Ground System Architectures Workshop

Session 11A
Model-Based Systems Engineering (MBSE) Approaches for Complex System Acquisition

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Session Goals

- Open discussion on application of model-based engineering (MBE)
MBSE shows great promise for ground systems
  - Helps to manage complexity (both product and process)
  - Enables early V&V
  - Improves analytical insight
  - Early discovery of requirement or architecture problems
  - Greater consistency
  - Better communication
  - Model is a single source of analyzable truth
  - Improves management of cross-cutting concerns
  - Facilitates decision-making with better enterprise context
• Acquisition policy and practice needs to evolve to incorporate models as primary artifact
  – Requirement Specification and CDRLs integrated with MBSE
    • Formats, standards, content, views, scripts, policy, contracts
    • Transition from textual requirements to models as requirements
• Human issues
  – Models can hide or emphasize factors based on human biases
  – MBSE not a “silver bullet” that can fix all bad SE practices
• Integrating enterprise, system, and software models not trivial
• A wide range of tools are being used for system modeling
  – But model interchange between tools is still poor
  – ESA studying non-UML-based approaches
• Tools have come a long way, but interoperability challenges remain
• Integration between levels is needed for best results
  – Enterprise ⇔ System ⇔ Software
• More effort needed to address acquirer-to-builder interface gap
• How do we incentivize programs to incorporate MBSE to improve the likelihood of successful outcomes?
  – Success stories needed to help close business case
    • Look for the “small wins” and copy them
    • Bring MBSE success stories to GSAW
• Can we take advantage of crowdsourcing opportunities to seek innovative approaches to addressing MBSE challenges?