

JPDO NextGen EA Briefing

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Report Documentation Page

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Partners in the Next Generation Air Transportation System

Joint Planning and Development Office



- **Joint mission needs (capacity, security, defense, environment, safety, global harmonization) drive what we architect, engineer, resource, implement, and govern**
- **Today's architect requires a shift to Command, Control + Collaboration → Choices, Actions, Decisions**
- **All NextGen capabilities require information sharing via Net-Centric Operations**
- **Forge innovation through public/private/academic/research efforts**



Need for Collaboration and Federation

No “Cookbook” Approach

- Work from core, shared principles, framework, taxonomy and ground work in reality – needs of users and decision-makers.
- Focus on interoperability less integration and support common discoverable services, just enough standards, clear roles and responsibilities, rules of engagement, accountability, decision-making, and innovation opportunities.
- Adequately characterize the degree of collaborative interdependence to understand interoperability requirements, develop appropriate architecture, and design strategies that meet those challenges.

NextGen EA Federation Goals and Principles

EA Federation Goals:

- Facilitate cooperative decision-making across the NextGen partner and stakeholder communities and a common understanding of NextGen
- Detail the full spectrum of NextGen concepts and capabilities described in the NextGen ConOps using architecture descriptions and information
- Provide NextGen partners and stakeholders with a well-managed standard body of knowledge that is timely, relevant, and accessible
- Increase the agility, reuse, and interoperability of partner agency assets by leveraging existing architecture descriptions and/or artifacts



EA Federation Principles:

- Respect the diverse requirements of individual NextGen partner agencies and focus on the associations that cut across organizational boundaries, roles, and responsibilities
- Maximize the use of existing partner agency architecture descriptions and artifacts regardless of structure and format (i.e., not re-building architectures)
- Utilize a data-centric architecture approach rather than product-centric

By creating a federated environment, the JPDO can conduct interagency analysis (i.e., gap/overlap analysis)

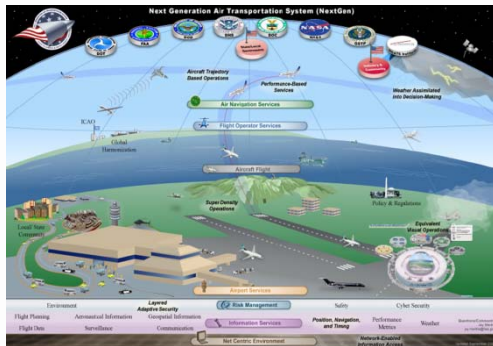
What is the NextGen EA?

It is the JPDO's method and tool to decompose and describe:

- NextGen concepts and capabilities
- Target operational and system architectures
- Improvements and enabling solutions

But to achieve the transformation will require...

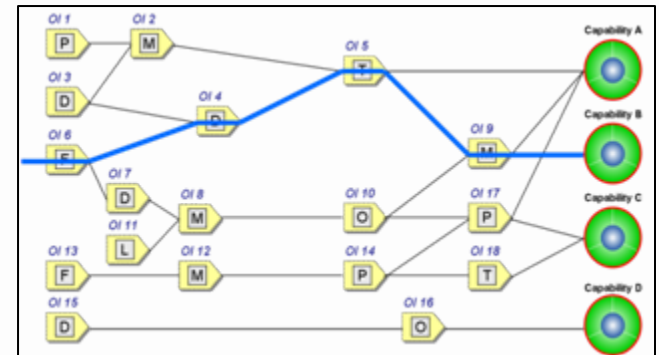
- New policies to create new behavior
- Modernization to prepare the infrastructure
- R&D to create new functionality



