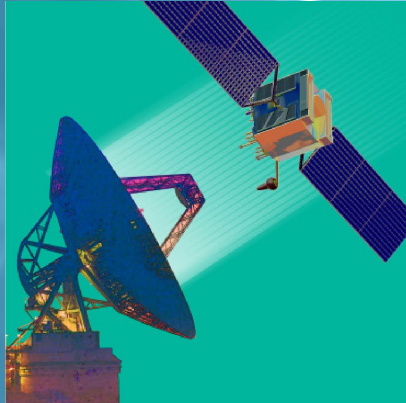


Ground System Architectures Workshop

Stronger Together: Improving Interoperability for Users and Operations
February 27-March 2, 2023

Welcome

March 2, 2023
11:00 PT



Ground System Architectures Workshop

Stronger Together: Improving Interoperability for Users and Operations
February 27-March 2, 2023

Working Group A: Space Enterprise Integration

Lori Gordon, Ron Birk, Barbara Braun
The Aerospace Corporation

February 27, 2023

Rules of Engagement

- This workshop is entirely **UNCLASSIFIED**



- This workshop will be **recorded** for note-taking purposes

Housekeeping Notes

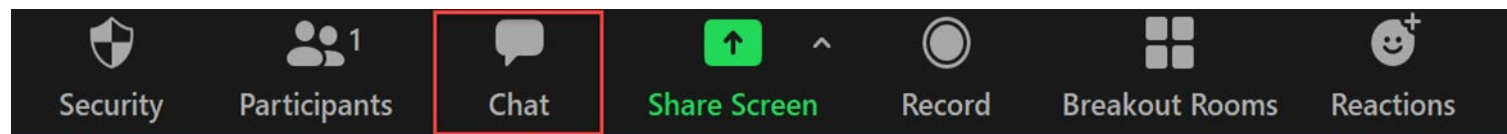
Reminders:

- *Please keep your mic on mute*
- *Use your full name (no nicknames) when logging into Zoom*
- *If you experience any Zoom issues, please refer to [Troubleshooting Tips](#) and [Join Zoom Meeting instructions](#) links found in the chat box.*

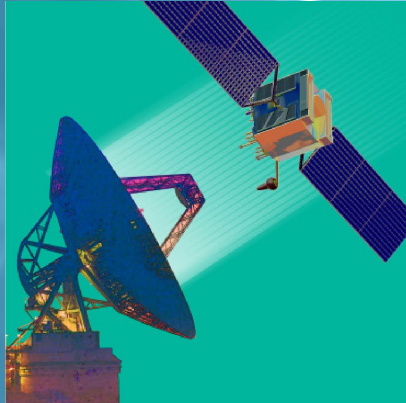
Attendees are encouraged to use the chat box for questions or comments:

- *The host, if time permits, may ask the speaker to answer questions, recap, or provide closing thoughts after their presentation is complete.*
- *The facilitators will help consolidate the questions entered through the chat box interface and deliver them to the speaker during the live Q&A session.*
- *Questions and comments should be professional, relevant, and related to the subject.*

Click on the Chat icon to:



- *Send questions/comments to everyone.*
- *You can also click on the **drop-down arrow** next to **Everyone** and select a particular individual to chat with privately.*



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This working group will address challenges and opportunities associated with Space Enterprise Integration for high profile use cases such as

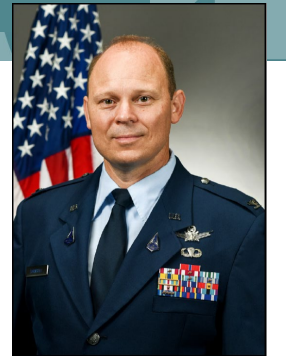
- Advancing Space Traffic Coordination (STC)
- Integrating Space for Advanced Battle Management System (ABMS)
- Developing the Cislunar Neighborhood

U.S. government agency panelists address high profile use cases:

- Colonel Wallace 'Rhett' Turnbull - Deputy Director, Space Systems Integration Office, Space Systems Command
- Scott Leonard – Technical Director, Office of Space Commerce
- Wes Fuhrman – Senior Professional Staff, Johns Hopkins University Applied Physics Laboratory

The workshop includes a leadership panel and a town hall.

