

Strategies for Process Documentation - Part 1

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This Presentation...

This briefing is Part 1 of a two part presentation on lessons learned from our experiences working with the SIAP (Single Integrated Air Picture) Joint Program Office

This briefing addresses the subject topic broadly, providing tips and suggestions for an audience of process improvement professionals

Part 2 will provide a “deep dive” on the topic of documenting processes, with actual examples from our experience



The SIAP JPO...

The SIAP JPO existed in various forms from 1999 – 2009

Their deliverables were a system engineering specification, and a software instantiation of that specification

They existed in an acquisition context

Their development context was incremental:

- Two-year major increments “Capability Drops”
- 12-week minor increments “Timeboxes”

The process scope encompassed all of the “Divisions” of the JPO

- Requirements
- Acquisition
- Test
- Development
- Engineering
- Technology
- Contracts
- Quality
- Configuration Mgmt
- Security



Your Authors...



Fred Schenker is a Senior Member of the Technical Staff working in the SEI's Acquisition Support Program. He participates in activities to improve software acquisition and product development practices throughout the armed services, and other government agencies.

Mr. Schenker has worked at the SEI for 8 years. He is a certified Intro to CMMI instructor, and a certified SCAMPI A Lead Appraiser. Before joining the SEI, Mr. Schenker spent over twenty years in industry as an active contributor in all phases of product development activities.

Mr. Schenker is also an inventor, and has obtained patents for a pressure switch (used in automotive airbag applications), and for a manufacturing process to seal gas inside a vessel.



Kursten Szabos graduated from Virginia Tech with a B.S. in Industrial and Systems Engineering and a M.S. in Systems Engineering.

Ms. Szabos worked for the SIAP JPO for 10 years as a contractor. During that time, she helped to: charter the organization, set the architecture framework in place, defined, implemented and executed Test Team processes and eventually took on the responsibility of chairing the Engineering Process Group. In this role she helped develop the Process Architecture, documentation standards and guidelines and supported the review of all process submissions. She is currently employed as a Research Associate in the field of Child Development and Human Relations.



Rolf W. Reitzig is the President and a Principal Consultant with cognence, inc. cognence helps companies integrate best practices, automation tools, and training to create a repeatable and scalable engineering system. The firm's methodology employs proven transformation techniques, creating the organizational buy-in essential for lasting change.

Mr. Reitzig has 20 years practical experience in software engineering and has helped dozens of Fortune 500 companies improve quality, productivity and project results. Mr. Reitzig is an SEI Resident Affiliate assisting in communicating the return on investment of CMMI efforts to the software development community. Mr. Reitzig holds a Bachelor's degree in Computer Science and an MBA in Finance from the University of Colorado.



Documenting Processes

Process documentation is not easy.

In the end, the documented process may serve many purposes:

- Communicates “process intent” and expectations to users
- Provides a baseline for analysis which could be used to:
 - Avoid scrap and rework (defects)
 - Improve the process efficiency (throughput, productivity, etc.)
- Provides opportunity to break down functional silos, and improve organizational cohesion
- Provides training materials
- Provides a means for objective evaluation of process performance

The process artifacts may need to be used by process appraisers for evaluation purposes.

The process description should reflect the business of the organization; it should be a roadmap that shows how work is done.



Process Documentation Strategies – Listing

1. Establish and Maintain Management Support
2. Build the Process Documentation Team Infrastructure and Competency
3. Establish the Process Architecture
4. Focus on Process Outputs (Artifacts or Deliverables)
5. Connect the Dots
6. Plan Your “Practitioner” Strategy
7. When you are finished, read CMMI
8. Don't Forget to Have Fun!

Strategies 1, 2(a), 7, and 8 are in Back-up

Strategies 2(b), 3, 4, 5, and 6 are the focus of this presentation



Strategy #2(b) – Build the Process Documentation Team Competency

Develop the process definition process, team norms and expectations for team behavior.