NextGen Concepts and Capabilities



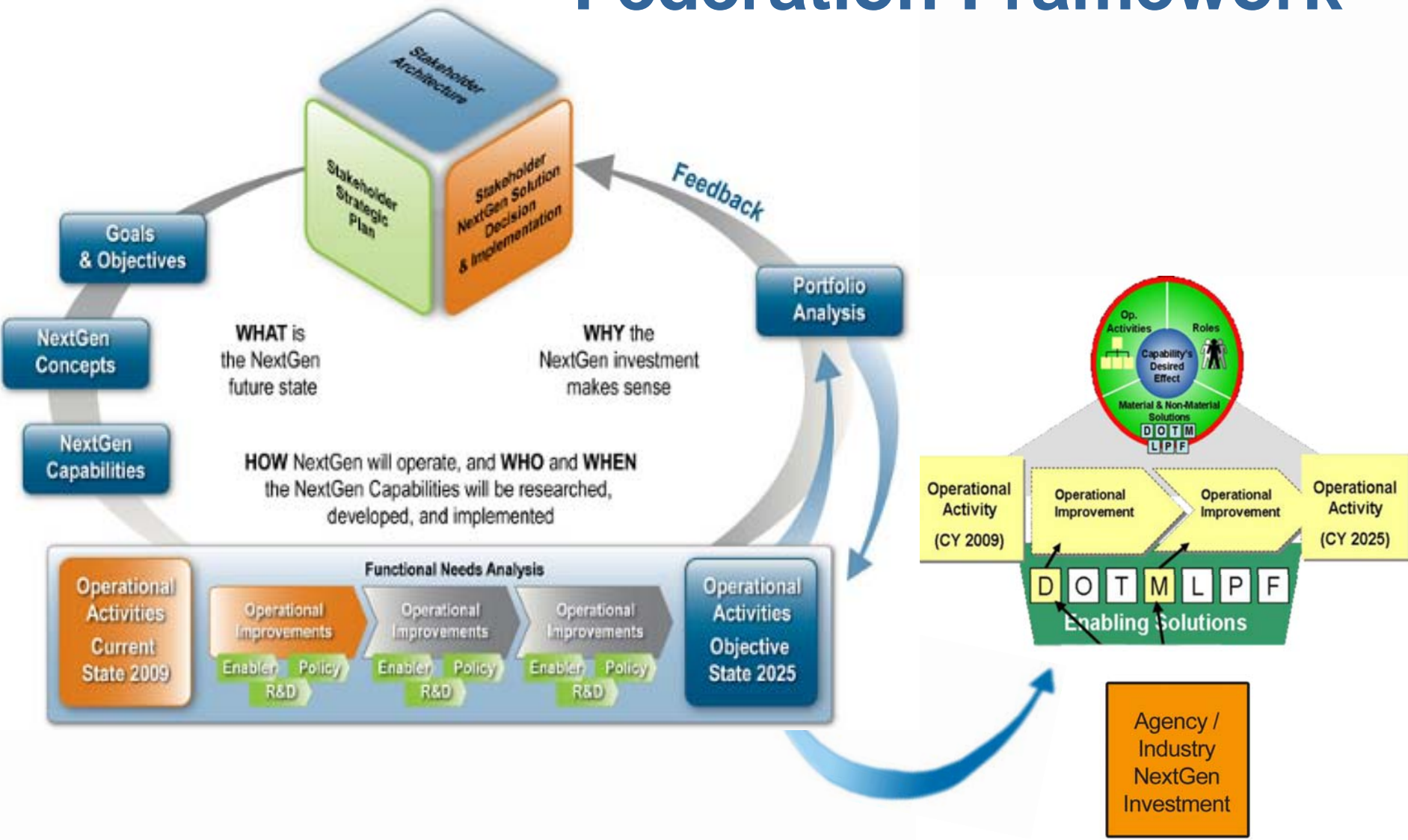
Target Operational and System Architectures



