

How Do You Deal with the Generic Practices ?

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1. Introduction

- Most people are not sure how to deal with the Generic Practices
- For the Staged Representation, the Generic Practices can be handled a bit more simply
- No Generic Practices for Level 1 (only for the Continuous Representation)
- For Levels 2 and 3, there are Generic Goals (GG2 and GG3)

1. Introduction -2

- For Levels 4 and 5, there are no additional Generic Goals required for the Staged Representation
- Obviously, if you can use the Stage Representation, the Generic Goals are fewer (only GG2 and GG3)

2. Process Institutionalization

- Institutionalization is related to the Generic Practices
- Process Institutionalization implies that the process is ingrained in the normal way that the work is performed*
- Further, Process Institutionalization implies that there is commitment and consistency to performing the process*

*CMMI – Guidelines for Process Integration and Product Improvement, Chrissis, M et al, Addison Wesley, 2003

2. Process Institutionalization - 2

- Features of an institutionalized process:
 - Likely to be retained and followed faithfully during times of “stress”
 - When process requirements and/or objectives change, the implementation details of the process may need to change
 - Generic Practices describe activities that address these aspects (including commitment, and consistency)

2. Process Institutionalization - 3

- The degree of institutionalization is reflected in the titles of the Generic Goals
- One Generic Goal is associated with each level:
 - **GG1** **Performed Process (Level 1)***
 - **GG2** **Managed Process (Level 2)**
 - **GG3** **Defined Process (Level 3)**
 - **GG4** **Quantitatively Managed Process (Level 4)***
 - **GG5** **Optimizing Process (Level 5)***
 - *** Used only for the Continuous Representation**

2. Process Institutionalization - 4

- As an organization matures, it must progress in its process institutionalization
- For a staged representation case, start with Level 2 and Generic Goal 2 (Institutionalize a “Managed” Process)
- For this talk, we will focus on Level 2 and the “Managed” Process

3. The “Managed” Process

- Summary: a managed process is a performed process that is:
 - Planned & performed per a documented policy
 - Employs skilled/trained people
 - Adequate resources
 - Involves relevant Stakeholders
 - Process is monitored & controlled
 - Process is reviewed & evaluated for adherence to its process description

4. Generic Goal 2 (GG2)

- GG2- Title: Institutionalize a Manage Process
- The process is institutionalized as a managed process
- There are 10 Generic Practices that apply (and are required) for Level 2

4. Generic Goal 2 (GG2) -2

- There are 10 generic practices that must be satisfied for each Level 2 Process Area:
- GP 2.1 -
- GP 2.2 -
- GP 2.3 - Provide Resources
- GP 2.4 - Assign Responsibility
- GP 2.5 –Train People

4. Generic Goal 2 (GG2) - 3

- GP 2.6 - Manage Configurations
- GP 2.7 - Identify & Involve Relevant Stakeholders
- GP 2.8 - Monitor & Control the Process
- GP 2.9 – Objectively Evaluate Adherence
- GP 2.10 – Review Status with Higher Level Management

5. The Generic Practices for each Process Area (PA)

- Example: for **Project Planning** (Process Area)

Commitment to Perform:

- GP 2.1 - Establish & maintain an organizational policy for planning & performing the **project planning** process

5. Generic Practices for each PA - 2

Ability to Perform:

- GP2.2 – Establish & maintain the plan for performing the **project planning** process
- GP 2.3 – Provide adequate resources for performing the **project planning** process, developing the work products, & providing the services of the process
- GP 2.4 – Assign responsibility & authority for performing the process, developing the work products, & providing the services of the **project planning** process
- GP 2.5 – Train the people performing or supporting the **project planning** process, as needed

5. Generic Practices for each PA - 3

Directing Implementation:

- GP 2.6 – Place designated work products of the **project planning** process under appropriate levels of configuration management
- GP 2.7 – Identify & involve the relevant stakeholders of the **project planning** process, as planned
- GP 2.8 Monitor & control the project planning process against the “plan” for performing the process, & take approp. Corrective action

5. Generic Practices for each PA - 4

Verifying Implementation:

