Avoiding a Documentation Glut
When Achieving CMM* or CMMI℠

The Process Group

Neil Potter

Mary Sakry

* Capability Maturity Model and CMM are registered in the U.S. Patent and Trademark Office.
℠ CMMI is a service mark of Carnegie Mellon University.

Agenda

1. Focusing on the organization's **needs**.

2. Keeping processes **concise**.

3. Knowing when you are in **trouble**.

4. Knowing if you are meeting the **intent** of the CMMI or CMM process areas.
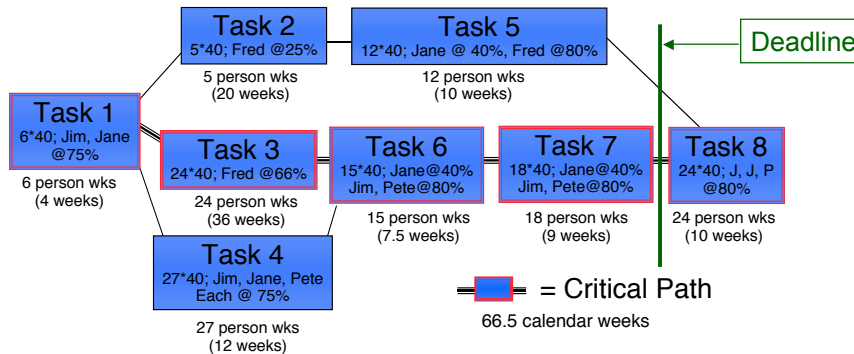
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1. Focus on the Organization's Needs

- **Keep process documentation concise by focusing it on specific needs (e.g., business goals and problems).**

- **Begin with a simple version of the process. When the need is addressed, stop.**
  - Refine further when the process no longer meets the need.

Focus on the Organization's Needs
Example

Project Needs	SEI CMMI (v1.1) Practices That Would Help
Changing requirements.	**Level 2: PP - Specific Practice 2.1** Establish and maintain the project's budget and schedule.
The poor quality of incoming code from other groups.	
We routinely over commit.	
Inadequate availability of test equipment.	**Level 2: PP - Specific Practice 3.2** Reconcile the project plan to reflect available and estimated resources.
Too many features are required for the 6- to 9-month development cycle.	
Difficult to find defects early.	

Use the need to scope the process.

Example Process for Schedule Creation
(Level 2: PP - Specific Practice 2.1 <Schedule>)

Task 2
5*40; Fred @25%
5 person wks
(20 weeks)

Task 5
12*40; Jane @ 40%, Fred @80%
12 person wks
(10 weeks)

Deadline

Task 1
6*40; Jim, Jane
@75%
6 person wks
(4 weeks)

Task 3
24*40; Fred @66%
24 person wks
(36 weeks)

Task 6
15*40; Jane@40%
Jim, Pete@80%
15 person wks
(7.5 weeks)

Task 7
18*40; Jane@40%
Jim, Pete@80%
18 person wks
(9 weeks)

Task 8
24*40; J, J, P
@80%
24 person wks
(10 weeks)

Task 4
27*40; Jim, Jane, Pete
Each @ 75%
27 person wks
(12 weeks)

= Critical Path

66.5 calendar weeks

1. Determine task dependencies.   2. Add task EFFORT estimates.
3. Add resources - people, equipment, resource assumptions.
4. Add resource availability - %allocation, calendar days out.

Example Process for Reconciling Commitments
(Level 2: PP - Specific Practice 3.2)

Step 1: Project team determines high-level product needs (or scope of work), from customer and marketing input.

Step 2: Project team develops an initial project plan and estimates to determine what is feasible.

Step 3: Project team meets with management, marketing, customers and related groups to determine whether:

- the change or product is feasible (with options).
- there is agreement to the resource, cost and schedule estimates.
- the risk is acceptable.

Step 4: A commitment is made OR further negotiation is held.

2. Keep Processes Concise - 1

- **Always consider 1 page (small) for each process or sub process!**
    - Refine what you have defined, don't necessarily add more.

- **A Defined/Managed Process can be the instructions embedded in a work product template. e.g.,**
    - The template for a CM, QA or project plan.

- **A standing agenda can be the process for a project review.**
    - With instructions for use.

