to the process and product quality assurance process area

- Some relationships are not obvious
  - Pull -> Push as in GP 3.2 -> IPM SP 1.5
  - Between GP’s and PA’s
<table>
<thead>
<tr>
<th>GP</th>
<th>Enabling PA</th>
<th>SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2 Plan the Process</td>
<td>Project Planning (PROJ)</td>
<td></td>
</tr>
<tr>
<td>2.3 Provide Resources</td>
<td></td>
<td>PP 2.4 Plan for Project Resources (PROJ)</td>
</tr>
<tr>
<td>2.4 Assign Responsibility</td>
<td></td>
<td>PP 2.7 Establish the Project Plan (PROJ)</td>
</tr>
<tr>
<td>2.5 Train People</td>
<td>Organizational Training (ALL)</td>
<td>PP 2.5 Plan for Needed Knowledge and Skills (PROJ)</td>
</tr>
<tr>
<td>2.6 Manage Configurations</td>
<td>Configuration Management (ALL)</td>
<td></td>
</tr>
<tr>
<td>2.7 Identify and Involve Relevant Stakeholders</td>
<td></td>
<td>PP 2.6 Plan Stakeholder Involvement (PROJ)</td>
</tr>
<tr>
<td>2.8 Monitor and Control the Process</td>
<td>Project Monitoring and Control (PROJ) Measurement and Analysis (ALL)</td>
<td>PMC 1.5 Monitor Stakeholder Involvement (PROJ)</td>
</tr>
<tr>
<td>2.9 Objectively Evaluate Adherence</td>
<td>Process and Product Quality Assurance (ALL)</td>
<td>IPM 2.1 Manage Stakeholder Involvement (PROJ)</td>
</tr>
<tr>
<td>3.1 Establish a Defined Process</td>
<td>Organizational Process Definition (ALL)</td>
<td>IPM 1.1 Establish and maintain the project’s defined process (PROJ)</td>
</tr>
<tr>
<td>3.2 Collect Improvement Information</td>
<td>Organizational Process Definition (ALL)</td>
<td>IPM 1.5 Contribute work-products…to the organizational process assets (PROJ)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPF 2.4 Incorporate process-related work-products…organizational process assets (ALL)</td>
</tr>
</tbody>
</table>
Project Level Perspective
**GP 2.2 Interactions With Other GPs And SPs**

**GP 2.2 Plan the Process**

<table>
<thead>
<tr>
<th>Typical Contents for the Plan for Performing the Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Description</strong></td>
</tr>
<tr>
<td>- Activities</td>
</tr>
<tr>
<td>- Characteristics</td>
</tr>
<tr>
<td>- Requirements</td>
</tr>
<tr>
<td><strong>Other Contents</strong></td>
</tr>
<tr>
<td>- Resources</td>
</tr>
<tr>
<td>- Responsibility and Authority</td>
</tr>
<tr>
<td>- Training for Process</td>
</tr>
<tr>
<td>- CM Requirements for Process</td>
</tr>
<tr>
<td>- Involvement of Identified Stakeholders</td>
</tr>
<tr>
<td>- Measurement Requirements</td>
</tr>
<tr>
<td>- Activities for Monitoring and Controlling the Process</td>
</tr>
<tr>
<td>- Objective Evaluation Activities</td>
</tr>
<tr>
<td>- Management Review Activities</td>
</tr>
</tbody>
</table>

**When the Plan for Performing the Process Is Executed, All SP’s and CL2 GP’s Are Implemented, for a Given Process Area**

**Plan Includes Budget and Schedule**

**The Process Description Can Include Most of the Plan Content**

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 2.2 Plan the Process**

**Typical Contents for the Plan for Performing the Process**

- **Process Description**
  - Inputs
  - Outputs
  - Activities
  - Entry/Exit Criteria

- **Other Contents**
  - Resources
  - Responsibility and Authority
  - Training for Process
  - CM Requirements for Process
  - Involvement of Identified Stakeholders
  - Measurement Requirements
  - Activities for Monitoring and Controlling the Process
  - Objective Evaluation Activities
  - Management Review Activities

**The Process Description in the Plan for Performing the Process Is Now a Defined Process Tailored From the Organizations Set of Standard Processes**

**When the Plan for Performing the Process Is Executed, All SP’s, GP’s 2.2 - 2.10, and GP 3.1 Are Implemented for a Given Process Area**
The Project Plan(s) Should Have the “Plan the Process” Content for All Project-Level PA’s (Except for the Project Planning PA)

When the Project Is Executed According to the Project Plan(s) and Schedule(s), Compliance With All Project-Level SP’s and GP’s Is Achieved (Will Address the Project Planning PA Later)
Ensuring That Generic Practices Are Implemented At The Project Level