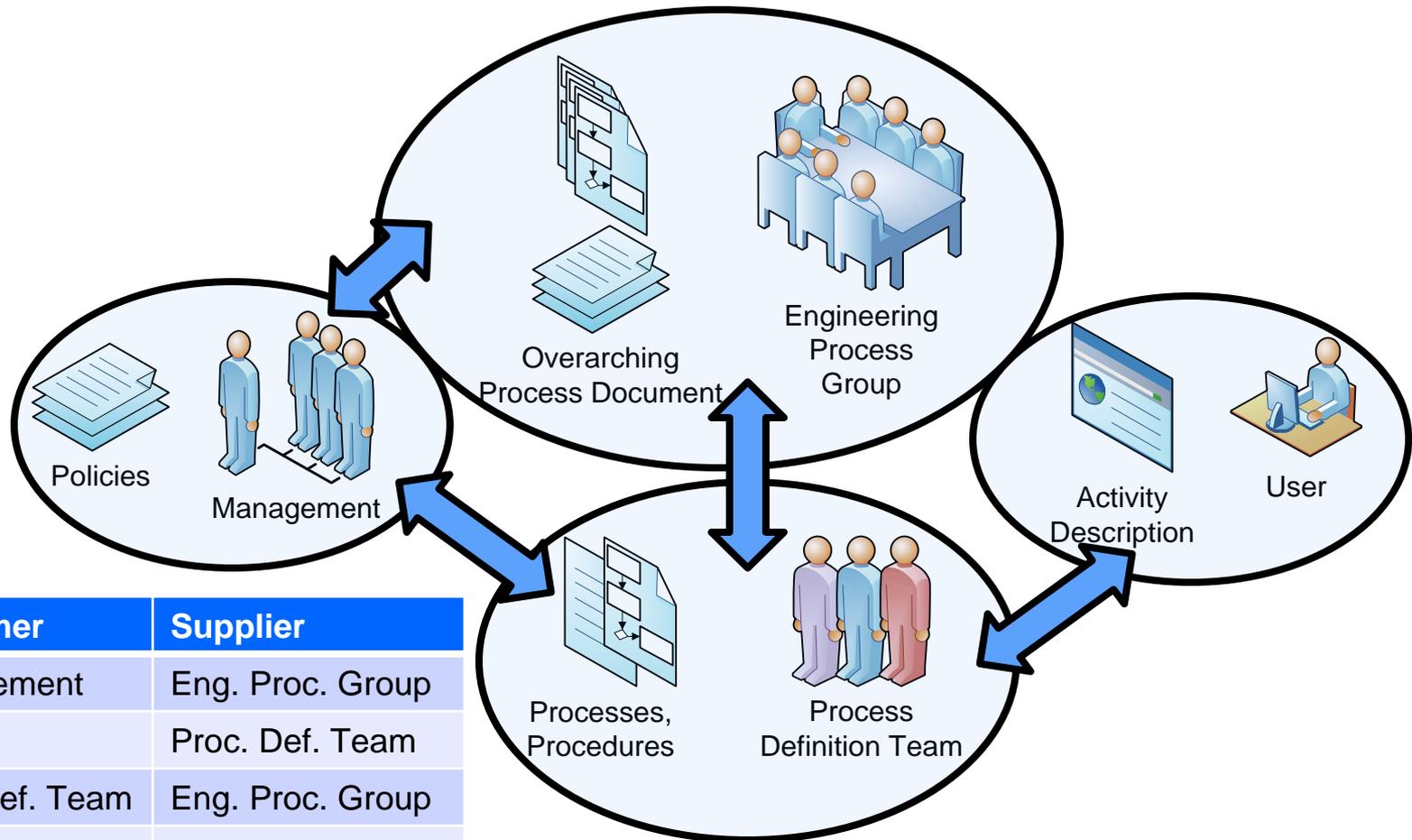
- Process definition “process”
- Clear definition of scope
- Expectations
- Deliverables
- Authority
- Ground rules

Don't forget to train your process definition “experts” (your team).

- These folks are your “horses”... make sure they are ready to run!
- Even with proper training, it will soon become apparent that some folks are better at defining processes than others.



Process Architecture Context – Simplified



	Customer	Supplier
1.	Management	Eng. Proc. Group
2.	User	Proc. Def. Team
3.	Proc. Def. Team	Eng. Proc. Group
4.	Management	Proc. Def. Team



Strategy #3 – Establish the Process Architecture

The process architecture should include WHAT it is you plan to document, and HOW you plan to document it. Be careful, and prototype, because mistakes made here will cost a lot to fix.