Operational Improvements and Enabling Solutions, Policies, and R&D

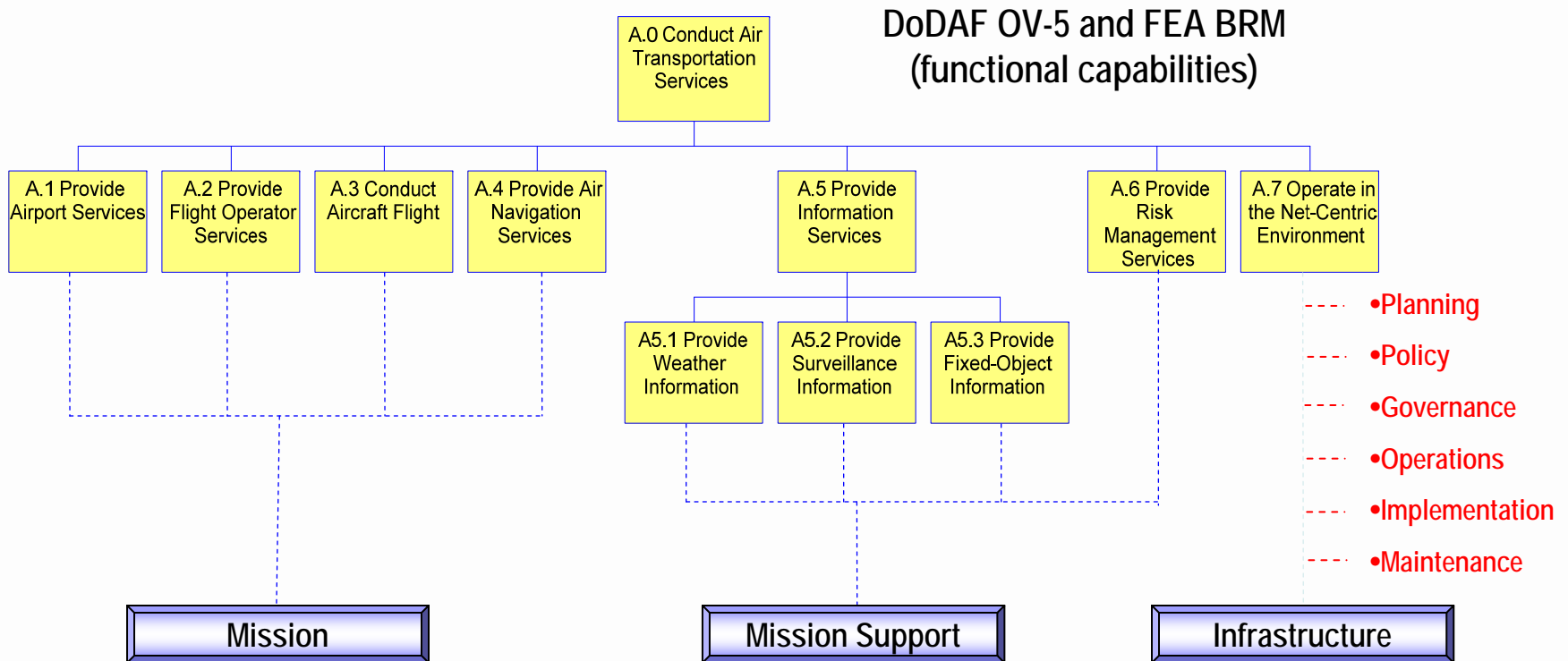
The NextGen EA goal is to articulate the 'curb-to-curb' transformation of air transportation...

