



*Software Engineering Symposium.
Pittsburgh, PA 1999*

*Synopses Presented to Omaha
SPIN*

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agenda

- General Comments
- Sessions attended
 - Software Process Improvement in the Social Security Administration
 - Building Your Improvement Knowledge Base
 - Developing and Documenting Improved Software Engineering Processes
 - Overview of the CMM-I
 - FAA's iCMM
- Conclusion
- Resources

General Comments

- When: August 30-September 2, 1999
- In conjunction with the 1999 Conference on Software Technology and Engineering Practice (STEP'99)
- Symposium was held over 4 days
 - Tutorials – day 1 and 4
 - Sessions – days 2 and 3
- SEI and SEI sponsored projects were the key focus
- Observations:
 - Few vendors with products
 - Many SEI Partners
 - PSP and TSP (Personal and Team Software Process)
 - Organizations present were: Government, commercial and overseas firms.
- The Next Software Engineering Symposium is to be held in Washington DC.

Sessions Attended

- **Tutorials – Overview of the CMM-I**
- Day 2 sessions:
 - Model Based Verification Practices
 - CMM-I Models
 - CMM-I Assessment Methodology
 - High Maturity Organizations.
- Day 3
 - **Building your improvement Knowledge Base**
 - Establishing Software Measurement Programs
 - **Integrated Process Improvement at the FAA**
 - **Software Process Improvement at the Social Security Administration**
- Day 4
 - **Developing and Documenting Improved Software Engineering Processes**
- Day 5 – Special Meeting at SEI
 - **Overview of the CMM-I Model**

Software Process Improvement at the Social Security Administration

- Big operation, most of the programming is in one building
- Started with a Pilot Project
- Went after key processes and focused
 - Using more of the Continuous Process
- Developed and observed for 1 year
- Initiated throughout the agency
- Developed a video series to communicate Processes and Practices to the users - training
- Working on the next phase
 - Configuration Management
 - Quality Assurance

Building Your Improvement Knowledge Base

- SEI has the Software Engineering Information Repository (SEIR)
 - Best Practices database
 - Forum for contributions and information
 - » What practices lead to improvement
 - » Where to get information on specific practices
 - » What impact a practice can offer if applied
 - » How to implement a specific practice
- Would like to get everyone to participate
- Started with 50 contributors, now over 4200
- <http://seir.sei.cmu.edu>

Developing and Documenting Improved Software Engineering Processes

- How to develop a usable Processes and Procedures Manuals
 - Hard Copy and Soft Copy
- Good ideas and would recommend looking at the lecture
 - » <http://epg.sei.cmu.edu/sym99tutorial/>
- Ideas on the design of processes and procedures
- Good examples on using web pages.

- Recommend looking at if you are developing or revising your Process and Procedure manuals

Overview of the CMM-I

- Most of what I attended was on CMM-I
- CMM-I – what am I
 - Made up of three models
 - » SW CMM V2.0 draft C
 - » EIA 731 (systems engineering)
 - » IPD CMM (IPD) V0.9a
 - CMM-I version 0.2 was released on August 30th
 - » For public review and comments
 - » One year review cycle - want comments
 - » Publish in 2000
 - » In both Continuous and Staged Models

Overview of the CMM-I - cont.....

- Status of the Current SW CMM Version 1.1
 - Still the official version
 - Will not release version 2.0 Draft C
- Will support SW CMM Version 1.1 for two years (2001)
- OK, now what does this all mean???
 - After 2 years SEI will address support of SW CMM
 - SEI may **NOT** support SW CMM Version 1.1 if there is no interest
 - SEI may improve or update the SW CMM if there is interest

Overview of the CMM-I - cont.

- Defining Process Levels - CMM or CMM-I, that is the question?
 - This will depend on which model is being used to assess the level of maturity
 - Will have to specify by model
 - » Level 3 SW CMM or Level 3 CMM-I
- The Assessor Community
 - Very sensitive to this issue
 - Concerned about clients and changes
 - New Assessor Licensing Process
 - » By company and assessor

Overview of the CMM-I - cont.

