

# Delivering NextGen

Next Generation Air Transportation System



***Presented By:***

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# The Current System Is Not Performing Adequately

**The New York Times**  
**Airport Delays Worsen**  
By MATTHEW L. WALD

...delays at Newark Liberty and La Guardia are worse.



- Demand remains high in already congested markets
- The problems are worse in the highest density airspace
- Record high fuel prices
- Environment poses a constraint
- Our air traffic system does not take advantage of current technology

# ***NextGen...***

**Applying 21<sup>st</sup> Century technology to transform our aviation system ---- expanding capacity, enhancing safety and security, and protecting the environment.**





# NextGen: Improving Efficiency & Capacity

## Today's NAS

- Ground-based Navigation and Surveillance
- Air Traffic Control Communications By Voice
- Disconnected Information Systems
- Air Traffic "Control"
- Fragmented Weather Forecasting
- Airport Operations Limited By Visibility Conditions
- Forensic Safety Systems



## NextGen

- Satellite-based Navigation and Surveillance
- Routine Information Sent Digitally
- Information More Readily Accessible
- Air Traffic "Management"
- Forecasts Embedded into Decisions
- Operations Continue Into Lower Visibility Conditions
- Prognostic Safety Systems



*The transition to NextGen has already begun.*

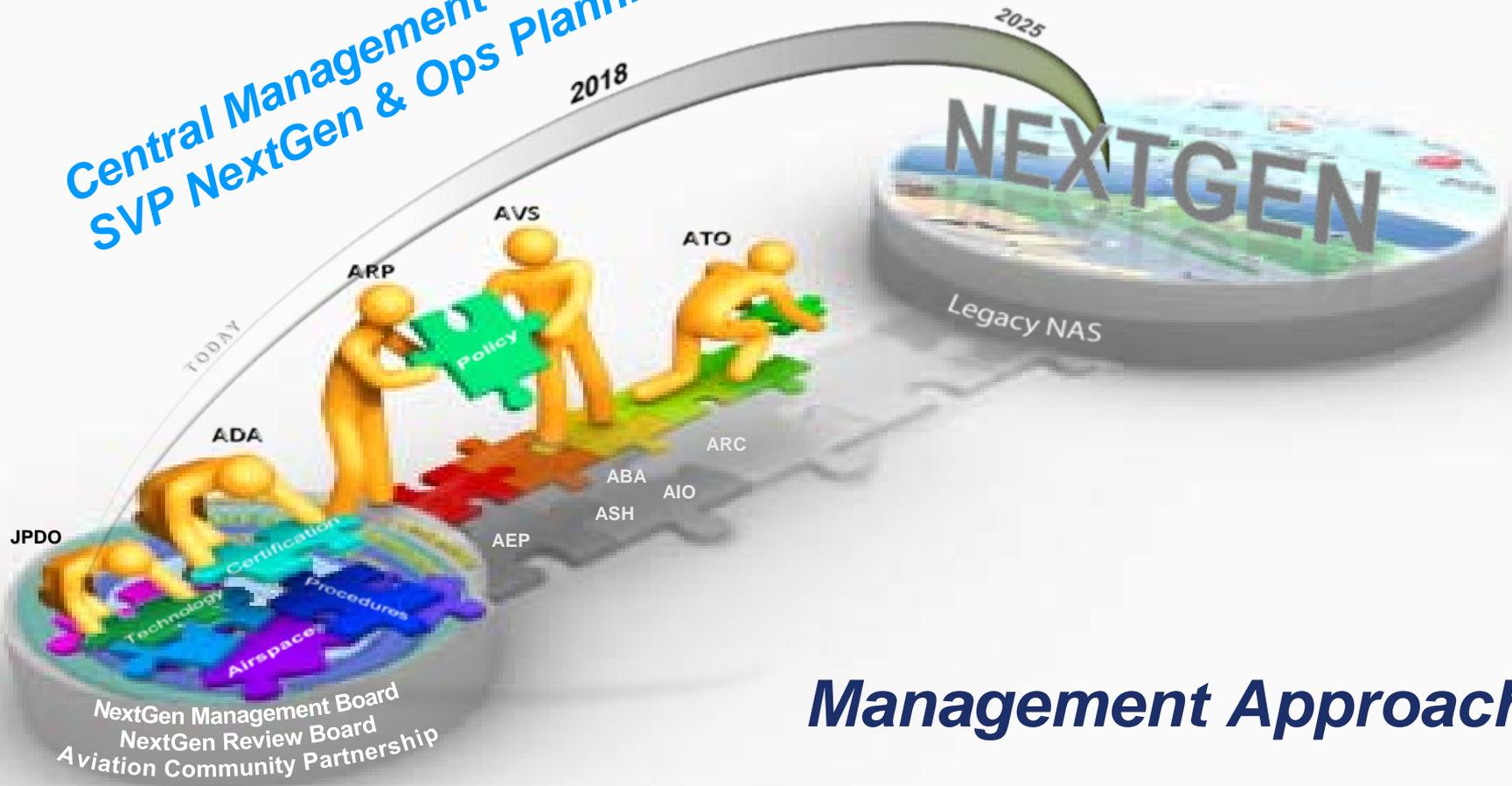
# NextGen is more than just...

