Practical Software and Systems Measurement

A foundation for objective project management

PSM

Systems Engineering Measurement Examples

AM Workshop
PSM TWG Meeting
25 February 2004

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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*

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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*
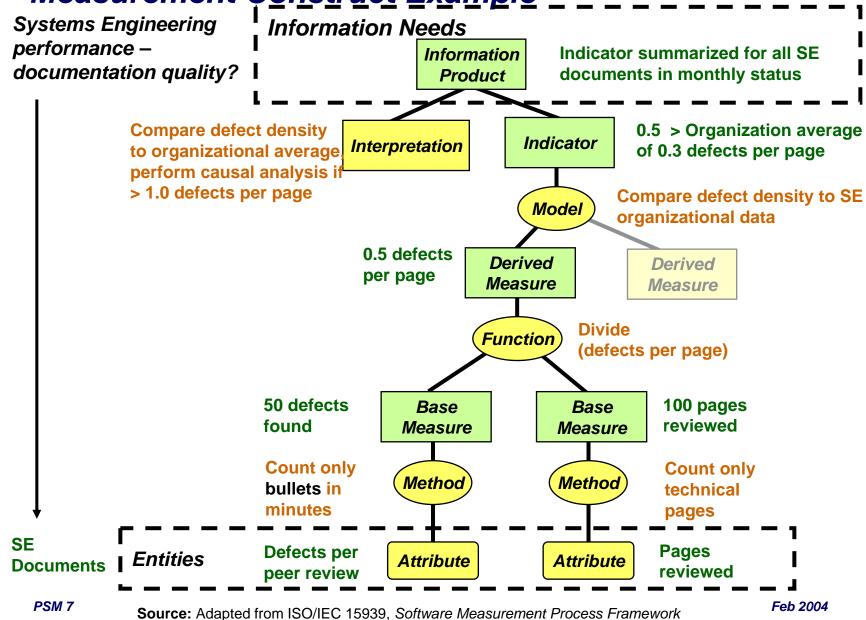
Intended Output - Deliverables

- *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*

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Measurement Construct Example

Systems Engineering performance – documentation quality?

Information Needs

Information Product

Indicator summarized for all SE documents in monthly status

Compare defect density to organizational average, perform causal analysis if > 1.0 defects per page

Interpretation

Indicator

0.5 > Organization average of 0.3 defects per page

Model

Compare defect density to SE organizational data

0.5 defects per page

Derived Measure

Derived Measure

Function

Divide (defects per page)

50 defects found

Base Measure

Base Measure

100 pages reviewed

Count only **bullets in** minutes

Method

Method

Count only technical pages

SE Documents

Entities

Defects per peer review

Attribute

Attribute

Pages reviewed

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

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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)*

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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*

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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!