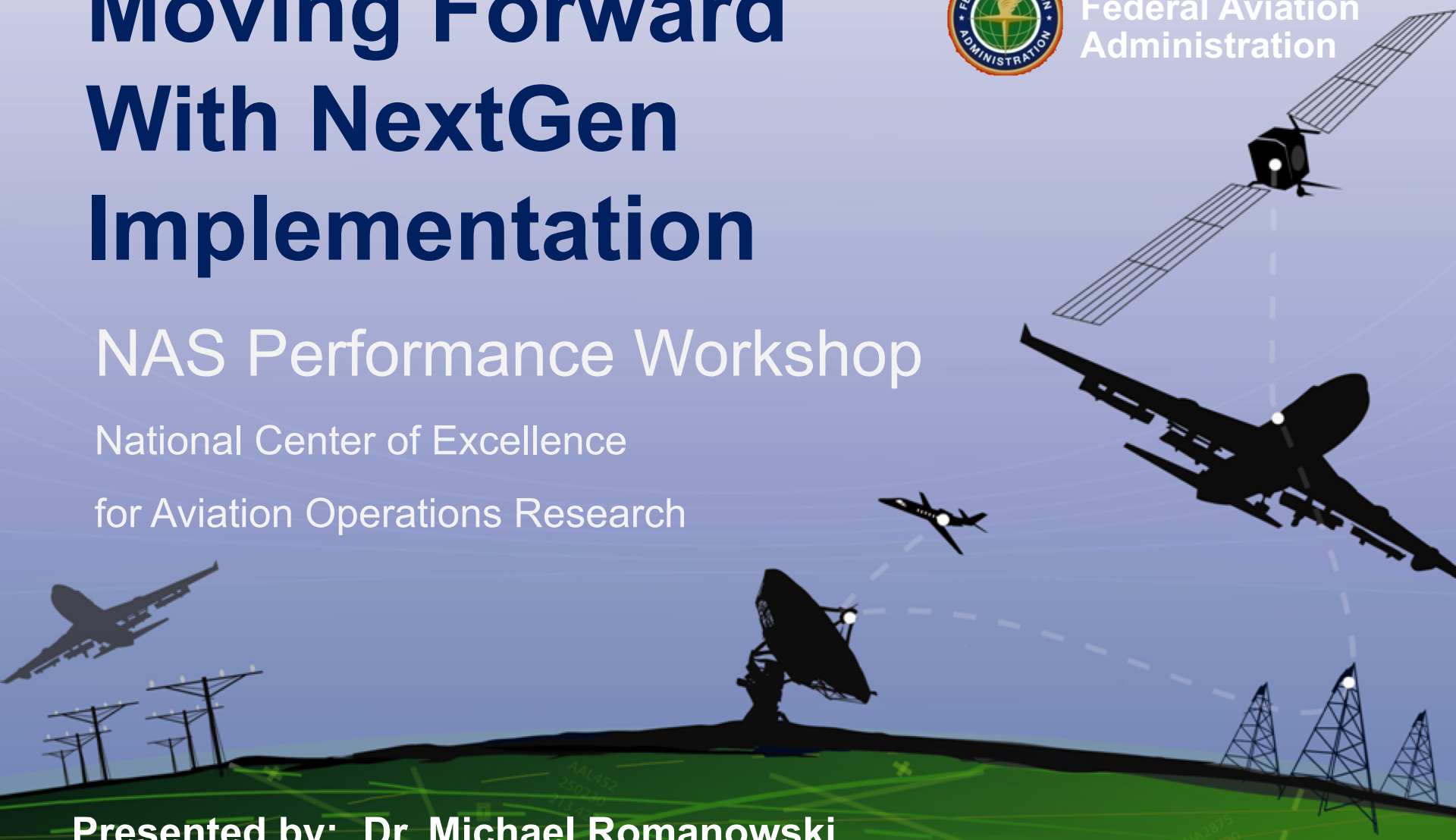
Moving Forward With NextGen Implementation

