



# **Network Enabled Operations (NEO)**

## **Security Demonstration – Spiral 0**

**Built-In Security for the  
Next Generation Air Transportation System**

# Network Enabled ATM: Exploiting Shared Precision Information



Boeing - CSC - Lockheed Martin - Raytheon

Joint NEO Demonstration Team

Operations

3x Capacity • Efficiency • Safety • Security

Applications/  
Automation

Flow  
Control

ATC  
Separation  
Services

Security  
Command  
and  
Control

Military  
Command  
and  
Control

Others . . .

Network

Network Centric  
Information Management

Functions

Communication

Navigation

Surveillance

Weather

World

Systems/  
Sub-Systems

- ACARS
- VDL2
- VDL3
- Mode S
- Etc.

- GPS
- INS
- VOR
- DME
- GAL
- LORAN
- TACAN
- DR
- Etc.

- ADS-B
- SF21
- Radars
- Capstone
- Multi-Lat
- SDN
- TCAS
- Etc.

- WARP
- GIWS
- OASIS
- TDWR
- NCWF
- TCWF
- CIP/FIP
- C&V
- Etc.

- TAWS
- EFB
- DTED
- Etc.

# Program Objectives



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- **Reduce major NGATS risks:**
  - Net-centric technical approach
  - Schedule and cost feasibility
  - Multi-agency integration
  - Multi-industry coordination
- **Show path to simultaneous ATM and Security improvements**
- **No clean sheet - leverage today's fielded systems**
- **Real, scalable architecture – not a one-time demo**

# Joint NEO Security Demonstration

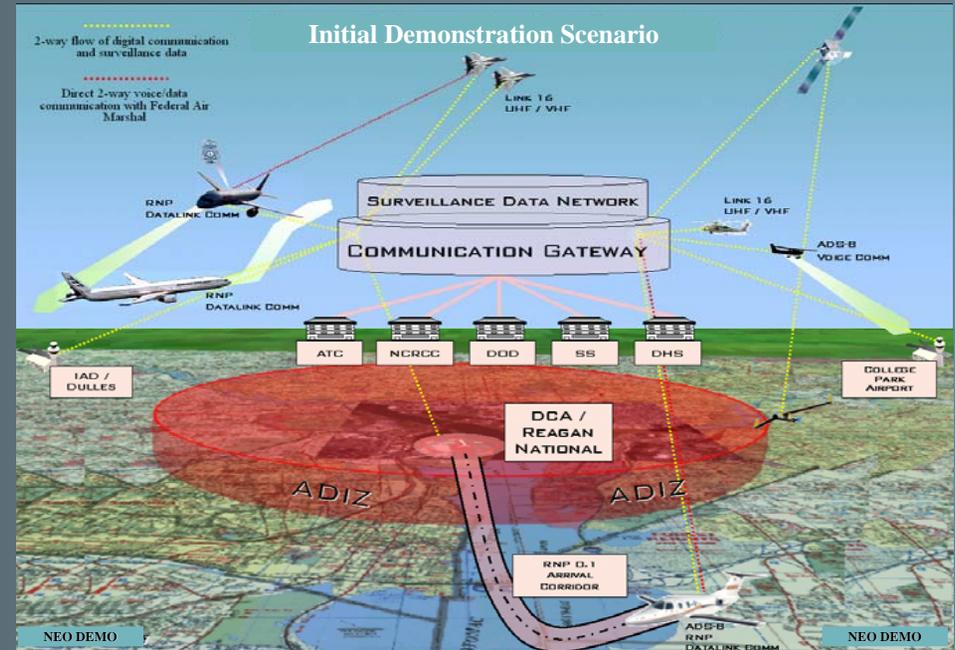


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Joint NEO Demonstration Team

## In nine months:

- 4 Government agencies (FAA, DoD, DHS, NASA)
- 4 Industry partners (Boeing, CSC, Lockheed, Raytheon)
- 12 distributed sites
- 7 legacy systems
- 5 advanced systems / applications
- Multiple operational scenarios
- 1 network centric architecture



## Accomplished:

- Information sharing across legacy ATC and security systems
- Shared situational awareness
- Demonstrated net-centric operations approach for improved inter-agency collaboration and decision making

