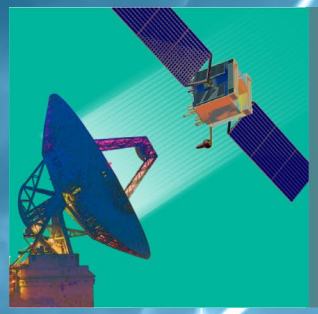
Working Group Session 11F Outbrief



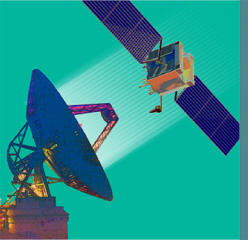
Ground System Architectures Workshop

Opportunities in Data Exploitation

March 2–5, 2020 | Renaissance Los Angeles Airport Hotel

Improving Data Exploitation for Engineers and Operators Through Model-Based Engineering

Leads:
Ryan Noguchi and Fredda Lerner,
The Aerospace Corporation



Ground System Architectures Workshop

Session Goals

- Open discussion on Model Based Engineering practices for ground systems
  - *Around the room*
  - *Experiences with MBE*
  - *Lessons learned and best practices*
  - *Research and development needs*
- How is MBE being used to improve our exploitation of data?
  - *Mission data (Users)*
  - *Telemetry (Operators)*
- How is MBE data being exploited to improve decision-making?
  - *Acquisition*
  - *Development*
  - *Operations*
- Needs and interest in model interoperability for MBE?

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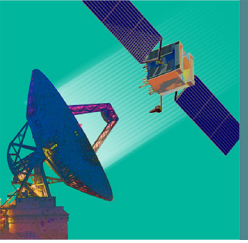

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Presenters/Panelists

- Ryan Noguchi, Aerospace Corporation
- Fredda Lerner, Aerospace Corporation
- Jon Paul Mozee, General Dynamics
- Kristian Mikalsen, Kongsberg Satellite Services
- Doug Ruby, L3 Harris
- Tim Allard, GDMS
- Hillary Armstrong, Sandia National Laboratories
- Jay Bugenhagen, ASRC/NASA
- Jared O'Quinn, Lockheed Martin
- Diogo Ribeiro, GMV
- Alvaro Ortiz, GMV

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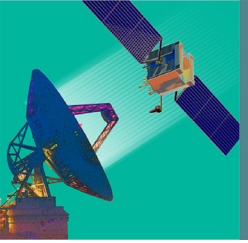

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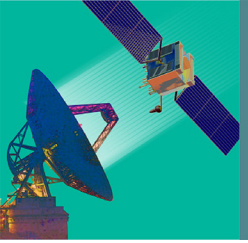
Key Points

- What does the acquirer want?
  - *Specifying Agile makes sense*
  - *Specifying MBE may not—how does the acquirer benefit from contractor doing MBE*
    - Benefit from models that answer the acquirer's questions.... which are…?
    - Benefit from improvements in the development process—problems solved/prevented
  - *Models that developers would build on their own accord may be very different than models that would answer acquirers' questions*



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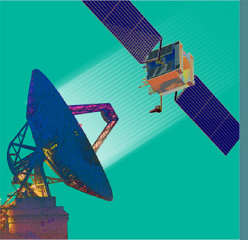
Key Points

- Pick the right tool for the job
  - *Models and modeling tools can be overly complicated*
  - *Lightweight tools often helpful in a fast-paced environment*
  - *Focus modeling effort to just build what's needed—Model with a purpose*
  - *How to reconcile the tension between agile and modeling?*
  - *Agile approach to building models works well*

- Models can be an excellent communication device
  - *Depends on the audience: engineers vs. program managers*
  - *Need to abstract models to communicate to stakeholders and non-systems-engineers*
  - *Model literacy—Provide training on SysML or other modeling languages being used*



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Key Points

- Key benefits of MBE
  - *Improved traceability*
  - *Reuse of models and data across life cycle*
  - *Consolidation of information between many disciplines, organizations in a single model*
  - *Keep historical data and models of paths not traversed—to enable us to revisit them and potentially reuse them*
  - *Track technical debt, identify low-hanging fruit*
  - *As-is enterprise/system modeling*
    - To serve as a point of departure for upgrade/replacement decision-making
    - To identify gaps and inconsistency in knowledge of the as-is
    - To support problem solving
- Model configuration management, branching/merging, NoMagic implementation
- Models as requirements
- Contracting with models as requirements, analogies with Agile

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