Examples of Approaches:

- Include the Generic Practices in the Process Descriptions
  - Since the Process Descriptions Are a Component of the Project Plan(s) (by Reference or Explicitly), the Generic Practices Can Be Planned During the Project Planning Phase and Implemented During the Project Execution Phase
  - In the Continuous Representation, There May Not Be a Project Plan - the Process Plan (containing the Process Description) can be used instead

- Define a Project Plan Template That Includes All the Generics Across All Project-Level Process Areas (Will Work for the Continuous Representation, Only if PP Is Being Implemented)
  - What Resources Are Needed for Project Management, Engineering, and Support activities (i.e. across all Project-Level PA’s)?
  - What Training Is Needed to Perform These Activities Effectively and Efficiently?
  - Who Needs to Be Involved in These Activities Throughout the Life Cycle?
  - What Work Products Should Be Controlled? Objectively Evaluated?
- Tables/Matrices Are Useful to Capture Generic Practice Requirements
Don’t Forget About “Plan The Plan”

- Typically, the Plan Resulting From Applying GP 2.2 (Plan the Process) to the Project Planning Process Area Is Not Included in the Project Plan

- This Plan Is Used by the Project Manager to Plan the Activities of the Project Planning Process Area
  - Establishing Estimates
  - Developing the Project Plan
  - Obtaining Commitment to the Plan

- A Simple Checklist and/or “Plan the Plan” Template Can Be Used to Guide the Project Manager and Meet the Intent of This Practice
<table>
<thead>
<tr>
<th>Activities</th>
<th>Planned</th>
<th>Actuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Managed Products generated by Project Planning</td>
<td>The following items will be placed under QCM control after the project</td>
<td>□ This completed checklist.</td>
</tr>
<tr>
<td></td>
<td>schedule is baselined.</td>
<td>□ Completed &amp; Controlled Project Management Planning Schedule</td>
</tr>
<tr>
<td></td>
<td>1. This checklist.</td>
<td>□ Completed &amp; Controlled [Name of Project] Software Development Plan</td>
</tr>
<tr>
<td></td>
<td>3. [Name of this project] Project schedule</td>
<td>□ Controlled Project Planning Meeting Minutes</td>
</tr>
<tr>
<td></td>
<td>4. The [Name of this project] Software Development plan (SDP)</td>
<td>□ Controlled Project Planning Status Reports</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectivity of Project Planning</td>
<td>SQA audit of Project Planning artifacts (project management planning</td>
<td>□ SQA Audit of this completed checklist occurred on MM/DD/YY</td>
</tr>
<tr>
<td></td>
<td>schedule, project schedule, SDP and this checklist) on date of completed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>checklist.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planned date of Audit: MM/DD/YY</td>
<td></td>
</tr>
<tr>
<td>Project Planning Reviews with Product Management</td>
<td>Populated Project planning status reports.</td>
<td>□ Controlled Project Planning Status Report</td>
</tr>
<tr>
<td></td>
<td>Minutes from the reporting meeting.</td>
<td>□ Controlled Meeting Minutes of review</td>
</tr>
<tr>
<td></td>
<td>Action items from the reporting meeting.</td>
<td>□ Controlled Action Items from Review</td>
</tr>
<tr>
<td></td>
<td>status meetings anticipated with Product Management</td>
<td>status meetings actually held with Product Management</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>
## Sample “Plan the Plan” Schedule Template (Excerpt)

<table>
<thead>
<tr>
<th>Task Name</th>
<th>04</th>
<th>Oct 24, '04</th>
<th>Nov 7, '04</th>
<th>Nov 21, '04</th>
<th>Dec 5, '04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Mgt Status Reporting (Section 5.18 of SDP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Start Project Planning Checklist</td>
<td></td>
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</tr>
<tr>
<td>Develop Project Management Schedule</td>
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<td></td>
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<tr>
<td>Software Development Plan</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Define or Identify Product Life Cycle phases - Section 3.3 of SDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimate Scope - Section 1.2 of SDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Project Risks (Section 2.1 of SDP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCB Approval of QPRs and Generation of Build Definition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determine Estimates of Effort &amp; Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generate list of CM controlled documents (Section 5.14 of SDP)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Identify all needed project resources (people, lab config, equipment, licenses) as per Section 7.2 and Table 5-2 of SDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Training &amp; Skills needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Project Manager
- Project Manager, Product Manager
- Project Manager
- Project Manager
- Project Manager
- Project Manager
Model Overlaps One More Time...
Overlap Between GP’s And Project Management SP’s

