Practical Software and Systems Measurement

A foundation for objective project management

COSYSMO and Beyond Using, Improving and Extending COSYSMO Wed-Thurs (7/26-7/27)

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PSM Users Group Conference
24-28 July 2006
Vail, Colorado

COSYSMO: Current Experience and Beyond

Using, Improving, Extending COSYSMO

- The COSYSMO Dissertation was defended and published in 2005
- Numerous contractors and government agencies have started to explore what COSYSMO means to them
- Commercial and non-commercial implementations of COSYSMO are starting to make their presence known

Objectives of the Workshop

- ***Explore and review the experiences of the COSYSMO user community, including academia***
- ***Collect Lessons Learned***
- ***Identify model deficiencies and improvements***
- ***Identify model extensions needed by the user community***
- ***Establish a process for communicating problems and future enhancements, including an ongoing user group forum***
- ***Create a COSYSMO Roadmap***

COSYSMO and Beyond – Day 1

- Wednesday, July 26
  - 2:15 – 3:45
    - COSYSMO Usability Survey (30 minutes)
    - Addressing Reuse (30 minutes)
    - Risk Extensions (30 minutes)
  - 3:45 – 4:00 Break
  - 4:00 – 5:30
    - Process for Communication / User Forum (30 minutes)
    - Deployment Experiences (60 minutes)
      Lockheed-Martin
      Raytheon
      BAE
      SAIC
      General Dynamics
      Northrop Grumman
    - SystemStar (15 minutes)
    - Homework Assignment – handout COSYSMO User's Manual

COSYSMO and Beyond – Day 2

- Thursday, July 27
  - 8:30 – 10:00 AM
    - COSYSMO Users Manual Review (45 minutes)
    - COSYSMO Website architecture and content (45 minutes)
  - 10:00 – 10:30 Break
  - 10:30 – 12:00
    - Observed Deficiencies (30 minutes)
      Schedule Compression
    - Lessons Learned (30 minutes)
      Schedule Compression
    - Improvement Opportunities (15 minutes)
    - Future Academic Pursuits (15 minutes)

Summary of Past PSM Workshops

- ***2002: 13 participants***
  - ***Presented Delphi Round 1 results***
  - ***Converged on scope of COSYSMO-Information Processing***
  - ***Developed COSYSMO evolution path***
- ***2003: 23 participants***
  - ***Performed Delphi Round 2***
  - ***Incorporated ISO 15288***
  - ***Converged on difference between size & cost drivers***
  - ***Don Reifer presented COSYSMO-Trade Study***
- ***2004: 27 participants***
  - ***Performed Delphi Round 3***
  - ***Addressed sizing issues via FAA ERAM***
  - ***Had 11 data points from Raytheon, BAE Systems, and General Dynamics***
  - ***Gary Thomas presented myCOSYSMO and two case studies: Albatross & Goony Bird***
- ***2005: 25 participants***
  - ***Industry calibration results – 42 data points***
  - ***Opportunities for improvement (vagueness of definitions, maintenance phase estimation)***
  - ***COSYSMO Implementations***

Intended Output

- Lessons Learned from model deployment
- Recommendations for model improvement
- Recommendations for model extension
- Recommendations for changes to the User's Guide or other documentation
- A Process for communicating problems and future enhancements, including an ongoing user group forum
- COSYSMO Roadmap

Workshop Participants

- John Rieff – Raytheon
- Stacy Gore – Raytheon
- Mark Smith – Raytheon
- Quentin Redman – Raytheon
- George Stratton – Raytheon
- Bill Marksteiner – Raytheon
- Paul Wojtaszek - Raytheon
- Garry Roedler – Lockheed
- Patrice Roseland – Lockheed
- John Gaffney - Lockheed
- Chris Miller - SSCI
- Taki Turner – Boeing
- Elzabeth O'Donnell – Boeing
- Betsy Legg – Tecolote Research
- Timmie McArthur – Aerospace
- Jeremy Gnanayutham – L3 COM IS
- Susan Stefanec – Softstar Systems
- Denton Tarbet - Galorath

Restatement of Objectives

- Explore and review the experiences of the COSYSMO user community, including academia
- Collect Lessons Learned
- Identify model deficiencies and improvements
- Identify model extensions needed by the user community
- Establish a process for communicating problems and future enhancements, including an ongoing user group forum
- Create a COSYSMO Roadmap

Workshop Results - 1

- COSYSMO Usability Survey
  - Reviewed the survey that will be part of a PhD research project
  - Solicited feedback of survey instrument from attendees
- Reuse
  - Identified an approach to incorporate reuse as part the counting aspect of the size drivers
  - Created a framework recommendation for submittal

Workshop Results - 2

- COSYSMO and Risk
  - Walked through an approach how risk and uncertainty can be incorporated into the size and cost drivers
  - Reviewed an add-on to the academicCOSYSMO Tool
- Created a framework for future communications
  - Face-to-Face meetings
  - Website architecture
    - Bulletin Board
    - Library of tools, papers, and presentations for download
    - FAQ's
    - Calendar
    - Links
    - Ask Dr. COSYSMO
  - Trouble Report submittals
  - Feature/Enhancement recommendations
  - "Voting"/Prioritization methodology

Workshop Results - 3

- Deployment Experiences
  - Diverse company population; Similar experiences
  - Deploying COSYSMO as a 2nd opinions
  - Data collection is being performed in order to facilitate a local calibration
  - Creating a Rosetta Stone in order to map between the COSYSMO WBS and WBS used by programs
  - Identified deficiencies and lessons learned during deployment
  - Captured obstalces encountered during deployments

Workshop Results - 4

- Demonstrated a commercial implementation of the COSYSMO model
  - SystemStar from SoftStar Systems
  - Calico for tool calibration
- Reviewed COSYSMO User Manual
  - Captured comments on 50% of document
  - Distributed softcopy for review comment completion

Workshop Results - 5

- Captured and prioritized model improvement opportunities
  - Update Users Manual for clarity and completeness; e.g., lack of clear definitions of complexity factors (easy, nominal, difficult) (0)
    - Must be part of user manual release
    - See commented version of Users Manual
  - Ability to address reuse (1)
  - Ability to estimate a partial set of the SE activities (2)
  - Ability to estimate a partial life cycle (2)
  - Ability to address a range of estimates based on risk (3)
  - Ability to do effort distribution (4)
  - Lack of schedule compression insight (4)
  - An industry calibration report should be produced annually – when enough data is available provide calibration by industry domain/segment (possibly other stratification) (5)
    - Note: Talk to Dan Galorath or Karen McRitchie about what they are doing with Scatter plots
  - Annual review and refinement of the viewpoints (5)
  - Allow user defined number of hours in a person month (6)
  - Model should provide results in hours and person-months (6)
  - Define an exponent calibration process (7)

Summary

- Reviewed experiences with COSYSMO deployments
- Captured a set of deficiencies and lessons learned from deployment experiences
- Established a framework for future communications
- Reviewed a commercial application of COSYSMO
- Reviewed the next academic pursuit involving COSYSMO
- Captured and prioritized a set of improvement opportunities

Next Steps/Action Items

- Communicate results of the workshop to COSYSMO custodian
- Build the website
- Initiate incorporation of improvement recommendations
- Plan November Face-to-Face meeting in Herdon, VA