> **CM Plan Template**
> 1. List Configuration Items
>
>   *x, y, z*
> 2. Establish File Naming Convention
>
>   *File-x<n>.doc*
> 3. Establish Baseline File Structure
>
>    ~~~~~
> 4. ~~~~

Example Milestone Review Process

(Level 2: Project Monitoring & Control - Specific Practice 1.7)

- **For the last period:**
  - The **original plan**
  - **Accomplishments**
  - The **critical path** of the project
  - **High-risk areas** that need attention (top 2-3)
  - **Problems** that are impacting quality, cost and the schedule
  - **Status of action items** (open and closed)

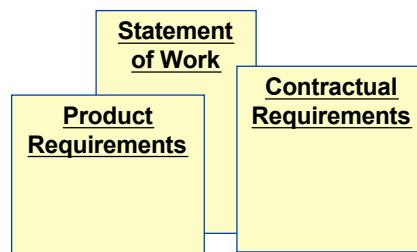- **For the next period:**
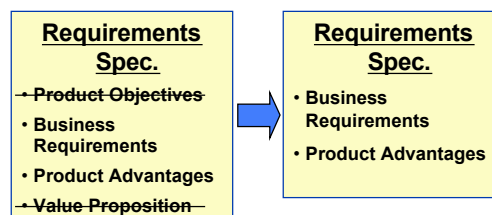 - **The plan**

Instructions for use:

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Keep Processes Concise - 2

- **Merge duplicate work products, e.g.,**
  - Just because they might be listed separately in CMMI/CMM does not mean that you can't merge them for your project.

Statement of Work

Product Requirements

Contractual Requirements

- **Remove redundancy in templates.**

Requirements Spec.
- ~~Product Objectives~~
- Business Requirements
- Product Advantages
- ~~Value Proposition~~

Requirements Spec.
- Business Requirements
- Product Advantages

Keep Processes Concise - 3

- **Don't have separate QA checklists that repeat the original process. Use the original process as the checklist.**
    - Add specific QA pointers and guidelines.

- **Look for reuse in your CMMI/CMM implementation, e.g.,**

CMMI Practice	This CMMI Practice Can be Used Here Too
Level 2: PP - Specific Practice 1.1	**GP 2.2 in all Process Areas**
Establish a top-level work breakdown structure (WBS) to estimate the scope of the project	Plan the Process + use PA process description
Level 3: VER - Specific Practice 2.2	**Level 3: TS - Specific Practice 1.2**
Conduct Peer Reviews	Evolve Operational Concepts and Scenarios

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Keep Processes Concise - 4

- **Consider one representation.**
    - e.g., PowerPoint can be printed, shared and presented.

- **Embed tailoring guidelines.**
    - A separate document can be difficult to find and update.

- **Have one policy.**
    - e.g., "Perform the lifecycle." Follow the tailoring guidelines in the lifecycle.

> **Estimation Process**
>
> **Step 5: Use the historical database to verify the estimate for each task**
>
> ***Purpose:*** This step should be performed to search the organization's historical data to see if a similar task (or group of tasks) exists.
>
> ***Tailoring guideline:*** This step should be performed whenever applicable data exists. It can be discarded when a new language or technology is being used.
>
> ***Risk if omitted:*** Failure to use the database could result in significant oversight about schedule estimates, and could lead to a loss in revenue.
>
> ***Minimum requirement:*** Data that exists, but is not considered applicable for the current estimate, must be reviewed with one other manager to verify non-applicability.

3. Know When You are in Trouble

- Project team members create process and project documentation to please an assessor or auditor.

- It has been 6 months and still the process is not ready to use.

- Project managers "study" the documentation in preparation for the assessment.

- The ink refuses to dry, and the assessment interview is about to start!

4. Know if You are Meeting the Intent of the CMMI or CMM Process Areas

- **The problems related to those Process Areas have been solved and the solutions are captured in the process descriptions.**
- **Project and process documents are used to run the project and the business:**
  - The practices within the CMMI have been institutionalized. The process "lives."
  - No "extra paperwork".
- **The processes have Common-Feature characteristics:**
  - E.g., documented, planned, resourced, trained, someone assigned, under control, meet needs, monitored.

Summary

- **Write processes and procedures with a business goal or problem in mind. Use the *need* to scope the process.**

- **Focus on process quality, not process weight!**
  - Refine what you have. Remove redundancies.

- **Impress assessors with institutionalized behaviors, supported with natural-bi-product documentation.**

Documentation is:
- **Only a small part of process improvement.**
- **A method of capturing and sharing engineering and management practices.**

Questions

- Potter, N., Sakry, M. (2002). *Making Process Improvement Work - A Concise Action Guide for Software Managers and Practitioners*, Addison Wesley. (See **www.processgroup.com/tpgbook.htm**)

- CMMI Product Development Team. *CMMI^SM for Systems Engineering/Software Engineering/Integrated Product and Process Development. Version 1.1 (CMMI^SM-SE/SW/IPPD, v1.1), staged representation.* CMU/SEI-2002-TR-004, ESC-TR-2002-004, Pittsburgh: SEI, November 2002.

The Process Group
P.O. Box 700012 • Dallas, TX 75370-0012
Tel. 972-418-9541 • Fax. 972-618-6283
E-mail: help@processgroup.com
http://www.processgroup.com

Acronyms

- **TS:**   **Technical Solution**
- **VER:**   **Verification**
- **PP:**   **Project Planning**
- **CM:**   **Configuration Management**
- **QA:**   **Quality Assurance**