Practical Software and Systems Measurement

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A foundation for objective project management

Systems Engineering Measurement Examples
AM Workshop
PSM TWG Meeting
25 February 2004

Chris Miller, INCOSE Measurement WG Chair
Objectives of the Workshop

- Share systems engineering measurement examples
- Share experiences using the PSM measurement specification template
- Capture existing systems engineering oriented measurement examples using the PSM Measurement Specifications template
Practical Software and Systems Measurement

Workshop

• Agenda
  - Overview of task (15 min)
    • History/Deliverables/ INCOSE-PSM interface
    • Prerequisites or bust!
  - Review activities completed in Portland, OR at INCOSE IW 2004 (30 min)
    • Draft measurement specifications (in progress)
  - Break out into writing teams to develop structured outline or first working draft
  - Wrap-up (15 min)
History

- Joint INCOSE MWG – PSM task
- Completed measurement specification examples will be posted on the PSM website
- Issues to date
  - Systems engineering measurement knowledge or experience
  - Working knowledge of measurement specifications template and ISO 15939 terminology
Intended Output - Deliverables

• Draft systems engineering measurement specifications

• Alternative outputs: (if prerequisites not met)
  - Working knowledge of measurement specification template
  - Knowledge of systems engineering measurement
Current authoring assignments

• Rita Creel
• Weight – Ron Kohl
• Reliability – Chris Miller
• Requirements Volatility - Phil Richard
• Risk – Barney Roberts/Dick Kitterman
• Paper Quality - Eileen Pimentel
• ??? - Dorothy McKinney
• Defects – Chris Miller
**Practical Software and Systems Measurement**

**Measurement Construct Example**

**Information Needs**

- Systems Engineering performance – documentation quality?

**Derived Measure**

0.5 > Organization average of 0.3 defects per page

- Compare defect density to organizational data
- Interpretation

**Model**

- Divide (defects per page)
- 0.5 defects per page

**Function**

- Derived Measure

**Base Measure**

- Method
  - Count only technical pages
  - 100 pages reviewed

- Method
  - Count only bullets in minutes
  - 50 defects found

**Entities**

- Defects per peer review
- Attribute

- Pages reviewed

**Source:** Adapted from ISO/IEC 15939, Software Measurement Process Framework
Workshop Summary

• Systems engineering measurement, discussion
  - Only a few individuals had systems engineering measurement experience/knowledge
  - Experiences and examples of handling systems engineering were shared
  - Group decided to focus on measures that could be common (apply to both software or systems engineering)
Workshop Summary

• New authoring assignments
  - Functions Integrated – Ray Grossman
  - Customer Complaint Resolution Time – Virginia Slavin
  - Analysis Reports Acceptance Rate – Duane Tant
  - Slack time/Management Reserve - Don Metheny
Workshop Summary

- Workshop experiences/lessons learned while drafting the measurement examples
  - Very important to have a clear understanding of the information need
  - Spent a lot of time obtaining agreement on information need without a ‘real’ decision maker present
  - Often there are multiple, yet related information needs; working these at the same time helps define a more unified set of base and derived measures
Workshop Summary

• Workshop experiences/lessons learned while drafting the measurement examples
  - Refinement of the measurement specifications is very iterative; usually starting with generation of the leading indicator
  - Experience using the measurement specification template and a working knowledge of ISO 15939 terminology is critical
  • Having a facilitator really helped
Workshop Summary

• Workshop experiences/lessons learned while drafting the measurement examples
  - Experienced authors agreed that obtaining a draft measurement specification takes a minimum of 40 hours

• Workshop deliverables
  - 4 new measurement specifications in the queue
  - Practiced using the template
  - Participants found workshop to be valuable
Next Steps

• Authoring assignments will be tracked by PSM Project Manager (Cheryl Jones)
• Authors agreed to have their drafts completed before this summer’s Users Group Conference
• Another workshop will be held at the Users Group conference

Thanks to all who participated!