Information @ link : [Working Group A – Ground System Architectures Workshop \(gsaw.org\)](https://www.gsaw.org)



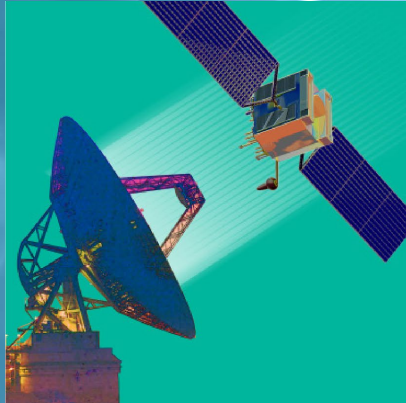
[Col Rhett Turnbull](#)



[Scott Leonard](#)



[Wes Fuhrman](#)



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The discussion will be framed around a '3x3' approach to assess each of these three Use Cases through three lenses to gain insight into how organizations conduct enterprise integration:

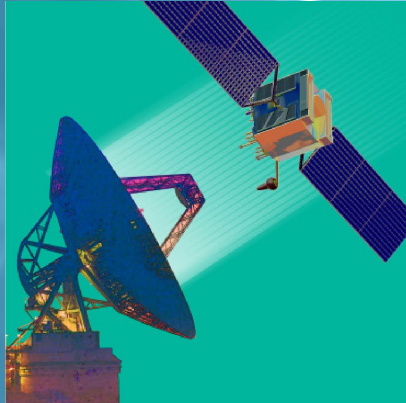
- Interoperability
- Tactics, Techniques, Procedures (TTPs)
- Threats

The working group session consists of two parts:

Part 1 will include a moderated panel session with presentations and discussions related to strategic foundational elements for space enterprise integration, outlining applicability to several use cases to advance U.S space capabilities in the national interest.

Part 2 will be a town hall meeting to include key representatives from government and private sector organizations sharing a common goal to advance space capabilities in the national interest.

