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Aeronautical Information Exchange Model (AIXM) / Weather Information Exchange Model (WXXM) Conference

Addressing the NextGen Challenge

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Today's Topics

- **NextGen Overview**
- **Aviation Information Sharing**
- **NextGen Weather**
- **Global Harmonization**

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NextGen Challenge

- **The current system**
  - **is not performing adequately**
  - **is not scalable**
- **The NextGen plan offers a transformational approach to resolving current inadequacies**
- **Cost of not transforming to NextGen – billions annually**

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NextGen: The Short Story

- NextGen is a **Congressionally mandated** initiative to modernize the U.S. Air Transportation System in order to:
  - Increase **capacity** and **reliability**
  - Improve **safety** and **security**
  - Minimize the **environmental impact** of aviation

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NextGen: The Short Story (Cont'd)

- These improvements to the air transportation system will be achieved by applying:
  - Space-based navigation and integrated surveillance
  - Digital communications
  - Advanced automation of Air Traffic Management
  - Net-centric information access for operations

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NextGen Gate-To-Gate Video

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The NextGen Initiative

The Next Generation Air Transportation System Partners

- Department of Transportation (DOT)
- Department of Defense (DoD)
- Department of Homeland Security (DHS)
- Department of Commerce (DOC)
- Federal Aviation Administration (FAA)
- National Aeronautics and Space Administration (NASA)
- White House Office of Science & Technology Policy (OSTP)

Ex Officio — Office of the Director of National Intelligence (ODNI)

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Coordination

Governance	Senior Policy Committee (SPC) chaired by Secretary of Transportation
FAA	NextGen Review and Management Boards
DoD	US Air Force Lead Service Office
DOC	Senior Executive Weather Panel (with USAF, USN, FAA, and JPDO)
NASA	Research Transition Teams
DHS	Investment in Network Enabled Operations Demonstration (w/DoD and FAA) Integrated Surveillance Integrated Product Team (IPT)
ODNI	Integrated Surveillance IPT
OSTP	National Plan for Aeronautics R&D

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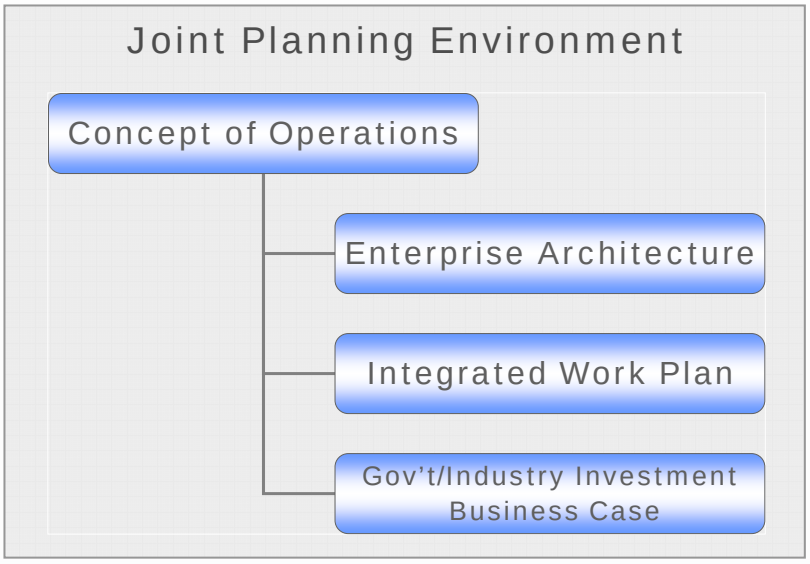
NextGen Institute
Mechanism for Industry Involvement

- Primary Role of the Institute
  - To provide a mechanism for private sector to actively engage with government in defining, developing, and implementing the NextGen System with the JPDO
    - 16-member Institute Management Council (IMC)
    - 250+ private sector Working Group participants
- Nine Working Groups
  - Each has a Government and an industry co-chair