Federation Framework



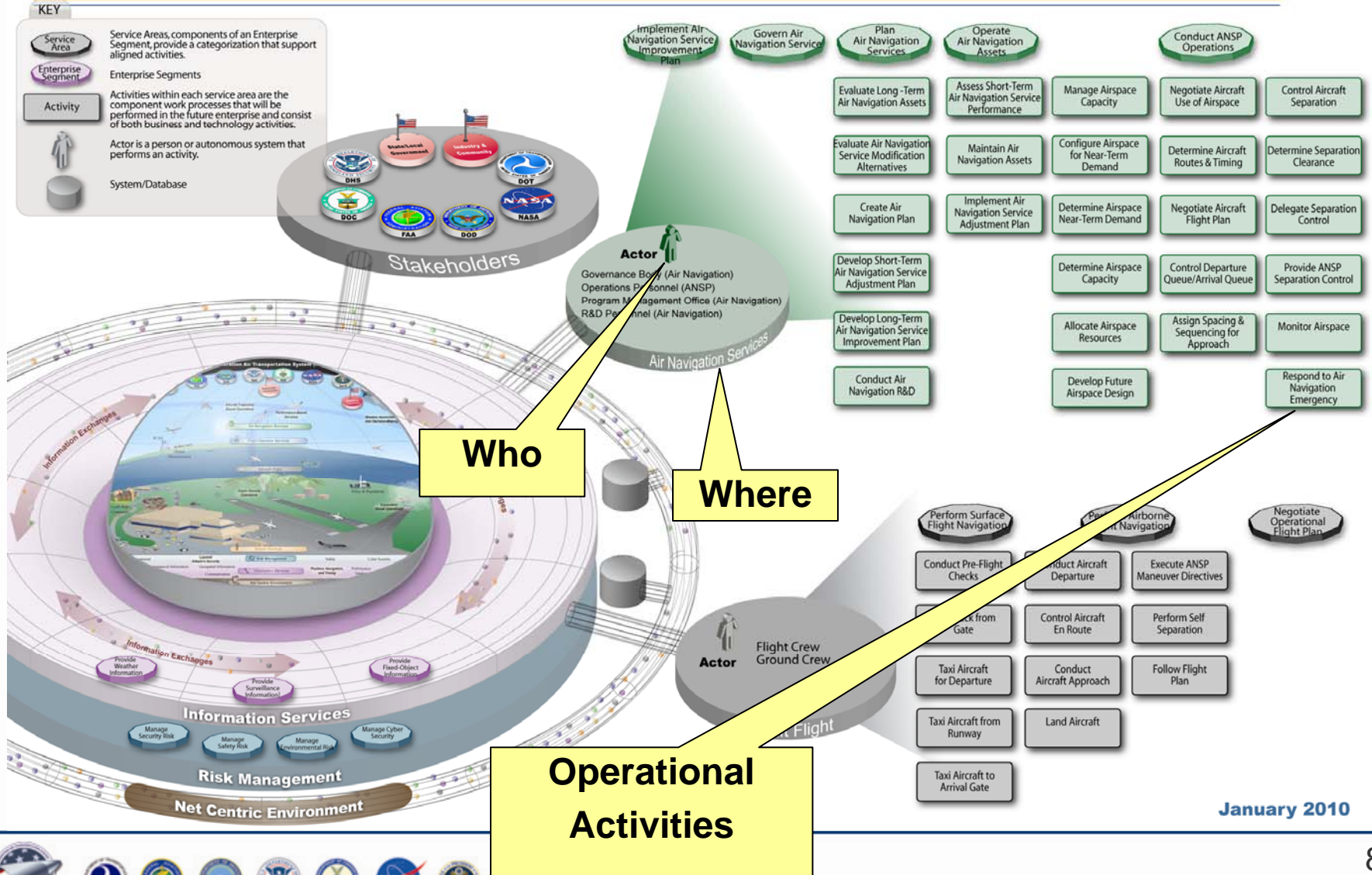
How is the NextGen EA Organized?

The NextGen EA is operationally focused and organized around Mission Areas, Mission Support, and Infrastructure.



Enterprise Architecture 2025

NextGen Community Model View - Air Navigation Services and Aircraft Control



January 2010



How is the NextGen EA Developed?

