



INCOSE MBSE Initiative

Methodology and Metrics Activity Breakout Session

Outbrief

31 January 2011



Breakout Summary

- Number of participants: ~25-30 (23 on sign-up sheet)
- Reviewed breakout agenda
- Shared standard breakout questions (next slides)
- Outstanding talk and video demo from G. Oswalds on “Using Simulation and Visualization to support MBSE”
 - Application of Harmony-SE tying in Visualization
- Broke into open discussion surrounding standard questions and general feedback on topics of Methodology and Metrics



Participant Feedback IW11

[Methodology (1/1)]

- “Make or buy”?
 - Consensus centers around **tailoring** candidate methodologies
 - Questions emerge such as “how do we tailor” a methodology? Where do we start?
 - Suggest review of current SE practices, many of which have developed over dozens of years in an organization
 - Try and answer how to meet the spirit of existing /proven techniques in a model-based or model-driven context?
- Some methodologies better suited to certain domains – truth or myth? Experiences with hybrid approaches
- In some cases, external constraints may drive use or limit selection of methodologies
- Should methodology selection be risk-driven? (Apply risk-driven approach to selection)



Breakout Agenda for IW11 [Methodologies (2/2)]

- Suggestion for INCOSE to reach out to academia and frame as a study problem
- How do we create incremental steps toward deploying a methodology? And measure progress along the way? Perception exists that it is “all or nothing”
- Need to answer how you plan to grow a methodology within an organization?
 - Requires organizations to identify a Process Owner to provide continuous stewardship of methodology and not just focus on process of selection of methodology, and then you’re done
- Metrics for success: Measure actual use of an adopted/tailored methodology(ies) or hybrid throughout the project lifecycle
- Applicable/Candidate Standards?
 - OMG Systems & Software Process Metamodel (SPEM) V2
 - Tool support: Eclipse EPF / IBM Rational Method Composer (RMC)
- Excellent interest level in contributing to this Activity Team:
 - Rick Steiner, JD Baker, David Long, Chris Hansen, Arno Granados, Channy Laux



Breakout Agenda for IW11 [Metrics(1/3)]

- Measure Architecture “goodness”/maturity throughout project lifecycle
- How do we know our design is any good? Completeness, elegance, maturity spec?
- Measure/quantify how MBSE helps to facilitate V&V earlier in the project lifecycle
- Measure of risk mitigation/closure
- Measure of system satisfying quality attributes
- Can we associate cost w/size of system model and estimate level of effort to complete?
- Measure learning curve, capital investment, lessons learned, obtaining feedback



Breakout Agenda for IW11 [Metrics(2/3)]

- Following MBSE adoption, use metric to monitor progress ?
- Measure MBSE progress as it is being applied, following adoption
- Need to identify high payoff metrics (prioritize), may be driven by stakeholder engagement, stakeholders with \$'s to quantify ROI
 - Types of metrics, e.g., tool metrics, process metrics, cost metrics, others?
- Measure adaptability of a particular methodology (related to Usability)
- Measure compression of timeline to field new systems using MBSE
- Measure learning curve, capital investment, lessons learned, obtaining feedback
- Measure introduction of errors throughout lifecycle process
- Measure reuse, payoff, reduced time-to-market of MBSE paradigm
- Measure cost of processing change requests



Breakout Agenda for IW11 [Metrics(3/3)]

- Measure amount of work or “design-in-process” to identify areas of priority and focus
 - Objective function to minimize flow rate of design-in-process
- Measure of model complexity
 - This is a “DARPA hard” problem
 - A lot of research in this area
- Measure completeness of work products throughout project lifecycle w/emphasis early in lifecycle
- Applicable/Candidate Standards?
 - ISO/IEC 27004, CMU CMMI, IEEE 1024 (software)
- Measure the quality/correctness of the models (margin, uncertainty, etc.)

Coordinate w/INCOSE Measurement WG



Backup



Breakout Agenda for IW11

- Kickoff w/brief introductions
- Jeff E. to introduce John W. as new Activity Lead following IW11
- Guest talk by Gundars Osvalds (Northrop Grumman) entitled “Using Simulation and Visualization to Support MBSE”; will include a video
- Jeff E. to briefly review content of Wiki
- Jeff E. to recap IW09 MBSE workshop breakout participant feedback to set stage for workshop interaction, dialog, and participation
 - Seeking active participation from MBSE Usability team from morning session
- Jeff E. and John W. to facilitate working dialog and capture notes
 - Need to make time for workshop dialog and solution ideas on Metrics (tool metrics, process metrics, other metrics?)
- Jeff E. and John W. to submit breakout notes to Sandy F. and Mark S. for incorporation into MBSE workshop outbrief



Methodologies Outbrief (IW09) (2/2)

- Participant Feedback (afternoon session)
 - Differentiate work product-centric methodologies from process-centric methodologies (R. Hodgson)
 - Review “X-model” (R. Hodgson)
 - Seek process element/ process pattern reuse
 - Role of governance
 - Do some methods work better in certain domains?
 - Enterprise modeling and instantiation (R. Griego)
- Response to recommendations:
 - Will need a great deal more participation from practitioners and other interested stakeholders to adopt these recommendations
 - This is A LOT of work
 - Best opportunity near-term is to stand-up public Wiki site for methodologist to post information about their particular methodologies
 - Possibly continue annual update of MBSE Methodology Survey (TBD)
 - Want to get out of annual “maintenance” business