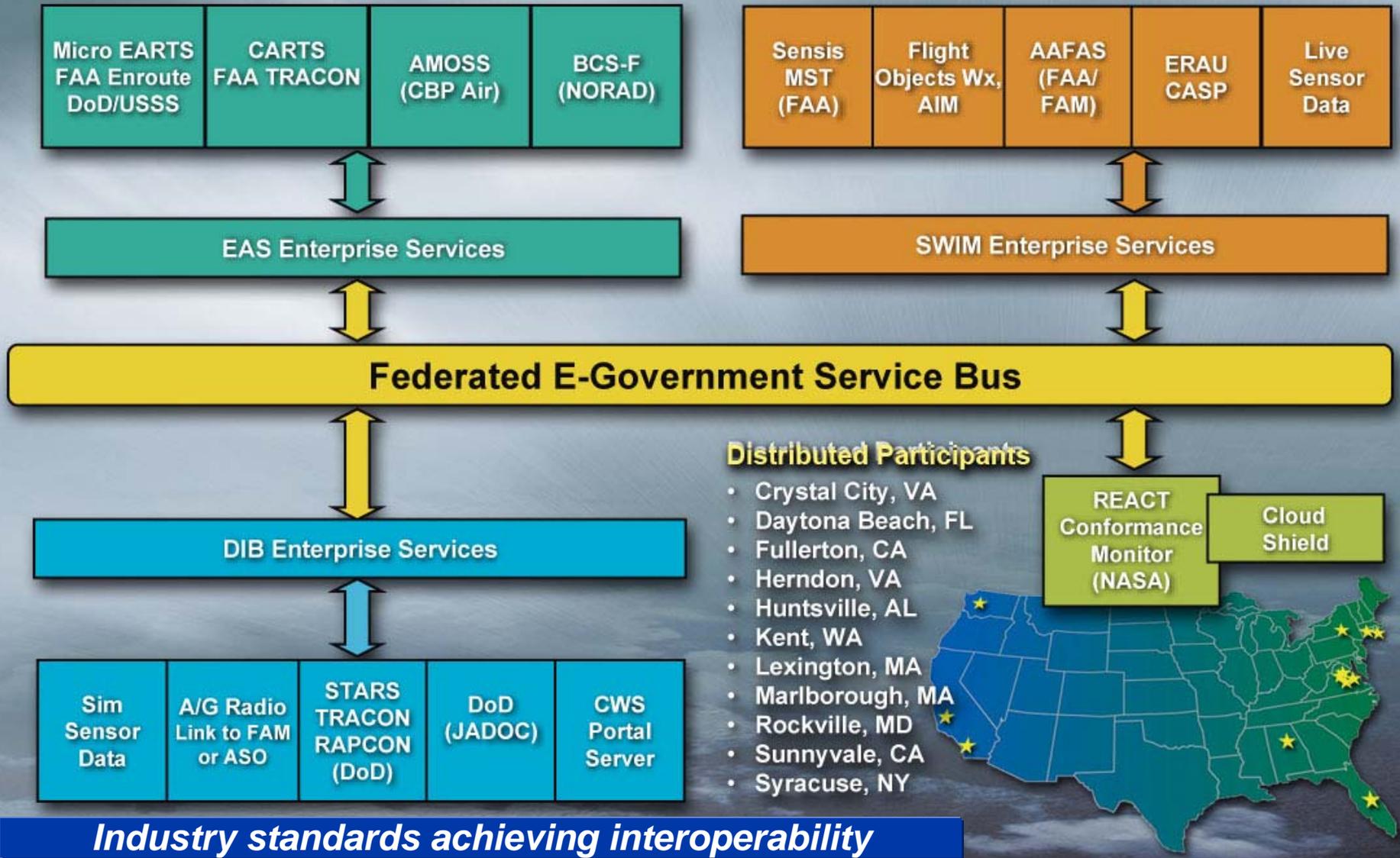


# All Systems Share Information



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# Operational Scenario



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Early Warning Zone

## Scenario: Commercial Aircraft Departing Philadelphia



# NEO Capability Developments



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- **Application tools for multi-agency ATM and security information exchange**
  - Shared surveillance/other data
  - Point-outs of track/airspace of interest across systems
  - Automated flight path conformance monitoring and other alerts
  - Wireless connectivity
  
- **Operators can now electronically collaborate**
  - Immediate multi-agency situational awareness
  - Flexible back-ups for continuity of operations
  - *Agencies/systems retain established applications, interfaces, procedures, training, etc.*
  
- **Improved mission performance**
  - DC area security incident scenarios

***Real time. Scalable. Any location. With built-in information security.***

# Summary



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- **NEO approach brings high value for all JPDO participants**
  - Cost effective and rapid development
  - Builds on current systems, procedures, training
  - Immediate benefits to multi-agency security operations
    - Faster, more informed decisions, fewer false alarms
    - Simultaneous events
    - Continuity of operations
  - Clear future applications to ATM operations
- **The Next Generation Air Transportation System has already started**
  - JPDO model is working (and it's essential)
  - Network centric architecture is a powerful design basis
  - Not a 2025 vision only