- GP 2.9 – Objectively evaluate adherence of the **project planning** process against its process description, standards, & procedures, and address noncompliance
- GP 2.10 – Review the activities, status, & results of the project planning process with higher-level management, & resolve issues

5. Generic Practices for each PA - 5

- Similarly, every Level 2 Process Area has these 10 Generic Practices
- However, instead of saying “**project planning**” the appropriate PA name is inserted

6. Elaborations & Subpractices for each Generic Practice

- Some of the Generic Practices have subpractices, or are provided with elaborations that are helpful
- In the SEI CMMI Technical Report (CMU/SEI-2000-TR-002), they are shown with each Process Area
- In the 2002 “text book” by Mary Beth Chrissis, Mike Konrad , Sandy Shrum (CMMI –Guidelines for Process Integration and Product Improvement), the details for the Generic Practices are only shown in one place: pp 39 -52

Sample Subpractices & Elaborations

- The details are quite extensive, and vary somewhat from one Process Area to another
- For this talk, we will show an example for only one Process Area
- For consistency, we will use the Process Planning PA as the illustration

Part II

Sample Subpractices & Elaborations - 2

- **GP 2.1** - Establish & Maintain an organizational policy (what's an organizational policy?) for planning & performing the _____ process
- Purpose: define the organizational expectations of the process, & make them visible to the people in the organization
- Sr. Mgmt is responsible for establishing & communicating guiding principles, direction, & expectations for the organization

More on GP 2.1

- Note: Not all direction from Sr. Mgmt will have the label “policy”
- CMMI expects that the appropriate organizational direction exists & is actively supported, regardless of the label or how this guidance is communicated
- Some organizations document a separate Policy document, while some have a “policy” statement built into the front part of each Process Description

GP 2.2 - Plan the Process

- Establish & maintain the plan for performing the process
- This GP can be a bit confusing - what is a plan for a process?
- Determine what's needed to perform the process & define the objectives, prepare a Process Description (PD), & get agreement on the plan (the approach, the resources req'd, and the PD)

GP 2.2 - Plan the Process - 2

- This Generic Requirement requires that a plan be documented for each process, and a plan be prepared for developing the PD, reviewing the PD, and approving/issuing the PD
- The plan should also include provisions for maintaining the plan, based on changes to reqts or objectives, corrective actions, or process improvement

GP 2.2 - Plan the Process - 3

- Contents of the “plan” for performing the process:
 - PD
 - Standards for the work products (& services)
 - Reqts for the work products (& services)
 - Specific objectives for process performance (quality, cycle time, time scale, resource usage)
 - Dependencies among activities, work products, services

GP 2.2 - Plan the Process - 4

- Contents of the “plan” for performing the process (cont’d)
 - Resources needed (funding, people & skills, tools)
 - Assignments of responsibility & authority
 - Training needed
 - Work products to be put under CM (& level)
 - Measurement reqts

GP 2.2 - Plan the Process - 5

- Contents of the “plan” for performing the process (cont’d):
 - Involvement of identified stakeholders
 - Monitoring & control activities for the process
 - Objective evaluation reqts & activities
 - Management review activities for the process & the work products (what, by whom, frequency/timing, criteria)

GP 2.2 - Plan the Process - 6

- Subpractices (5):
 - Obtain mgmt sponsorship for performing the process
 - Define & document the PD (may be included in the plan by reference)
 - Define & document the plan for performing the process (plan may be a standalone document, embedded in a higher-level document, or a distributed document)

GP 2.2 Plan the Process - 7

- Subpractices (5) (cont'd):
 - Review the plan with the relevant stakeholders, & get their agreement & support (includes reviewing the process- satisfies applicable policies, plans, reqts, standards, to provide assurance to the relevant stakeholders)
 - Revise the process plan, as necessary

GP 2.3 - Provide (adequate) Resources

- Purpose: ensure that adequate resources are provided - to perform the process as defined by the plan (when needed)
- Resources include: adequate funding, approp. Physical facilities, trained people, approp. Tools
- Note: Inadequate resources may be addressed by increasing the resources, or reducing the reqts/commitments and/or removing constraints

GP 2.4 - Assign Responsibility (and Authority)