***a single project...*** It is the integration of many projects, concepts, and technologies.

***a program plan...*** It is the integration of many program plans to deliver new service capabilities to meet increasing demand.

***a new system...*** It is the integration of new systems, new procedures, new aircraft performance capabilities, new supporting infrastructure and a new way to do business as the Air Transportation System.

# Central Management & Oversight – SVP NextGen & Ops Planning



## Management Approach

# Governance

## *Senior-level Accountability - Building on a Proven Process*



# NextGen Capabilities will be Implemented by Solution Set Portfolios



**Each solution set is a portfolio of capabilities**

# NextGen Integration

## *Transformational Programs*

*Five cross-cutting programs provide the new infrastructure required to achieve the NextGen vision.*

**ADS-B:** Automatic Dependent Surveillance Broadcast

**SWIM:** System Wide Information Management

**DataComm:** NextGen Data Communications

**NVS:** National Airspace System Voice Switch

**NNEW:** NextGen Network Enabled Weather

*Enabling programs provide the foundation for NextGen.*

**ASDE-X:** Airport Surface Detection Equipment Model X

**ATOP:** Advanced Technologies and Oceanic Procedures

**CIWS:** Corridor Integrated Weather System

**ERAM:** En Route Automation Modernization

**GBAS:** Ground-Based Augmentation System

**RNAV/RNP:** Area Navigation and Required Navigation Performance

**TFM-M:** Traffic Flow Management-Modernization

**TMA:** Traffic Management Advisor

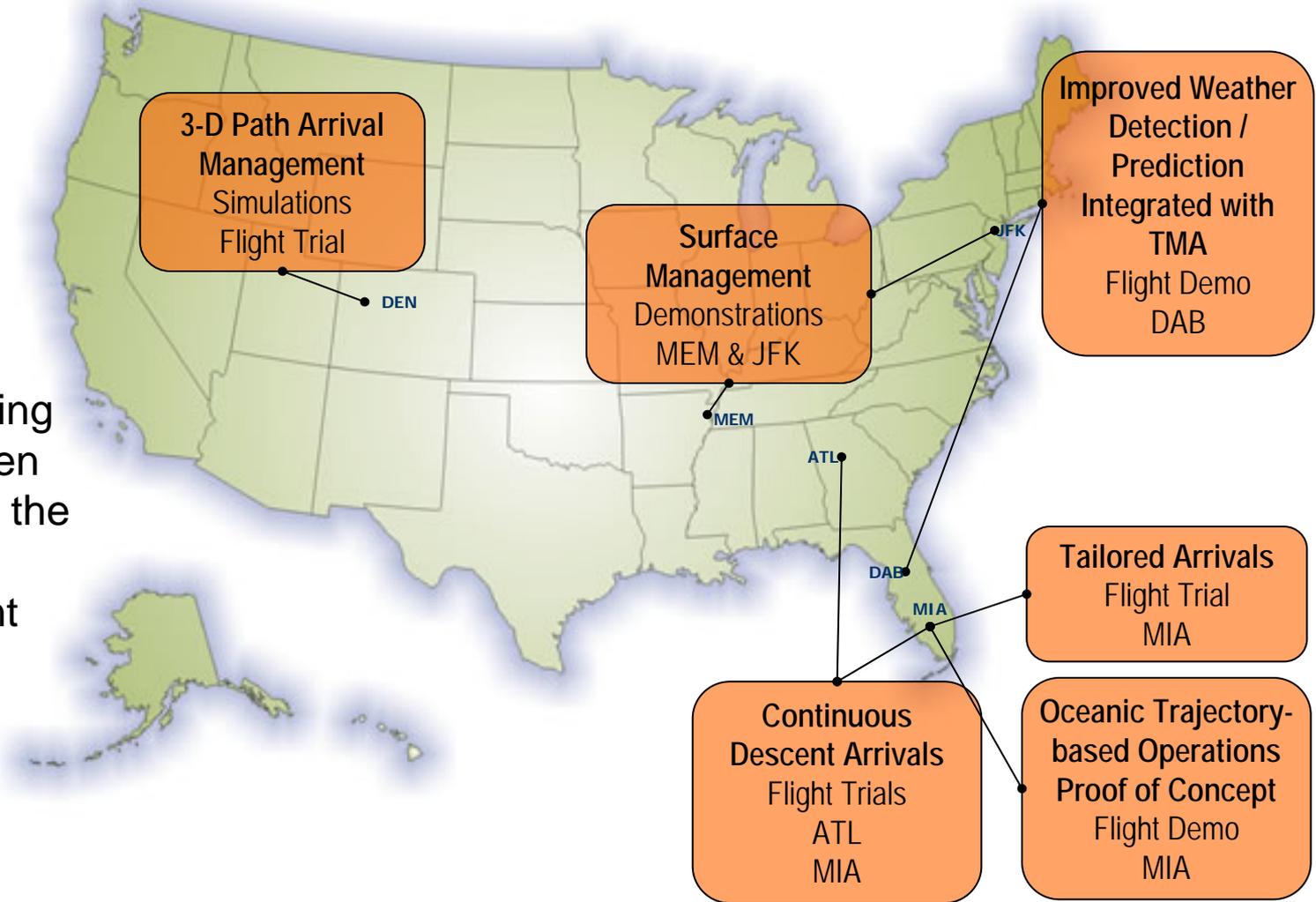
**WAAS:** Wide Area Augmentation System



# NextGen Implementation Plan

*Flight trials inform decision-making while providing targeted benefits*