# Outline of the Demonstration



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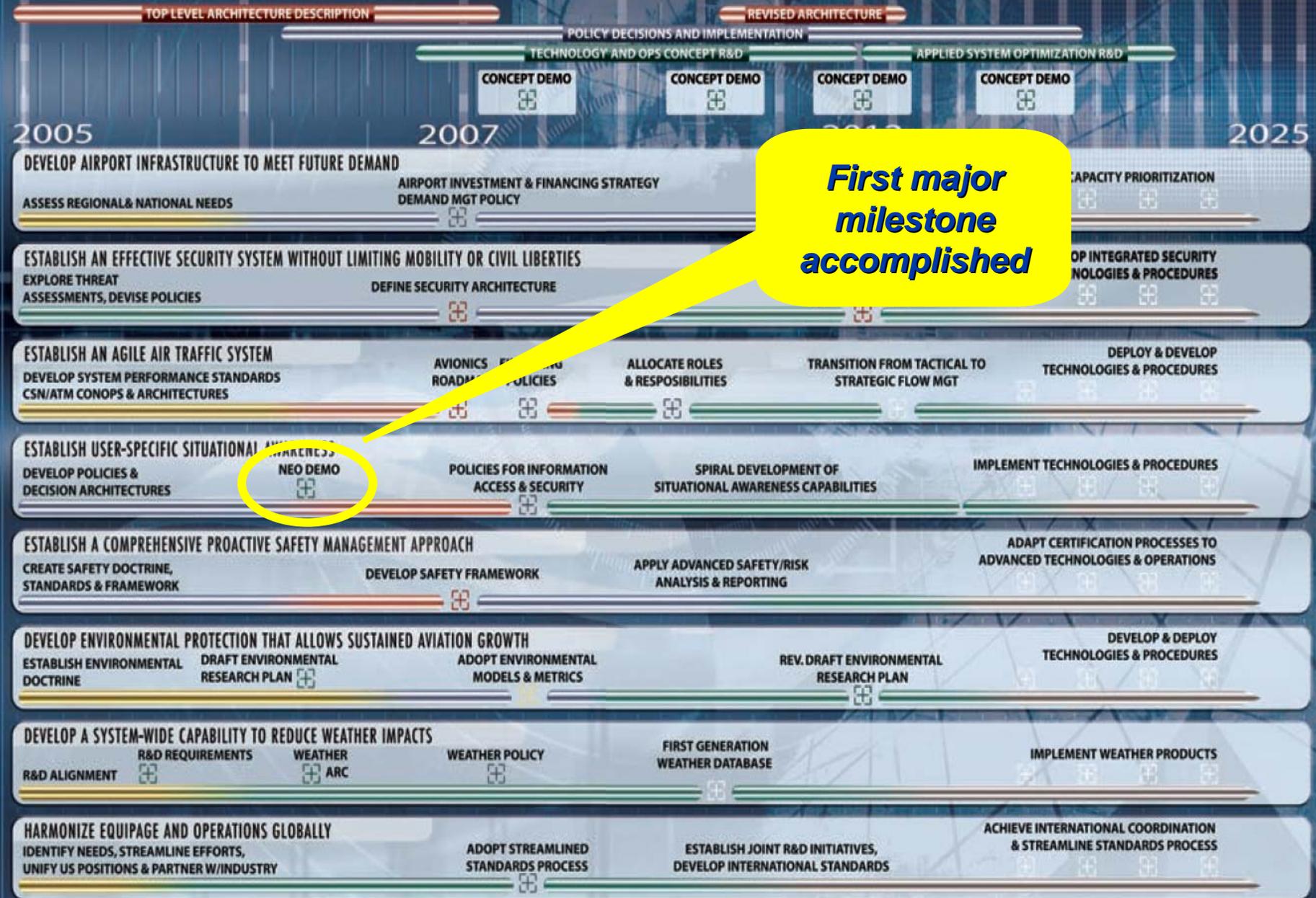
Joint NEO Demonstration Team

- **Overview of current operations**
- **Example of NEO technical capabilities**
- **Vignette 1:**
  - Suspect commercial aircraft approaching DC area with multi-agency response
- **Vignette 2:**
  - Future business jet tailored arrivals into DCA
- **Future vision/Next steps**



# NGATS ROADMAP

KEY EVENTS POLICY ARCHITECTURE R&D ANALYSIS INVESTMENT & IMPLEMENTATION



**First major milestone accomplished**