Working Group Outbrief

Ground System Architectures Workshop

Session 11F

Model-Based Systems Engineering (MBSE) Approaches for Complex System Acquisition

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Session Goals

- Address growing trends of applying model-based engineering (MBE) in complex systems
- Open discussion on the needs and challenges for model-based engineering
  - Lessons learned for successes and challenges
  - Tool support and capabilities
  - Large-scale integration of MBE
  - Process issues with incorporating MBE
  - Model verification and validation
  - Modeling standards / practices
  - Experiences with automated code generation
  - Effects on cost and schedule
Ground System Architectures Workshop

Presenters/Panelists

• Open discussion led by co-chairs
• 22 attendees
  – Mix of Aerospace, government, contractors
Key Points

• Many facets of MBE
  – Software, systems, system of systems

• Must understand context of MBE adoption for each project

• New cost/schedule estimation techniques needed
  – Function points vs. SLOC count more appropriate for MBE
  – How do you estimate cost avoidance from rework that doesn’t happen?

• Tool support
  – Compliance with modeling language standards (SysML, UPDM, DoDAF)
  – Round-trip engineering capabilities
  – Interoperability

• Cross-discipline integration

• Education / training
  – Developers and stakeholders
  – Grass-roots sharing of best practices
Conclusions

- MBE has promise for managing increased complexity
  - Model must be treated as the primary artifact (and a deliverable)

- Open issues include
  - System-wide adoption of MBE
  - Integration with multiple engineering disciplines
  - Maintaining code/model consistency over time
  - Cost/schedule estimation
  - Configuration management
  - Verification and validation of models

- Collaboration across professional community needed
  - Capture lessons learned and advance best practices