The NextGen EA's development methodology uses two industry frameworks (DoDAF and FEA) and is based on a collaborative, iterative approach, organized around capabilities that support the NextGen mission

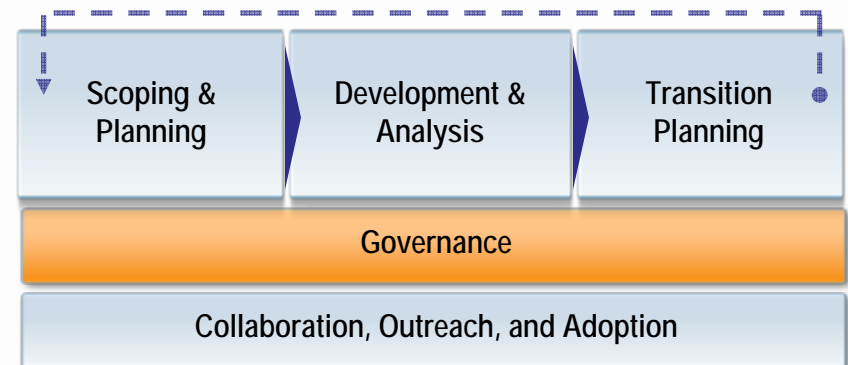
1. Iterative approach to developing and sustaining capability-based, mission segment architecture descriptions

- Define actionable plan for architecture development and integrated study team
- Develop and analyze a cohesive baseline and target architecture
- Develop transition plan aligned with the broader enterprise
- Translate outputs into terms decision-makers can act upon: implementation plan, business case, & briefings

2. End-to-end governance activities infused throughout

3. Continual collaboration, outreach, and adoption activities span the entire methodology

Mission Segment/Capability Architecture Development Methodology



- Concept Development
- Operational Scenarios
- Use Cases
- Information Exchange Requirements
- Supporting EA Views (OV and SV)
- IWP assessment

What Can I Find in the NextGen EA?

At the NextGen Enterprise Level...

DoDAF 1.5 Views

- Architecture Overview and Summary (AV-1)
- Integrated Dictionary (AV-2)
- Community Model (OV-1)
- Operational Node Connectivity Description (OV-2)
- Operational Information Exchange Matrix (OV-3)
- Operational Activity Decomposition (OV-5a)
- Operational Activity Flows (OV-5b)
- System Node Connectivity Description (SV-1)
- System to System Matrix (SV-3)
- Agency-specific Cross Reference Table (New)
- Integrated Work Plan (Transition Plan)