- Purpose: ensure that there is accountability for performing the process, & achieving the specified results throughout the process' life cycle
- People assigned must have adequate & appropriate authority to perform the assigned responsibility
- Responsibility can be assigned via detailed job descriptions, or in documents (e.g., the process plan
- Dynamic assignment of responsibility is also OK, must be documented (copy in PAL)

GP 2.4 - Assign Responsibility (and Authority) - 2

- Subpractices (3):
 - Assign Overall responsibility & authority for performing the process
 - Assign responsibility for performing the specific tasks of the process
 - Confirm that the people assigned the responsibilities & authority actually understand them (also make sure that the relevant stakeholders also understand the responsibilities & authority of the assigned people)

GP 2.5 - Train (the) People

- Purpose: Ensure that the people have the necessary skills & expertise to perform & support the process
- Appropriate training must be (prepared and) provided to the people who will be performing the process
- Overview training (or orientation) must be provided to those people who support the process or interact with those performing the process
- Methods: self-study, self-directed studyprogrammed instruction, e-learning, formal OJT, college classes, classroom training, conferences, professional societies,...

GP 2.6 - Manage Configurations

- Purpose: Establish & maintain the integrity of designated work products of the process and the related PD(s) throughout their useful life
- Designated work products are specifically identified in the process plan, together with a specification of the level of CM for each

GP 2.6 - Manage Configurations - 2

- Different level of CM are appropriate for different work products (and at different times in the life cycle)
- During development such as coding & unit testing, the control may be quite informal, and under the control of a single programmer. However, some level of version control is appropriate

GP 2.6 - Manage Configurations - 3

- When the software under development is promoted to the Test & Integration Library, and control is under the T&I team, the CM level is a bit more formal
- For a software system that is undergoing Acceptance Test (or the related dry runs), there is strict control of changes, plus full Version/Revision control

GP 2.6 - Manage Configurations - 4

- When the software system is actually under Qualification Test, the customer (or their rep) is directly involved. Changes are only made with customer approval, and full CM controls are used
- When the Software is delivered to the customer (or released to the open market), the “final” software is promoted to the “Delivered” Software Library, and full CM controls are also used.
- Delivered Software is under full CM control (Product Baseline)

GP 2.6 - Manage Configurations - 5

- Most mature organizations also apply strict CM procedures to their PDs (and to some other process artifacts in their PAL)
- This includes good configuration ID schema for their PDs, strict Change Control procedures (Process Group acts as the CCB), periodic configuration audits of the PDs, and Status Accounting & Reporting

GP 2.7 - Identify and Involve Relevant Stakeholders

- Purpose: Establish & maintain the expected involvement of stakeholders throughout the life of the process
- Stakeholders may differ from one Process Area to another
- Project Planning includes planning for the relevant Stakeholders (for each Process Area - identification, types of involvement,...)

GP 2.7 - Identify and Involve Relevant Stakeholders - 2

- Varies types of activities include:
 - Planning
 - Decision making
 - Commitments
 - Communications
 - Coordination
 - Reviews
 - Appraisals
 - Requirements definitions
 - Resolution of issues

GP 2.7 - Identify and Involve Relevant Stakeholders - 3

- Interactions necessary for accomplishment of each process must be identified, and the relevant stakeholders identified
- Keep it balanced - don't have excessive numbers of people (keep it lean & mean)

GP 2.7 - Identify and Involve Relevant Stakeholders - 4

- Subpractices (3):
 - ID relevant stakeholders for the _____ process (and define what type of involvement is necessary)
 - Share the IDs with the project planners
 - Involve relevant stakeholders (early for the planning, later at the right time for their approp. Involvement)

GP 2.8 - Monitor & Control the Process

- Purpose: Perform the direct day-to-day monitoring & control of the _____ process
- Approp. Visibility into the process must be established & maintained (process metrics?)
- Approp. Corrective Actions must be taken when the process goes out of control, or through established UCLs or LCLs or exceeds predetermined limits/thresholds

GP 2.8 - Monitor & Control the Process - 2

- See the Project Monitoring & Control Process Area for more guidance (event, milestone, & periodic monitoring, plus types of corrective actions)
- Don't delay the Corrective Actions - act quickly & decisively- Discuss)
- Also refer to Measurement & Analysis Process Area for information on process measurement