Advancing understanding and best practices for enterprise integration



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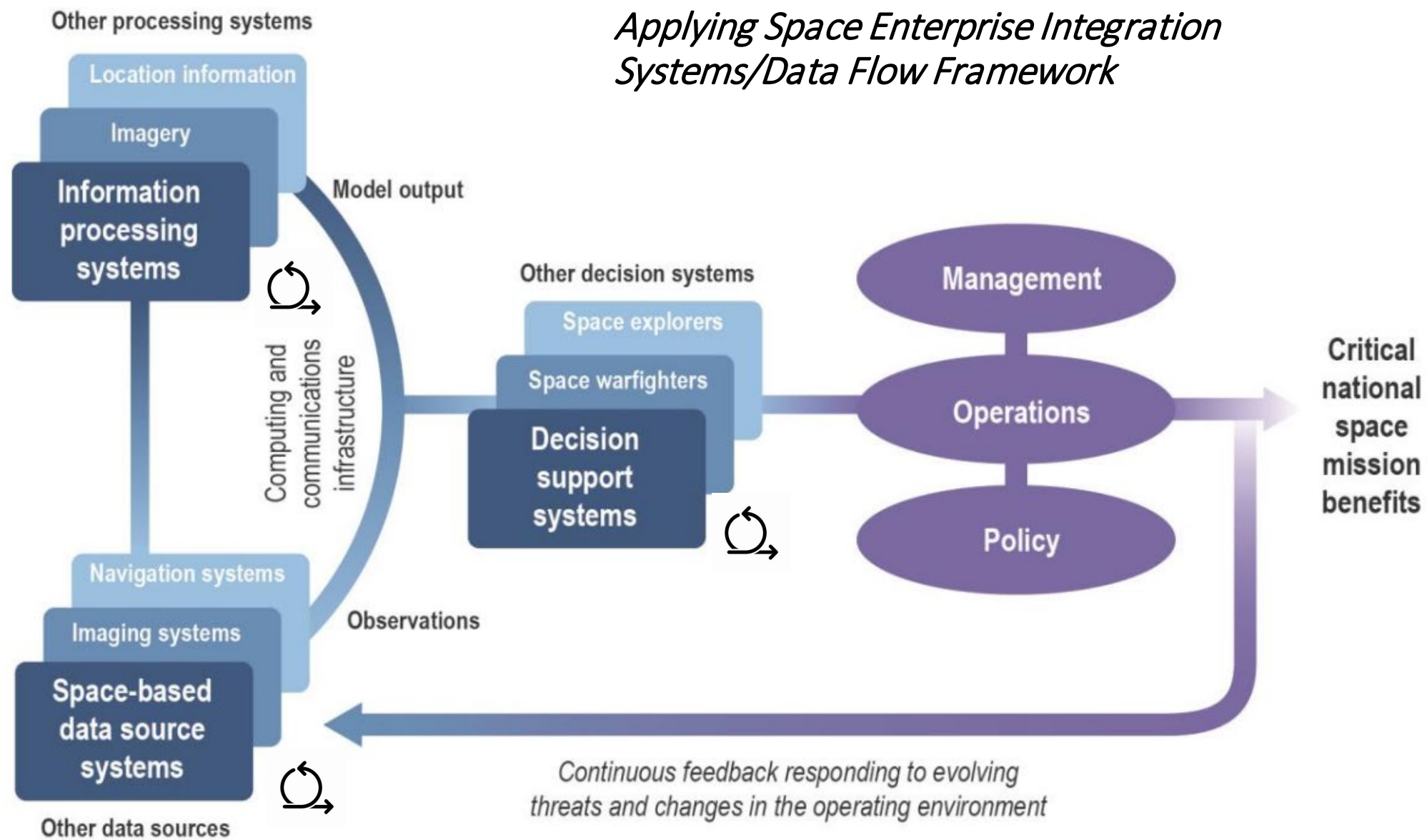
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***Space Enterprise Integration:**
structured process of coordinating across
stakeholders
to inform decisions
for assuring systems of systems operations
across the space enterprise
to deliver critical national benefits
in the face of evolving threats
and changing operating environments.*



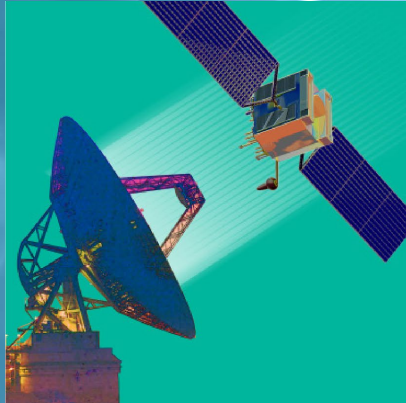
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Applying Space Enterprise Integration Systems/Data Flow Framework



 *Rapidly develop, deploy, evolve*

End-to-end integration of systems, data flows, decision processes across an enterprise to sustain operations



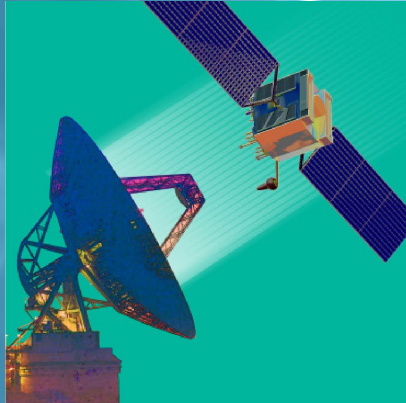
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Space Enterprise Integration: structured process to maintain up-to-date information to assure continuity of real-time operations of critical national space missions through horizontal and vertical integration of systems interconnections, data interchange, data product exchange, and distributed computing and communications environments across participating organizations in continuously changing operating environment with dynamically evolving threats and opportunities.^[1]

- Space Enterprise – all organizations contributing to space activities
- Participating organizations – stakeholders including owners, operators, developers
- Operations – spans life cycle from architecting to disposal
- Systems – anything or anyone who produces or processes information
- Data interchange – any mechanism for transferring data and/or information
- Data products exchange– information resulting from processing and/or manipulation
- Distributed computing – systems and services capable of processing and storing data