- Structure and Changes to Levels
 - Key Process Areas are now Process Areas
 - They are trying to generalize the CMM-I so more industries can use it.
- The word “Software” was removed from the titles of many practices
 - They used “medical” or “rubber” in place of software
- Staged and continuous models – briefing examples were always staged
 - Staged being Levels 1-5
 - Continuous is following a process

CMM-I Model

- CMM-I briefings covered the Staged Model
- Still has the 5 levels but some name changes
 - Level 1 – Initial
 - Level 2 – Managed (basic program management)
 - Level 3 – Defined (process standardization)
 - Level 4 – Quantitatively managed
 - Level 5 - Optimizing

Maturity Level 2 – Managed (Repeatable)

- The process is now Managed instead of Repeatable
- Includes the following Process Areas
 - Requirements Management
 - Project Planning
 - Project Monitoring and Control
 - Measurement and Analysis
 - Process and Product Quality Assurance
 - Configuration Management
 - Data Management
 - Supplier Agreement

Maturity Level 3 – Defined

- Builds on the foundation of level 2 - Proactive
- The Organization has a standard process, which individual projects tailor to their needs
- Includes the following Process Areas
 - Customer Requirements
 - Technical Solution
 - Product Verification
 - Validation
 - Decision Analysis and Resolution
 - Organizational Process Definition
 - Organizational Training
 - Integrated Project Management
 - Risk Management
 - Product Integration

Maturity Level 4 – Quantitatively Managed

- Quantitatively Managed was Managed
 - Process is measured and controlled
 - Performance of the defined process is stable and predictable within the quantified observed bounds
 - Management has an objective basis for making decisions to achieve established product quality, service quality and process performance goals.
 - SEI reviewed Companies with level 4 processes in place
- Includes the following Process Areas
 - Organizational Process Performance
 - Quantitative Management of Quality and Process

Maturity Level 5 – Optimizing(Optimizing)

- Optimizing
 - Focus on process improvement
 - Both defined processes and organization's set of standards processes are targets of the improvement activities
 - Quantitative process improvement goals for the organization are established and continually revised to reflect changing business objectives.
- Includes the following Process Areas
 - Causal Analysis and Resolution
 - Organizational Process Technology Innovation
 - Process Innovation Deployment

Process Areas Structure - Staged Model

- Practices under Process Areas
 - Goals
 - Commitment to Perform
 - Ability to perform
 - Activities to Perform
 - Directing Implementation
 - » Old Measurement and Analysis
 - Verify Implementation

Process Areas Structure - Staged Model -cont...

- Goals
 - » High Level statement
- Commitment to Perform
 - » practices typically concerning policies and leadership
- Ability to perform
 - » practices concerning resources, organizational structure and training
- Directing Implementation
 - » practices typically concerning performance management and control of the activities performed

Process Areas Structure - Staged Model -cont...

- Verify Implementation
 - Practices that satisfy the plans, policies, requirements, and standards
 - requires that the implemented process and work products meet standards and requirements
- Activities to Perform
 - Specific practices
 - any step that will contribute to the achievement of a goal

CMM-I – Main Focus

- The SEI wants input from the reader and user audience
 - There are two volumes to each model
 - Two models, staged and continuous

- Download and review

- <http://www.sei.cmu.edu/cmm/cmms/cmms.integration.html> – CMM-I

- The intent is that the CMM-I will replace the SW CMM v1.1

FAA's i-CMM

- 1996 FAA was using 3 models (SA, SW, SE CMM)
- Problems with inconsistencies and inefficiencies
- Developed the i-CMM – Integrated CMM in 1997
 - Developed with SW CMM v1.1, SE CMM, P CMM
 - It is the FAA's own model, developed prior to CMM-I
 - They are using a staged approach, level 2, 3
 - Implementing throughout most of their offices
- Curious note: The FAA was on the CMM-I team.
- FAA plans to map CMM-I to their model
- <http://www.faa.gov/aio/iCMM/index2.html>

Conclusion

- General Political Climate
 - A lot of organizations have manuals and procedures on the shelf
 - » Common problem on how to implement to the user.
 - Implementation of CMM and its practices (staged or continuous)
 - The new CMM-I has everyone's attention, and **YES**, yet another model
- Implementation of Processes and Practices
 - By manuals or web – which is best
 - By tools – which tools and how
 - By staged or continuous methods – two sides of the house
 - Main Point: The key is knowing your organization and making the implementation of your processes fit

Resources

Web sites

- SEIR
 - <http://seir.sei.cmu.edu>
- SEI home page
 - <http://www.sei.cmu.edu>
- Document Guidelines
 - <http://epg.sei.cmu.edu/sym99tutorial/>
- CMM-I Models
 - <http://www.sei.cmu.edu/cmm/cmms/cmms.integration.html>
- FAA site
 - <http://www.faa.gov/aio/iCMM/index2.html>

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