Foundational Strategic Planning



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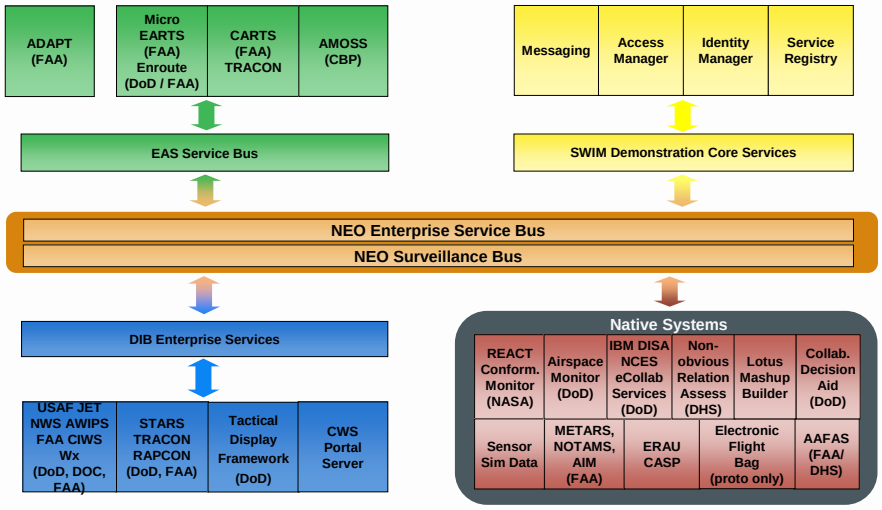
Net-Centric Operations Division

- In May 2008, the JPDO Senior Policy Committee (SPC) directed the establishment of a net-centric operations entity
- DoD agreed to provide civilian senior leadership FAA agreed to provide infrastructure implementation expertise and civilian air operations expertise
- DHS agreed to provide security operations expertise

Next Gen

Information Sharing Architecture (Notional)



Operations enabled by standards-based architecture

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NEO Video

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Integrated Surveillance

- JPDO established the Integrated Surveillance Study Team (ISST) involving partner agencies
- Interim report for interagency activities released in February 2008, with a critical recommendation:
  - Determine a formal mechanism for responsibility, management, and ownership for elements of integrated surveillance (to include funding)
- DHS convened Surveillance Summit in December 2008, which recommended that the SPC assume task of near-term resolution of joint surveillance issues

Find the Common Ground for Surveillance

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Integrated Surveillance (Cont'd)

- January 2009: SPC accepted Surveillance Summit tasking and directed JPDO to:
  - Develop an Integrated Surveillance Concept of Operations (ConOps) by May 2009
  - Develop an Integrated Surveillance Enterprise Architecture by January 2010
  - Recommend an approach to long-term governance of Integrated Surveillance by June 2010

Find the Common Ground for Surveillance

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Unmanned Aircraft System (UAS)

- UAS Community of Interest (COI) forming
  - DoD (operational expertise, defense)
  - DOT/FAA (certification, safety, security)
  - DHS (growing operational use via CBP, USCG)
  - NASA (science missions)
  - DOC (weather)
- JPDO to coordinate long-term concept for integrating UAS into the National Airspace (NAS)

Develop Uniformity of Thought for NextGen

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NextGen Weather Concept

- Integrated and consistent common weather data picture for observation, analysis, and forecast available to all system users
- Net-centric (net-enabled) capability is envisioned:
  - Information network that makes information available, securable, and usable in real time
  - Information may be pushed to known users and is available to be pulled by others
- "Virtual" repository, no single physical database
- Integration of weather information into operational decision making processes

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Today/NextGen Weather Information Attributes

Today	NextGen (new requirements)
• Not integrated into aviation decision support systems (DSS)	• Totally integrated into DSS
• Inconsistent/conflicting on a national scale	• Nationally consistent: Single Authoritative Source (SAS)
• Low temporal resolution (for aviation decision making purposes)	• High temporal resolution
• Disseminated in minutes	• Disseminated in seconds
• Updated by schedule	• Updated by events
• Fixed product formats (graphic or te›	• Flexible formats

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4-D Weather Cube

- The 4-D Weather SAS has the following characteristics:
  - Includes current observations, integrated analyses, and predictions of future conditions
  - Will support probabilistic decision aids
  - Provides a seamless, consistent common weather picture for integration into operational decisions for ATM decision-makers
  - Users tailor mission specific tools to apply source data

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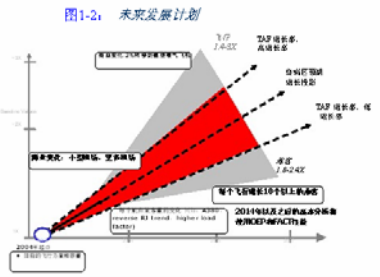
Global Harmonization

- International collaboration is essential to ensure compatible standards
- Reducing the cost of equipage
- Strategic partnerships with:
  - ✓ Europe
  - ✓ Japan
  - ✓ China
  - ✓ North America: Canada and Mexico



- Cooperation with ICAO
  - ✓ Review of key NextGen products
  - ✓ Collaboration in the development and acceleration of standards
- Partnership Expansion - Second Phase
  - ✓ India
  - ✓ Australia
  - ✓ Brazil

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