- Figure out how to represent the overarching process. There should be an “easy read” top-level process document that explains the “Big Picture” and allows you to navigate to subordinate process documents.
 - This document will likely look different than the low-level process descriptions.
 - A good description of the overall process will help keep the process definition teams on track.
- Establish the plan for implementing CMMI Generic Practices
 - ✓ Process Audits
 - ✓ Stakeholder Involvement
 - ✓ Configuration Items
 - ✓ Roles and Responsibilities
 - ✓ Process Measures/Metrics
 - ✓ Management Reporting
 - ✓ Policies
 - ✓ Lessons Learned
 - ✓ Training



Strategy #3 – Establish the Process Architecture (2)

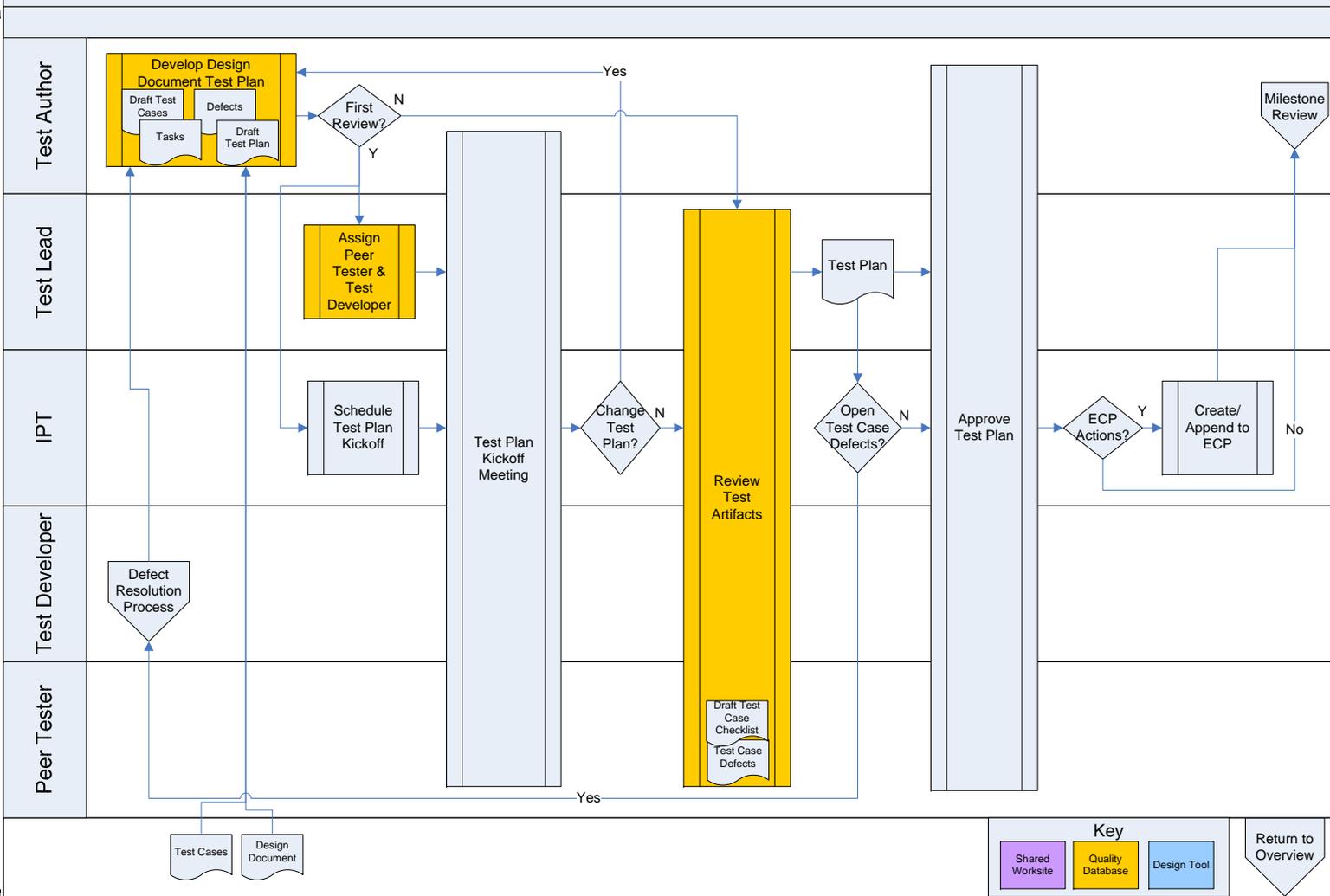
The process architecture should include WHAT it is you plan to document, and HOW you plan to document it. Be careful, and prototype, because mistakes made here will cost a lot to fix.

- Figure out how to represent the next process level down (may be defined by artifacts, or may be defined by “processes”). In any case, there should be a top-level process document that explains the process and allows you to navigate to “procedures.”
 - It’s a good idea to be able to provide a process document to the process stakeholders.
 - A graphical depiction of the process (e.g., “swimlanes”) is necessary. Don’t be concerned if you need multiple or nested swimlanes... it’s OK.
 - A common understanding of “how we represent a process” will reinforce the process definition competency training.
- Develop skill in writing procedures. These should represent the lowest level of your process architecture.