GP 2.8 - Monitor & Control the Process - 3

- Subpractices:
 - Measure actual performance vs process plan (measures can be of the process & related products & services)
 - Review accomplishments & results of process (vs the plan)
 - Review activities, status & results of process with the immediate mgmt responsible for the process, & ID any issues can be periodic or event-driven reviews)

GP 2.8 - Monitor & Control the Process - 4

- Subpractices (cont'd):
 - ID & evaluate effects of significant deviations from plan (**Who ? When?**)
 - ID problems in plan for performing the process
 - Take corrective action when reqts & objectives are not being satisfied, when issues are ID'd, or when progress differs significantly from plan
 - Track Corrective Action to closure

GP 2.9 - Objectively Evaluate Adherence

- Purpose: provide credible (believable) assurance (no “trust me’s”) that the process is implemented per plan, & adhere to its PD, standards, & procedures
- Objective Evidence must be collected (by whom?)
- Who should do the evaluations of adherence ? (independence, knowledgeable)

GP 2.9 - Objectively Evaluate Adherence - 2

- Credible assurance of adherence (or reports of non-adherence) must be available even when the process is under stress
- We don't have time to have anyone check our process adherence for the _____ processes because we are late & over budget (Isn't that special ! I wonder why ???)
- Who could do the process checking? (the medical dept? Buildings & grounds? Human Resources? SQA?) See PPQA Process Area

2.10 - Review Status (of the process) with Higher-Level Mgmt

- Purpose: provide higher-level (senior) mgmt with approp. Visibility into the process & related issues (& sometimes get their help)
- This level of mgmt includes the level of mgmt just above the level responsible for the _____ process
- This level provides overall policy & guidance (not the mgmt performing process monitoring & control)
- These reviews should be both periodic & event driven (What periods ? Discuss)

How Does this Affect You ?

- If you are transitioning from Level 2 of SW-CMM to CMMI, you will have to address all 10 Generic Practices in a fully adequate manner - for all the Level 2 Process Areas
- In addition, Level 2 now has an extra Process Area (Measurement & Analysis) - which now makes for 7 Level 2 PAs

A Possible Approach

- If you want to get to Level 2 of CMMI (for Software), address Measurement & Analysis - not easy, but lots of good benefits for your organization can be obtained
- For the Generic Practices, take them in 2 or 3 bites. Assign a competent, trained process person to each of these Generic Practices

A Possible Approach - 2

- Consider detailing the plan for each Generic Practice for only $\sim 1/2$ of the Process Areas (possible defer M & A a bit, until more work has been done on the Specific Practices)
- Take advantage of the fact that some of the Generic Practices relate to some degree to some of the Level 2 Process Areas that you may have mastered under SW-CMM.

A Possible Approach - 3

- Level 2 PAs (& 5 GPs that can draw on them):
- REQM
- PP GP 2.3, 2.4, 2.7*
- PMC
- CM.....GP 2.6 Manage Config'ns
- PPQA..... GP 2.0 Obj. Eval. Adherence
- M & A (**new PA**)... GP (CMM M&A common features

*** Provide Resources, Assign Responsibility, ID Relevant Stakeholders**

A Possible Approach - 4

- 5 GPs that are largely “new”:
 - GP 2.1 - Establish an Organizational Policy (use OPD ?)
 - GP 2.2 = Plan the Process (use OPD?)
 - GP 2.5 - Train (the) People (use OT?)
 - GP 2.8 - Monitor & Control the Process (use both Level 4 PAs?) (draw on M&A common feature)
 - GP 2.10 - use the Verification common practice, specifically the “Review with Higher-Level Mgmt” practice found in most Level 2 PAs

If You Want to Start “Easy”

- Consider starting with the 5 GPs:
 - GPs 2.3, 2.4, 2.6, 2.7, and 2.9
 - Work on these 6 PAs: REQM, PP, PMC, SAM, PPQA, CM - if you are already at Level 2 of the CMM-SW
 - Start a longer effort on the M&A PA
 - Defer starting on GPs 2.1, 2.2, 2.5, 2.8 & 2.10 (unless you have lots of smart resources)

Questions ???

- Easy Questions Preferred

