Working Group Outbrief

Ground System Architectures Workshop

Session 11B
Achieving the Resilient Enterprise Through Model-Based Engineering

Ryan Noguchi and Robert Pettit IV,
The Aerospace Corporation
Session 11B

Session Goals

• Opportunities for Enabling the Resilient Enterprise through MBE
  – Anyone have experience with this?
    • Architecting, Acquisition, Development, Operations
  – How does MBE need to evolve to better do this?
• Open discussion on Model Based Systems Engineering and Model Based Software Engineering for Ground Systems
  – Case studies
  – Lessons learned
• Discussion of a Collaborative effort to develop a Ground System MBSE framework
  – Interest in sustained collaboration outside of GSAW?
• Prepare outbrief slides to brief to the plenary session tomorrow
• None; open group discussion
• 25 participants
• Multiple perspectives for achieving a resilient enterprise
  – Improving resilience of an individual system
    • More robust engineering of systems
  – Improving resilience at the enterprise level
    • More robust architecting of an enterprise to provide redundancy, agility, etc. across multiple systems
  – Improving resilience at the data layer
    • Common data formats improve interoperability, ability to adapt to system failures by using alternate systems
  – Improving resilience of systems engineering and other processes
    • Faster, more agile engineering change processes, etc.
    • Faster, better-informed decision-making, faster recovery
    • Improve ability to communicate with non-engineers
– Improving resilience of the workforce
  • Shared knowledge, less variation between individuals’ mental models
  • Cultural barriers, individuals afraid of losing “power” or being replaced by “more efficient” model-driven processes
  • Facilitate greater flexibility in downstream sustainment by reducing lock-in to the developer
– Improving resilience of software development
  • Software architecture modeling helps flush out disconnects
– Improving resilience of architecture
  • Functional layer is often the most robust and enduring
  • Serves as a good point of departure for exploring alternatives
• Presented a proposed collaborative project to develop a Ground System MBSE framework and library
  – Capture best-practices in system modeling
  – Facilitate model interoperability
  – Establish common language for communicating within our community

• Challenges include:
  – Establishing appropriate scope and level of detail to standardize
    • What’s in scope, what’s NOT in scope
  – Achieving consensus among a diverse group of stakeholders

• Interest in starting this collaboration
  – Tag onto INCOSE Space Systems Working Group
  – Anyone else interested in participating? Contact us