Adapted from community definition of “Enterprise Integration”



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Break

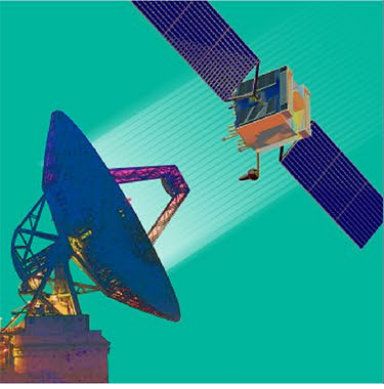


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Q & A



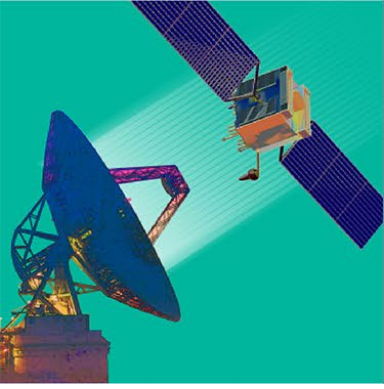


Enterprise Integration – Driving Questions & Bounding Scope

Considerations and Questions

- What problem or process are we, or should we, be trying to solve?
 - *Requirements, priorities, complexity, customers, frequency of execution, long term support tail?*
 - *What related processes are affected, replaced, or retired?*
 - *Is there an overarching strategy? Do we need one?*
 - *What is the desired end state, are there multiple paths to get there?*
- Thinking beyond current department, division, group, corporation, customers, ...
 - *Are there overlaps or commonalities with, or dependencies on, current solutions and processes?*
 - *Who are the affected stakeholders and what are their motivations?*
 - *How do they interact with the process/solution and each other?*
 - *Who are the subject matter experts and how do we integrate their knowledge and buy-in?*
 - *What opportunities and efficiencies does an enterprise solution present? What issues does it introduce?*
 - *What data is involved and how should it be captured, stored, reused, exploited?*
 - *Are there restrictions or constraints that will drive architectural changes?*
- What is the Space Enterprise Integration strategy?
 - *A single, shared solution? Multiple instances of a common solution? A framework that can be customized to support different stakeholder groups or missions?*

Establishing a “commonly understood and supported” scope is foundational

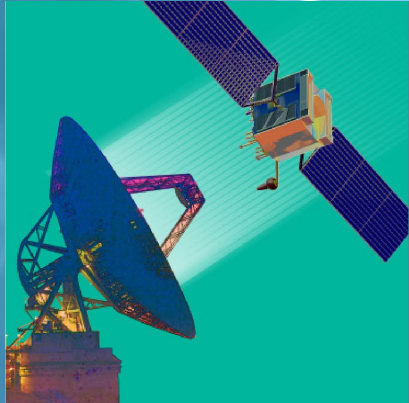


Enterprise Integration – Driving Questions & Bounding Scope

Considerations and Questions

- Identifying and evaluating threats, risks, constraints, and opportunities
 - *What are timing, resource, and supportability risks?*
 - *Are affected organizations ready to engage in a commonly understood and supported approach?*
 - *Are there key or recurring impediments to success and how are we addressing them?*
 - Conflicting priorities, lack of resources, lack of skill sets, internal resistance
 - *What is the strategy for transition to the enterprise solution and required organizational dynamics?*
 - Can transition be performed without excessive disruption to existing operations?
- Operational considerations
 - *Has the support tail been accounted for (or even considered?)*
 - *What is the operational plan? Is the solution or process secure, reliable, consistent, resilient, user friendly, efficient, cost effective, supportable, auditable, etc.? Is training required?*
 - *What does the RACI (Responsible, Accountable, Consulted, Informed) matrix look like?*
 - *Is there a way to report issues, request support, provide feedback, request improvements?*
 - *How will the system evolve? Be optimized? How are decisions made about system evolution?*
 - Does the planning cycle effectively identify updates or replacements?

Realizing a “commonly understood and supported” scope for EI is essential for realizing benefits



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Thank you