The FAA is demonstrating vital NextGen concepts in the operational environment



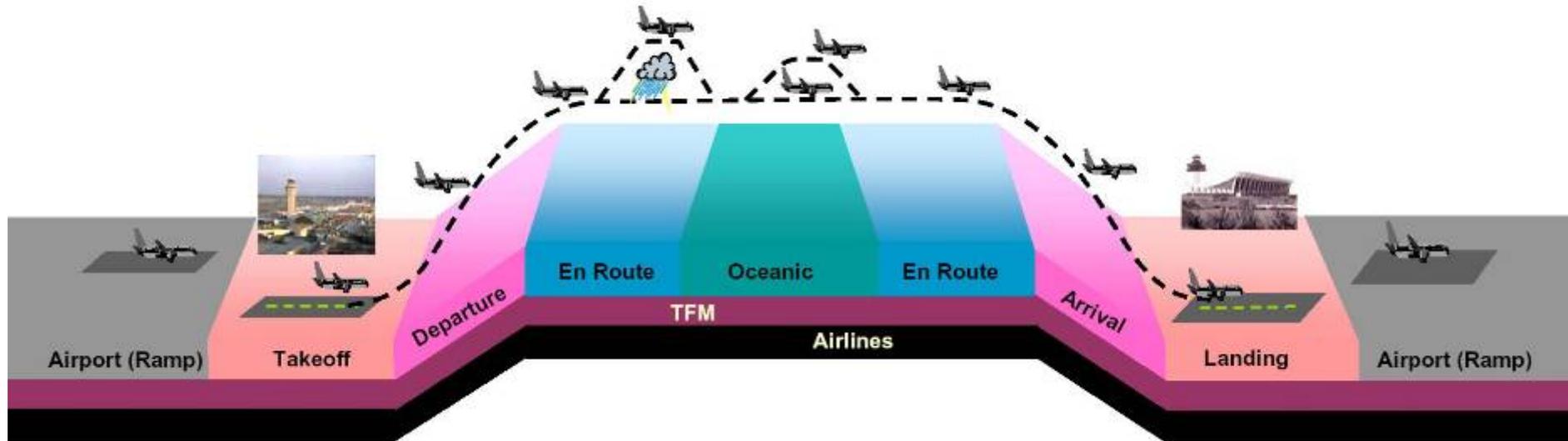
# Aircraft & Operator Requirements

- NextGen aircraft will have more onboard capabilities requiring associated crew training for
  - Precision navigation
  - Merging and spacing
  - Four-dimensional trajectories
- Unmanned aircraft systems will operate among regular aircraft and domestic supersonic cruise operations will be more prevalent
- Represents a significant change in the aircraft's role and equipage requirements



# Air Traffic Operations

- Airport capacity
- Airspace capacity
- Surface efficiency
- Optimized vertical and horizontal trajectories
- Improved fuel consumption
- Increased safety
- Improved access
- Reduced emissions & noise



# Near & Mid-Term Benefits



- Surface Traffic Management
- ADS-B in Gulf
- De-conflicting Airports
- “Performance-Required” Routes

- Performance-Based Navigation
- Continuous Descent Approaches
- Closely-Spaced Parallel Operations



# National Airspace System (NAS) Enterprise Architecture (EA)

- **NAS EA Contains 13 Interdependent Roadmaps**
  - Aircraft
  - Air-Ground
  - Automation
  - Weather
  - Communication
  - Navigation
  - Surveillance
  - Airspace & Procedures
  - Enterprise Services
  - Facilities
  - Human Systems Integration Roadmap
  - Information Systems Security
  - Safety
- **NAS EA Demonstrates Complexity of the V&V Issue for NextGen**
  - Case in Point: Automation Roadmap





# *The Challenge*

## *System level Verification & Validation is key to NextGen success*

*We are relying on this team to not only conduct V&V on NextGen systems but to develop the processes & procedures for doing so*