<table>
<thead>
<tr>
<th>Generic Practices</th>
<th>Project Management Specific Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP 2.3 Provide Resources</td>
<td>PP, SP 2.7 Plan for Project Resources</td>
</tr>
<tr>
<td>GP 2.4 Assign Responsibility</td>
<td>PP, SP 2.4 Establish the Project Plan (Implicit)</td>
</tr>
<tr>
<td>GP 2.5 Train People</td>
<td>PP, SP 2.5 Plan for Needed Knowledge and Skills</td>
</tr>
<tr>
<td>GP 2.7 Identify and Involve Relevant Stakeholders</td>
<td>PP, SP 2.6 Plan Stakeholder Involvement</td>
</tr>
<tr>
<td></td>
<td>PMC, SP 1.5 Monitor Stakeholder Involvement</td>
</tr>
<tr>
<td></td>
<td>IPM, SP 2.1 Manage Stakeholder Involvement</td>
</tr>
</tbody>
</table>

- **Scope Here Is for an Individual PA**
  - Subset of Project Management PA’s Content

- **Scope Here Is for the Entire Project**
  - All Project-Level PA’s Are Included

- **The GP’s Serve as “Reminders” to the Project Management PA’s to Include Activities Across All Project-Level PA’s**

- **If the Scope of the Project Management Processes Includes All Project-Level PA’s, GP’s 2.3, 2.4, 2.5* and 2.7 Will Be Satisfied for Each of the Project-Level PA’s**
  * Also Requires OT
Other PA → GP Relationships For Project Level PAs

<table>
<thead>
<tr>
<th>Generic Practices</th>
<th>Process Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP 2.6 Manage Configurations</td>
<td>Configuration Management</td>
</tr>
<tr>
<td>GP 2.8 Monitor and Control the Process</td>
<td>Project Monitoring and Control</td>
</tr>
<tr>
<td>GP 2.9 Objectively Evaluate Adherence</td>
<td>Measurement and Analysis</td>
</tr>
<tr>
<td></td>
<td>Process and Product Quality Assurance</td>
</tr>
</tbody>
</table>

- **Scope Here Is for an Individual PA**
  - Subset of CM, PMC, M&A, and PPQA Content

- **Scope Here Is for the Entire Project**
  - Activities and Work Products From All Project-Level PA’s Are Included in the scope of these PA’s

- **CM, M&A, PMC, PPQA Can Implement in Full GP’s 2.6, 2.8 and 2.9 for All Project-Level PA’s**

- **Perceived Redundancy**
  - Ensures That Key Institutionalization Activities Take Place in the Continuous Representation
  - Serves as a Reminder in the Staged Representation
Organizational Level Perspective
GP 2.1 Establish An Organizational Policy

- Direction From Senior Management About Organizational Expectations for the Process
- Organizational Level Responsibility
- Does Not Imply That There Must Be a Policy in Place for Each Process Area, but All Process Areas Must Be Covered
- Remember “Establish and Maintain” Means Define, Document, Use, and Update
This GP Resides at the Organizational Level – the Organization Collects Information From All the Project-Level and Organizational Activities (PULL)

For Project-Level PA’s, IPM SP 1.5, “Contribute Work Products, Measures, and Documented Experiences to the Organizational Process Assets”, Can Implement GP 3.2 in Full (PUSH)

GP 3.2 (PULL) – Should Include Artifacts From All PA’s

Not All Improvement Information Submitted by Projects Is Made Available to All Projects
GPs Applied To Organizational Level Process Areas

GP 2.2 Apply OPF

Organizational-Level Process Areas

Process Description
- Activities
- Characteristics
- Requirements

Other Contents
- Resources
- Responsibility and Authority
- Training for Process
- CM Requirements for Process
- Involvement of Identified Stakeholders
- Measurement Requirements
- Activities for Monitoring and Controlling the Process
- Objective Evaluation Activities
- Management Review Activities

Organizational Level Plans and Schedules

Organizational Level Plans Include the "Plan the Process” Content for All Organizational-Level PA’s

When These Plans Are Executed, Compliance With All Organizational-Level SP’s and GP’s Is Achieved

Treat Organizational-Level Activities as a Project

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
Summary

- Generic Practices Are Critical for Institutionalization
- Understanding the Relationships Among Model Components Is Important
  - For Correct and Useful Application of Generic Practices
  - To Simplify Model Implementation
  - To Prevent Duplication of Effort
- Think and Analyze How the Generic Practices Apply to Your Business Environment
  - Tailor the GP’s to Suit Your Business Context and Needs
  - Allow for Professional Judgment

*Use the CMMI as a Guide, Not a Dictate*