Data exists to create the following DoDAF 2.0 Viewpoints

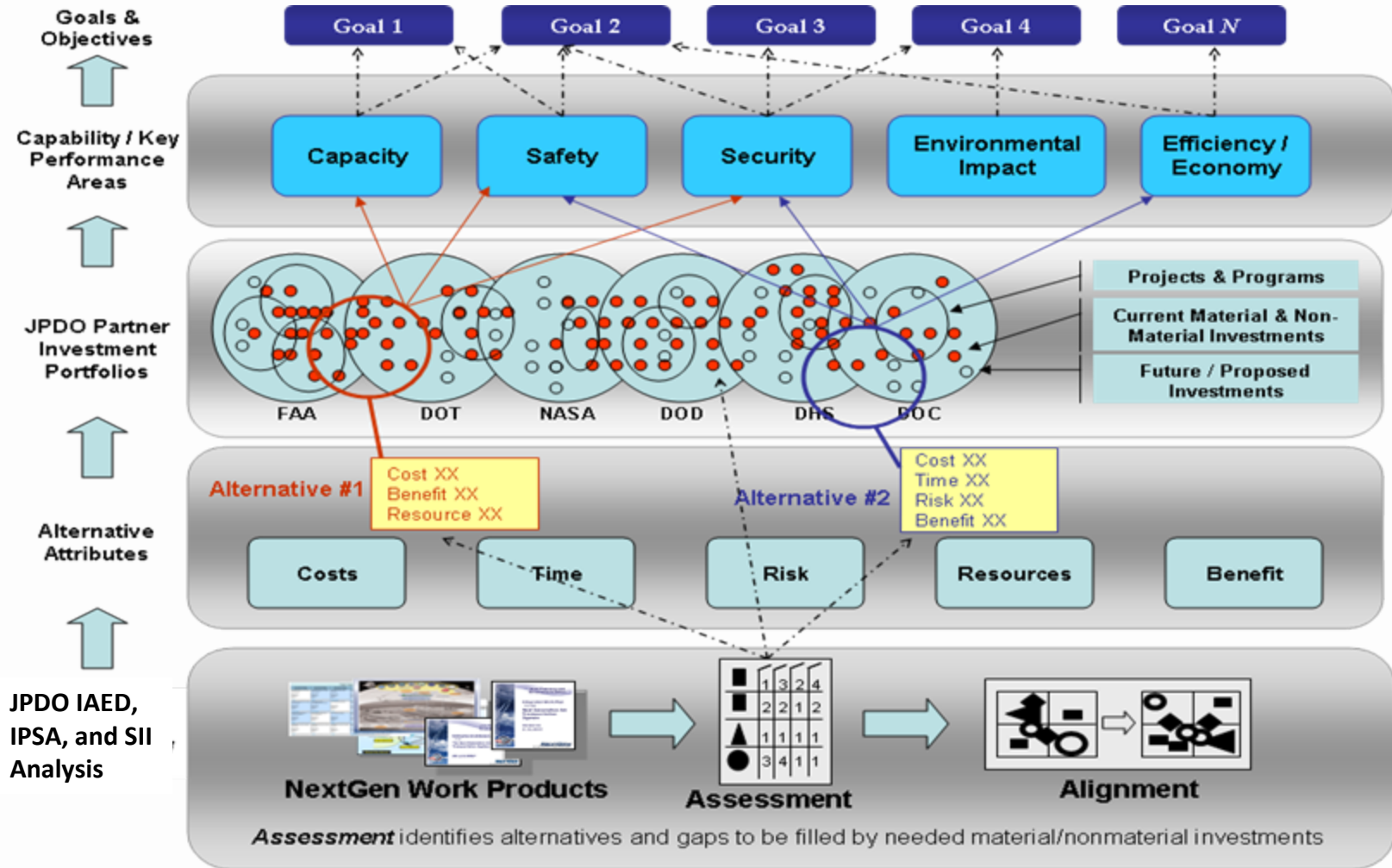
- Vision (CV-1)
- Capability Taxonomy (CV-2)
- Capability Phasing (CV-3)
- Capability Dependencies (CV-4)
- Capability to Organization Mapping (CV-5)
- Capability to Operational Activity (CV-6)
- Project Portfolio Relationships (PV-1)
- Project Timelines (PV-2)
- Project to Capability Mapping (PV-3)

And have the framework to capture the data to create other DoDAF 2.0 Viewpoints

At the NextGen Mission Segment / Capability Level...

	<u>Weather</u>	<u>Int. Surv.</u>	<u>TBO Study</u>
• Operational Node Connectivity Description (OV-2).....	X	X	In Progress
• Operational Information Exchange Matrix (OV-3)	X	X	In Progress
• Operational Scenarios & Use Cases (OV-6c)	X	X	In Progress
• System Node Connectivity Description (SV-1)	X	X	To Update
• System to System Matrix.....	X	X	To Update
• System Function Descriptions (SV-4)	X	X	To Update

Goal to Inform Decision-Making



What Can We Expect More of In Future?

- More attention to organizational and social architecture (non-material reqs.) in addition to operational and systems architecture
- Pull the pieces together ... collaboration, integrated architecture and engineering efforts fused into interagency experimentation efforts (public/private, academia, R&D, tests, prototypes, demos, etc.)



