Strategies for Process Documentation
- Part 2

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This Presentation…

This briefing is Part 2 of a two part presentation on lessons learned from our experiences working with the SIAP (Single Integrated Air Picture) Joint Program Office.

Part 1 addressed the subject topic broadly, providing tips and suggestions for an audience of process improvement professionals.

This briefing provides 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 Strategy 6 “Deep Dive”

Whatever strategies you employ to document your processes the goals are to deliver “value” to the user, and improved productivity to management.

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 “User” Strategy
7. When you are finished, read CMMI
8. Don’t Forget to Have Fun!

Strategies 2 (b), 3, 4, 5, and 6 were covered in Part 1 of this presentation
Strategy 6 is the primary focus of this presentation
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. 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)
What is a Process Asset Library (PAL)?

A collection of process asset holdings that can be used by an organization or project.

Examples of items to be stored in the organization’s PAL include:

- Policies
- Process descriptions
- Procedures
- Process aids (e.g. checklists, guidelines, templates, examples)
- Training materials
- Project plans
- QA plans
- Lessons learned

An organization’s PAL does not need to be unified (all artifacts in a single repository).
Process Assets in Action

Process Assets

Lifecycle #1

Lifecycle #2

Organization’s Standard Processes

Guidelines and Criteria for Tailoring

Library of Process-related Information

Organizational Policies, Standards

Data Stores

Execution

Lessons Learned

Project Management Repository

Organization Measurement Repository
Is Your Process Mapped to Reality?

Look at schedules
Ask people if their planned efforts show up on a schedule and whether they track time against them
Do schedules map to processes?
You Have Choices!

There are alternatives…

- Typewriters (then word processors) and binders
- MS Word/Visio (or equivalent) and shared drives
- MS Word/Visio (or equivalent) published to HTML
- Native HTML
- Database-driven tools

Which one is the right one for your organization?

Some Potential Selection Criteria…

- Budget
- Project Size
- Organization Size
- User Skill Level
- Training
- Technology
- Complexity
- Consistency
- Timeline
- Process Stability
- Level of Detail
- Security
SIAP JPO – Process Definition Tool Choices

Microsoft Office
Pros:
• Visio is a decent graphics tool
• MS Office tools available on network
• Process authors are generally fluent with MS tools

Cons:
• Unconnected process assets
• Dependencies very hard to manage
• Delivery of process to user is manual

Eclipse Process Framework
Pros:
• Web publishing
• Industry standard process architecture based on SPEM (OMG)
• Import and export capability
• Rich process content
• Separation of method content from process promotes reusability
• Database-driven tool manages dependencies well

Cons:
• Graphics need work
• Deploying software on a Government network requires certification
• Learning curve/training time
Process Documentation Example 1:
Microsoft Office (Visio, MS Word)

Processes are represented graphically by “swimlane” diagrams in Visio.

- Process activities (or tasks) are shown on the diagram, and dependencies are shown with arrows.
- Decision points are shown on the diagram.
- Artifacts/deliverables are shown on the diagram.
- Tasks (with procedures) are shown on the diagram.
- Color codes can be used to indicate different task environments.

Process descriptions in Word.

- Standard template employed for all of the process descriptions
- Good format for the Government approval process

Activity descriptions in Word.

- Standard template employed for all of the activity descriptions
- Activity descriptions were typical… Inputs, Outputs, Entry and Exit Criteria, Roles, Guidance (reference), Purpose, Steps, Process Metrics
Process Swimlane Example 1: Microsoft Office (Visio, MS Word)
Process Documentation Example 1: Microsoft Office (Visio, MS Word)
Activity Documentation Example 1: Microsoft Office (Visio, MS Word)
Process Documentation Example 2: Eclipse Process Framework (COTS/Freeware)

Build Reusable “Method Content”
- Roles, Work products, Tasks, Guidance

Use Method Content to build “Capability Patterns” and “Delivery Processes”
- Lower-level reusable processes (like Peer Reviews, or Milestone Reviews) are referred to as capability patterns
- Higher-level processes are made up of Method Content and Capability Patterns, and are arranged hierarchically
  - Task
  - Activity
  - Capability Pattern
  - Phase

Publish your process to a website and add links to relevant web pages as assignments are made.
Method Content Development Example 2

Method Content is the description of work that can be reused as key building blocks. Method content describes tasks, roles, work products, guidelines, etc. that are involved in completing work.
Method Content Architecture Example 2

Example:
Requirements ->
Workflow Detail ->
Define the System

- Business Rules
- Vision
- Stakeholder Requests
- Vision (refined)
- Supplementary Specifications
- Requirements Management Plan
- Requirements Attributes
- Requirements Attributes (refined)
- Use-Case Model (refined)
- Use Case (outlined)

- System Analyst
- Develop Vision
- Manage Dependencies
- Capture a Common Vocabulary
- Find Actors and Use Cases
- Use-Case Model (refined)
- Business Object Model
- Use-Case Model

- Business Rules (refined)
- Glossary
- Glossary (refined)
- Use-Case Modeling Guidelines
- Business Use-Case Model
- Use-Case Model
- Supplementary Specifications
- Stakeholder Requests
- Vision
- Requirements Management Plan
- Requirements Attributes
- Use-Case Model (refined)
- Use Case (outlined)
Process Development Example 2

Processes are the order of doing work. They provide the order for the method content. Processes will differ depending on project type, size, or other characteristics.

Two types:
- Delivery Processes – End-to-End complete project lifecycles
- Capability Patterns – Process fragments that can be used to compose Delivery Processes
Publishing Example 2

Configurations can be published based on required contexts
One repository can publish to numerous configurations, thereby keeping process assets in one centralized location, and their instantiations separate.
EPF Delivery Process Screenshot

[Diagram showing the process flow of EPF Delivery Process]

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EPF Web Page Screenshot

Role: Test Author

- Relationships
  - Test Author
  - Agree on Design Objectives (Kickoff)
  - Approve Design Document Test Plan
  - Design Document Test Plan Meeting
  - Develop Design Document Test Plan
  - Prepare Design Document Test Plan Package
  - Present Design Document Test Plan Package
  - Review Design Document Test Plan Package

- Modifies
  - Design Document Defect
  - Design Document Test Plan
  - Draft Test Case
  - New Deliverable
  - Task

- Process Usage
  - Timebox Lifecycle > Test Analysis Phase > Test Analysis > Test Author
  - Timebox Lifecycle > Test Analysis Phase > Test Analysis > Design Document Test Plan Kickoff Meeting > Test Author
  - Timebox Lifecycle > Test Analysis Phase > Test Analysis > Approve Design Document Test Plan > Test Author

- Main Description
  - The Test Author is responsible for
    - reviewing and understanding the Design Document
    - writing Test Cases to verify Design Document Objectives/Requirements
    - creating Tasks necessary to prepare Test Cases, Test Scenarios, and Test Scripts
    - correcting any defects associated with the Test Case itself
Summary

Our experiences with process definition at the SIAP Joint Program Office pointed out some areas where there is not a lot of practical guidance. We hope our experience helps improve yours.

• Try to integrate your process definition environment with your project management tools.

• Process Definition Tools. You have choices to make. Some organizations will tend towards a Microsoft environment, and others will seek a more integrated solution. Make sure the choice you make works for you, and your stakeholders.

• Your tool selection will not provide you with a silver bullet. However, a good tool, implemented correctly, should help you get good at “institutionalizing.”

• Don’t forget that your primary stakeholders are management, and “users.” The process definition effort must provide some tangible increase in productivity, that makes the user more productive, and management happy.
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