Process Architecture Context – SIAP Artifacts

Perform Test Analysis

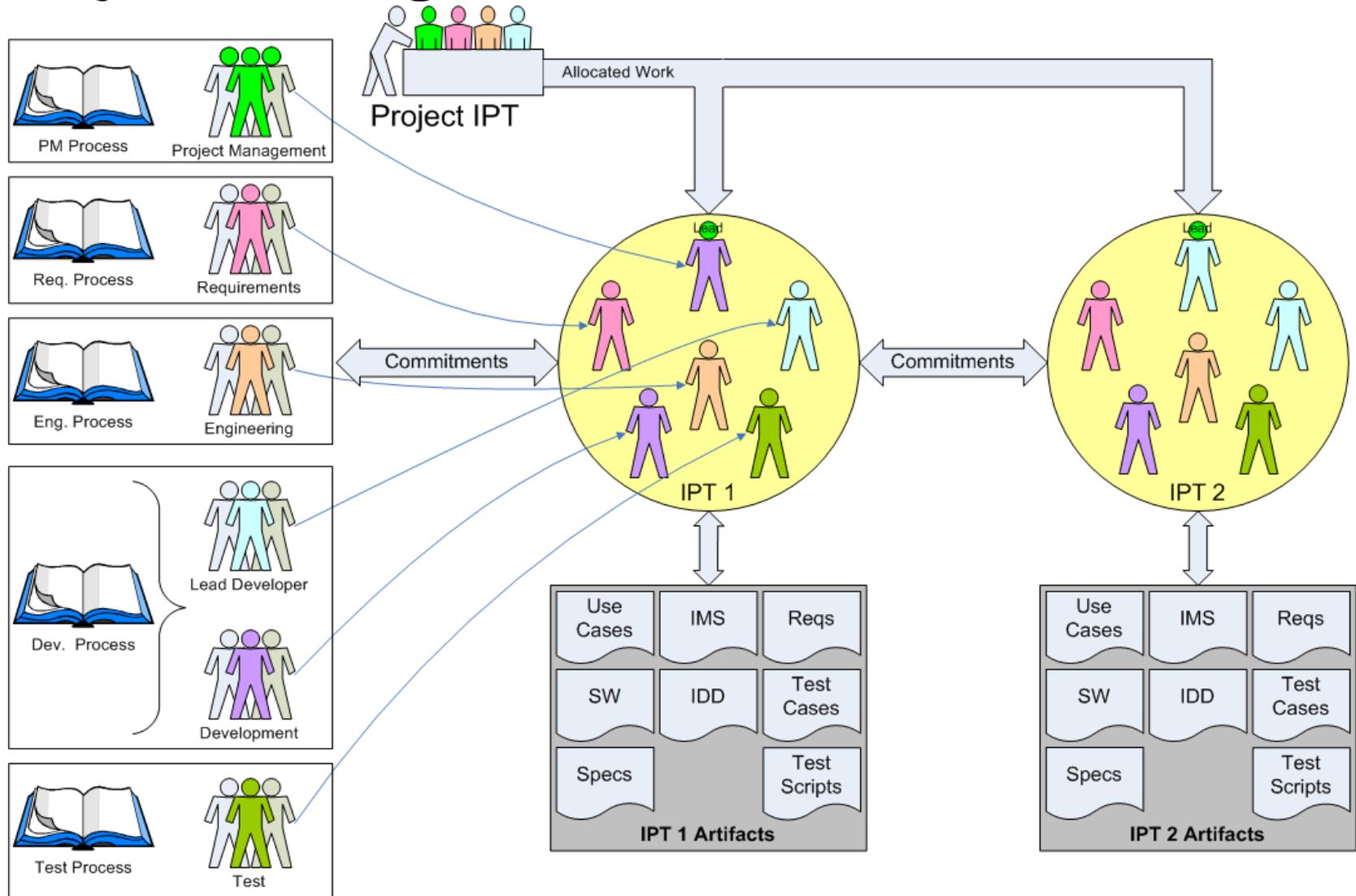


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OWNER	TITLE	DESCRIPTION	REVISED	PAGE
Test	Perform Test Analysis	Milestone Preparation for Design Increment	9/25/2009	2 OF 2



Project IPT Organization



Strategy #4 – Focus on Artifacts/Deliverables

All users have at least one thing in common; they all produce artifacts (or deliverables). Whether they admit it or not, all users need to improve their ability to produce their artifacts.