Fusion



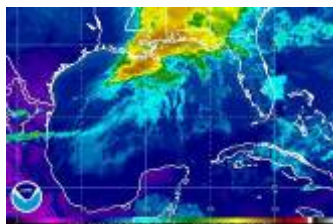
Key Interagency Strategic Initiatives



- **Integrated Surveillance**
 - Draft Concept of Operations and Architecture analysis completed
 - C2 Gap Filler multi-agency demonstration (DoD leadership) aligned
 - Governance options being prepared for SPC decision



- **Net-Centric Operations Information Exchange**
 - Multi-agency commitment to development
 - DoD leadership established and planning underway

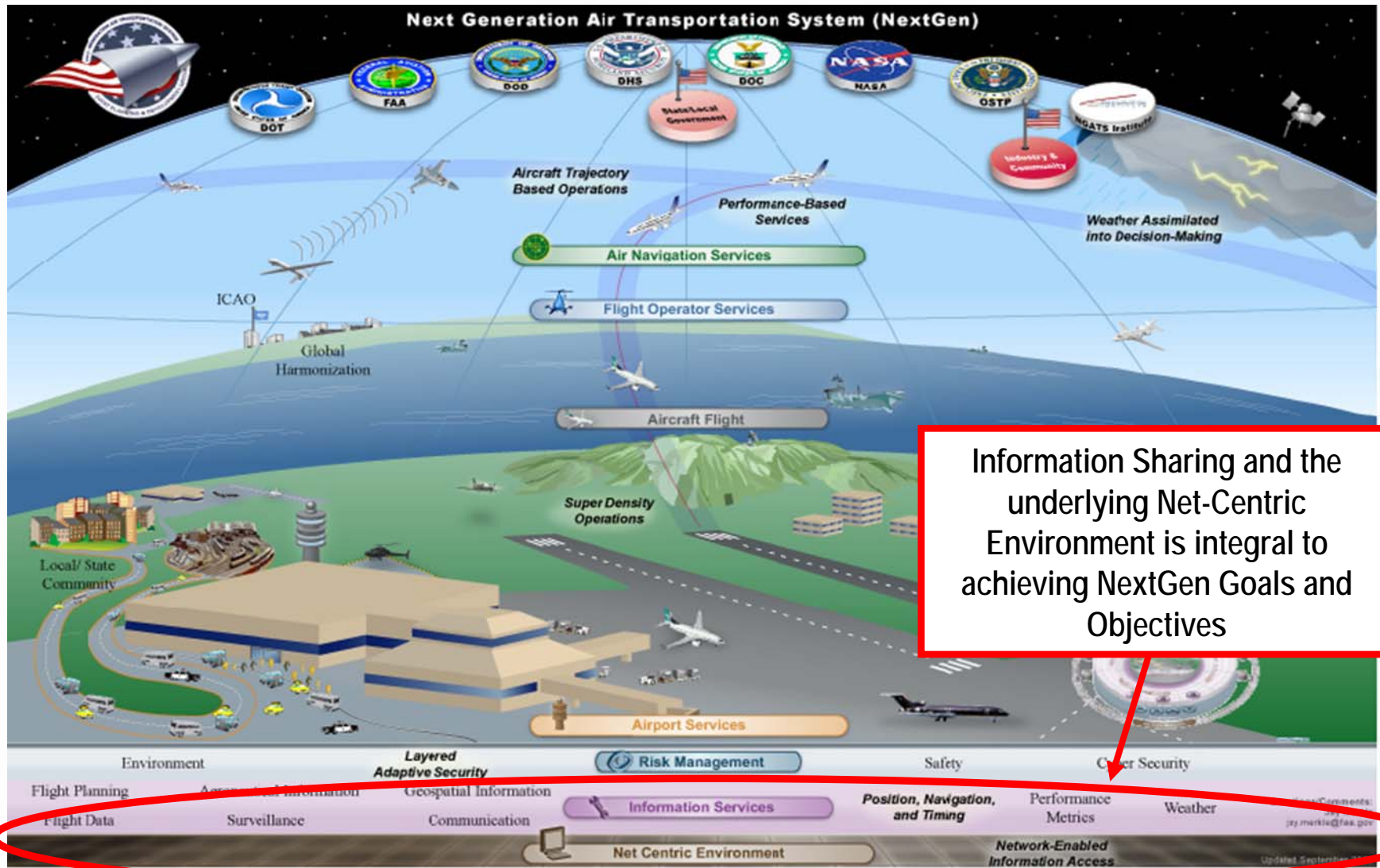


- **Aviation Weather**
 - Decision on Roles and Responsibilities (FAA, DOC, DoD)
 - Detailed planning and implementation underway

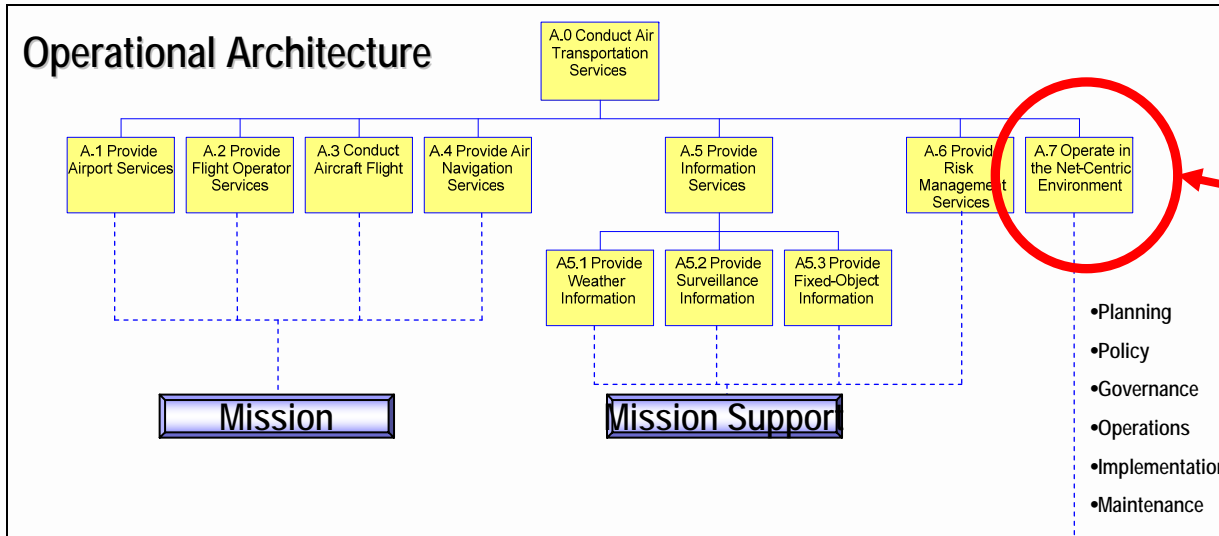


- **Aviation Safety**
 - Common Safety Management System Standard and Information Sharing approved
 - National Aviation Safety Strategic Plan prepared for SPC decision

Federation Opportunity Net-Centricity in NextGen



NextGen EA Net-Centric Focus



The NextGen EA OV-5 is structured to include the extended taxonomy for how the NextGen Net-Centric environment will operate.

Information Architecture
Architectural descriptions of the conceptual, logical and physical NextGen Data Model, including the business rules for data exchange, message formats, file structures, and schemas.

System / Service Architecture
Architectural descriptions of the systems and services, their functionality, the interfaces and interconnections, the resources being exchanged, the metrics, and how they will be implemented over time.

Infrastructure / Technology Architecture
Architectural descriptions of the standards that apply to NextGen Net-centric Operations, as well as emerging standards and their potential impact.

The existing NextGen EA views can be further decomposed, or new views can be created, to ensure Net-centric capabilities are properly reflected.

Thank you!

Questions?

