



## *Space Enterprise Integration Foundational Elements*

***Lori Gordon, Ron Birk, Barbara Braun  
Working Group Co-Chairs***

***March 2, 2022***

# *Ground System Architectures Workshop (GSAW)*

## *GSAW Working Group J: Space Enterprise Integration*

Lori Gordon, Barbara Braun and Ron Birk are coordinating a GSAW work session to be held on Wednesday March 2 from 11:00pm-1:30pm PT // 2:00pm-4:30pm ET.

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:

- Scott Leonard – Special Advisor to the Director, Office of Space Commerce
- Jeremy Leader – Deputy Director, Cross Mission Ground and Communications Enterprise, USSF
- Dr. David Spenser – The Aerospace Corporation

The workshop includes a leadership panel and a town hall.

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



Scott Leonard



Jeremy Leader



Dr. David Spenser



## ***Working Group Session Orientation***

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:

- Digital Integration (Digital Engineering, Digital Threads, Digital Twins)
- Operational Test (In-space Testbeds and Proving Grounds)
- Data Fusion (AI/ML, Authoritative Sources of Truth)

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***



## ***Brief Description of Enterprise Integration for Space-based Missions***

*Enabling distributed organizations to deliver “whole of government” solutions to national missions involving space systems*

***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.*

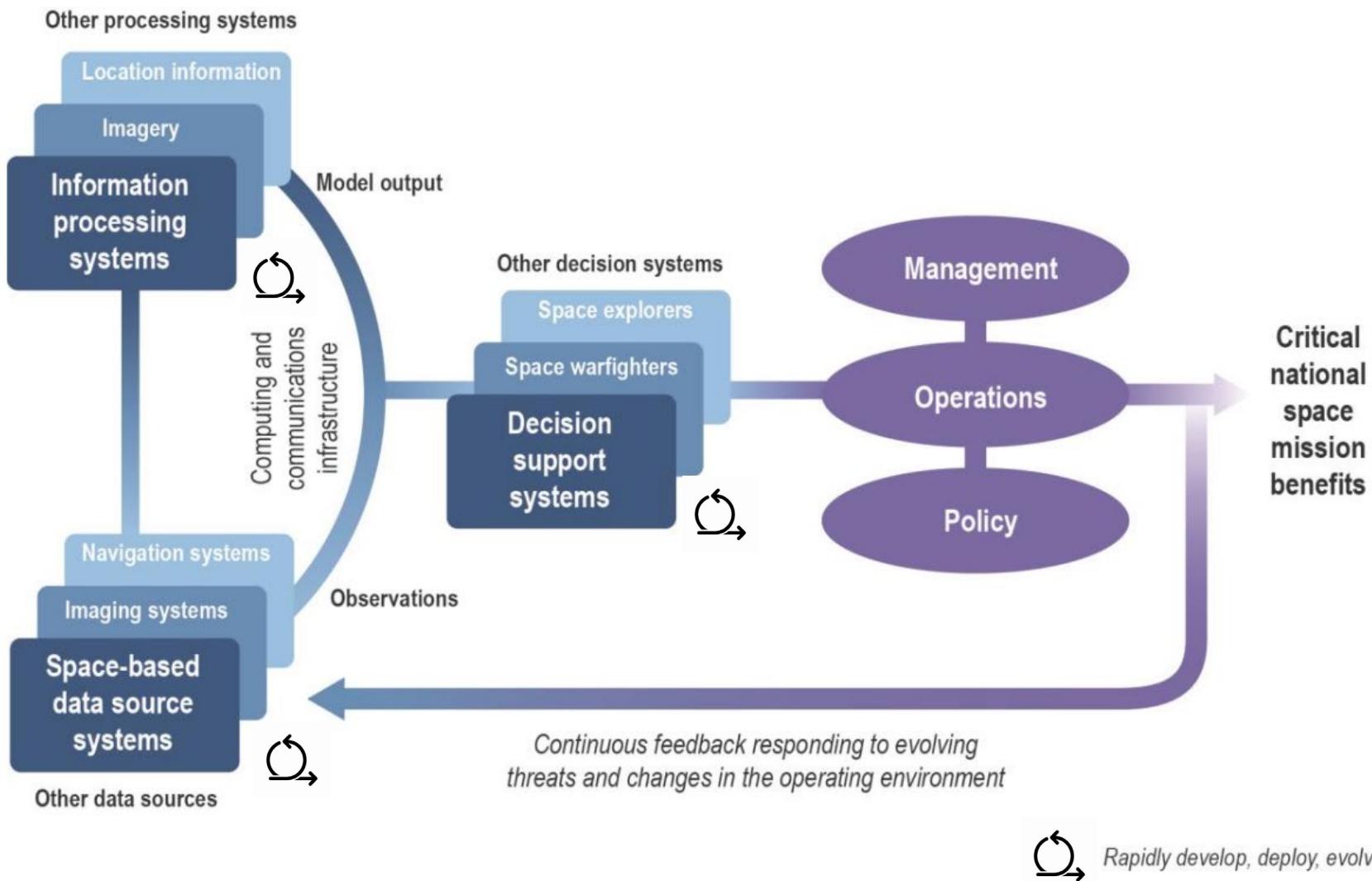
***OODA – Observe Orient Decide Act***

***TCPED – Tasking Collection Processing Exploitation Dissemination***



# Applying Space Enterprise Integration Systems/Data Flow Framework

Linking Ground and Space Data Source, Processing, and Decision Support Systems for Sustained Operations for National Missions



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



# Space Enterprise Integration Definition

*Integrating systems and information for decision support for operating a space enterprise*

**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.<sup>[1]</sup>

- *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”*