- When thinking about what to document, think about your artifacts. Your process descriptions should produce artifacts.
- Artifacts may evolve during the lifetime of the organization, however they also usually survive organizational change.
- Improved efficiency to produce artifacts represents value to the organization.

After you have focused on artifacts, then focus on Departments or Functional Areas.

- Premature focus on departments may lead to functional silos or stovepipes.
- Better plan is to focus on departments AFTER focus on artifacts. At that point, the activities required to produce the artifact have been defined, and can be assigned to specific roles (that exist within departments).



Strategy #5 – Connect the Dots

Artifacts should connect (upstream and downstream) to each other. Rationalize a project as a progression of artifacts.

- When artifacts are connected properly, they help you visualize the “Big Picture.”
- Artifacts (like activity or process descriptions) should have inputs, producers, consumers, and quality (or verification) checks.

The way the dots are connected will help you identify some of your process constraints.

- Artifacts are created in tools (e.g., MS Word, Rhapsody, Quality Center), and have potential dependencies. Tool integration may be necessary to maintain your data integrity, and improve operational efficiency.
- Storage of the artifacts needs to be planned as they may exist across multiple databases.

Connecting the dots promotes cross-departmental communication and helps to break down functional silos. Know who needs your artifact and why they need it!



Strategy #6 – Plan Your “User” Strategy

How do you want to deliver the process descriptions to the user? We have all experienced “shelf-ware” process descriptions. Ideally the latest process description would be delivered to the user when the task assignment is delivered.

- Process descriptions can take many forms (e.g. templates, guidance, flowcharts, procedures).
- Figure out how you want to train your users, and how to update the training when the process artifacts change.
- Determine the level of detail that you intend to provide to your users.

The tools that you use to document your process may impact the way your process description is delivered. Part 2 of this presentation will dive into this topic in detail. Examples of documentation tools include:

- Microsoft Office (Visio, MS Word)
- COTS (either freeware, such as Eclipse Process Framework; or commercial, such as Processmax or Rational Method Composer)

All of the process descriptions you produce are stored in your Process Asset Library (PAL)



Summary

Our experiences with process definition at the SIAP Joint Program Office pointed out some areas where there is a lack of practical guidance. We hope our experience helps improve yours.

- Process Definition Team behavior. Expectation setting, team norms, team scope definition were all contributors to “false starts.”
- Process architecture is necessary to set clear expectations for the level of detail required of each process component.
- When we focus on artifacts (or deliverables), we automatically gain a tangible basis for creation of process assets.
- In order to accurately reflect the way that work is done, we need to connect the process “dots.”
- Thinking through the way you would like to manage your process assets, and deliver them to the user will help you identify the documentation tool set that meets your needs.



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Back-up



Strategy #1 – Establish and Maintain Management Support

EVERYONE knows that the most important component of a process documentation activity is continued management support, so there must be a focus on the BUSINESS side.

- Establish a project for the process documentation project. Assign tasks with due dates, and report status regularly.
- Establish an “earned-value” system for your process documents.
- Confront issues head-on. If your resources are getting “reprioritized,” push back. If it looks like there is no local commitment, you may have to re-engage with management.
- Pick some “low-hanging fruit” (easy to implement, high return on investment) early, and use it to your advantage.
- Pick a process that has management visibility early (like Decision Making). Use this to demonstrate to Management the required process documentation rigor.
- Make sure you establish realistic objectives for management. Don’t let anyone think there is a “silver bullet.”
 - Tool integration is an example of this... it may help, but there may be unintended consequences.



Strategy #2(a) – Build the Process Documentation Team Infrastructure

It has been demonstrated that three levels of “team” are optimal:

- **Management team.** This team is the “sponsor” of the process documentation project.
- **Process Review Board.** Sometimes called an Engineering Process Group (or EPG), this team is responsible for:
 - creating guidelines for process definitions,
 - ensuring that process descriptions are consistent with guidelines,
 - approving process descriptions, and
 - dispositioning process change requests.
- **Process Definition Teams.** Usually, these teams are focused within a functional group. When processes (or artifacts) span multiple functional groups, custom teams may be required.



Strategy #7 – When you are finished, read CMMI

Just kidding.

CMMI provides lots of guidance and help, but the most important part for a process definition project is contained within the Generic Practices.

Use the CMMI Specific Practices in a diagnostic manner. It can easily help you identify gaps in implementation.

Don't use CMMI prescriptively. If you think you need to add an artifact (or a process) because of something you read in CMMI, you are probably wrong.



Strategy #8 – Don't Forget to Have Fun!

Celebrate your successes.

Don't dwell on setbacks... they will only be temporary.