Federal Aviation Administration

NAS Performance Workshop

National Center of Excellence

for Aviation Operations Research

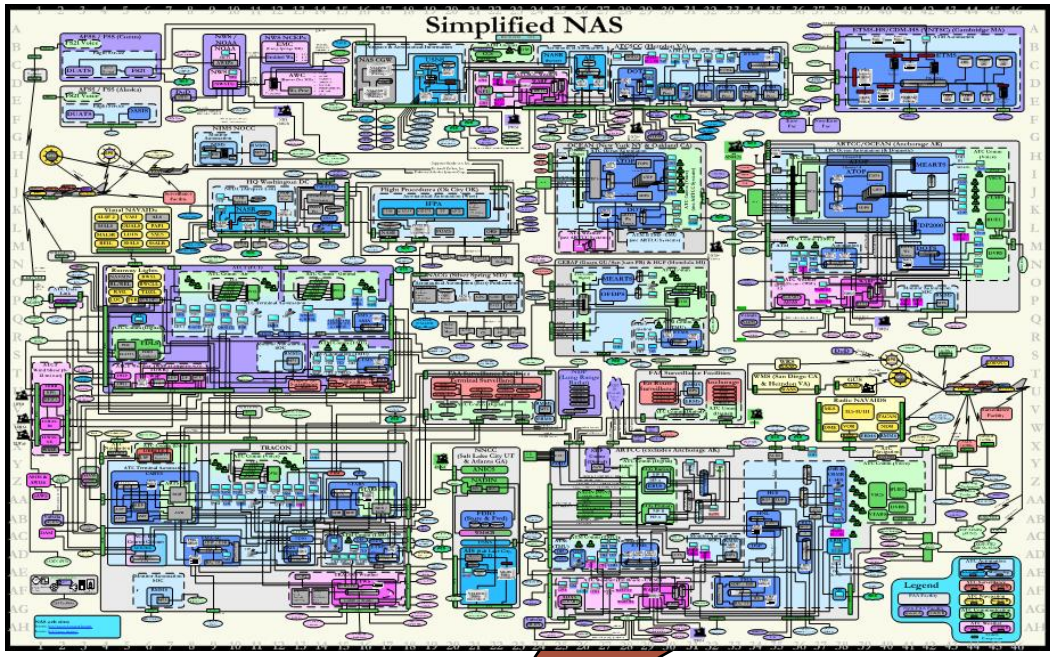


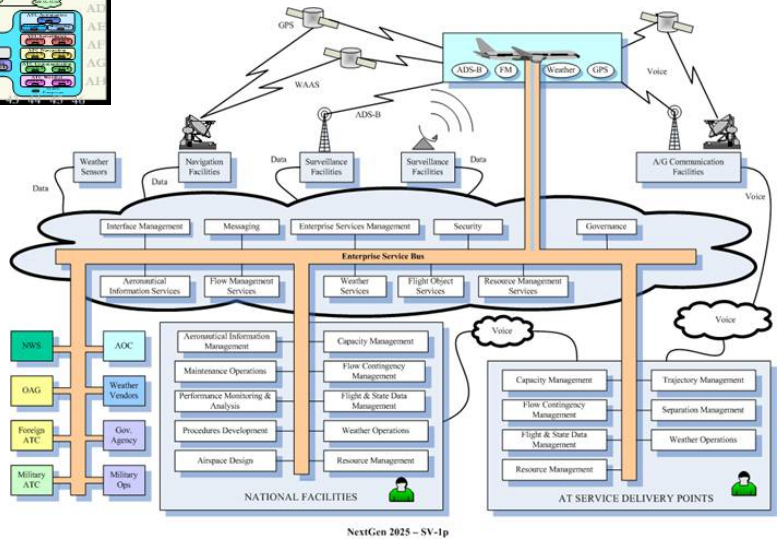
Presented by: Dr. Michael Romanowski

Director, NextGen Integration and Implementation

April 14, 2009

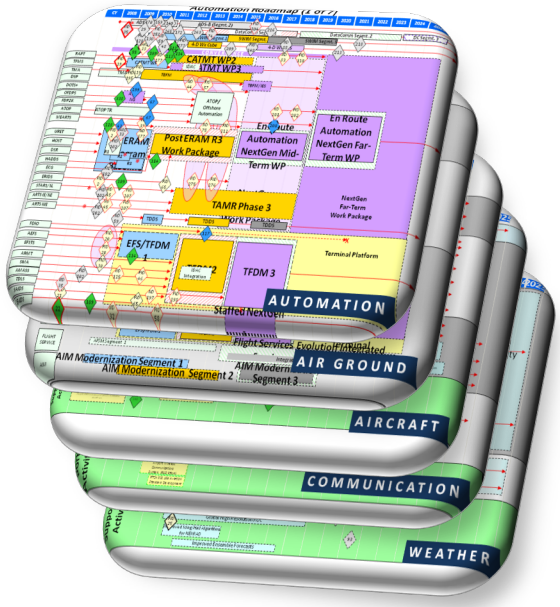
NextGen Complexity – Notional Transition to NextGen





Keys to NextGen

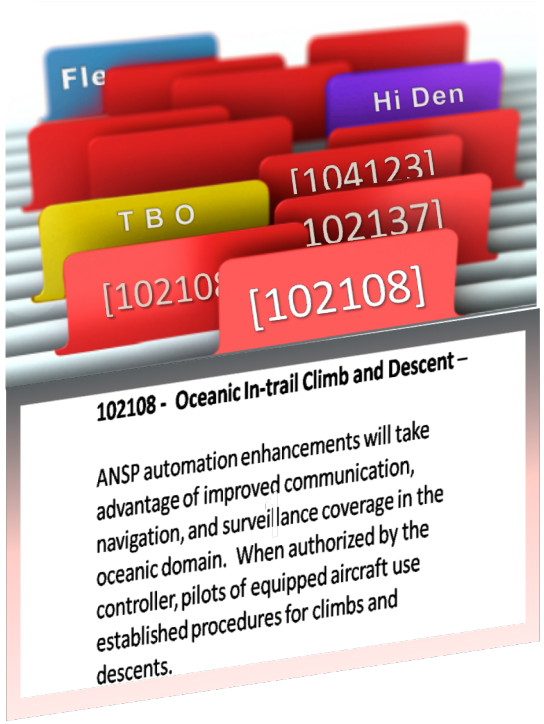
Technical Strategy (Roadmaps)



Operational Capabilities/Benefits

NEXTGEN Portfolio		Transformational Programs				
		ADS-B	SWIM	DATA-COM	NNEW	NVS
Enabling Activities	TBO	X	X	X	X	X
	HIGH DEN	X	X	X	X	X
	FLEX	X	X	X	X	X
	CATM	X	X	X	X	
	RWI	X	X	X	X	
	SSE	X	X	X	X	
	NET FAC		X	X	X	X

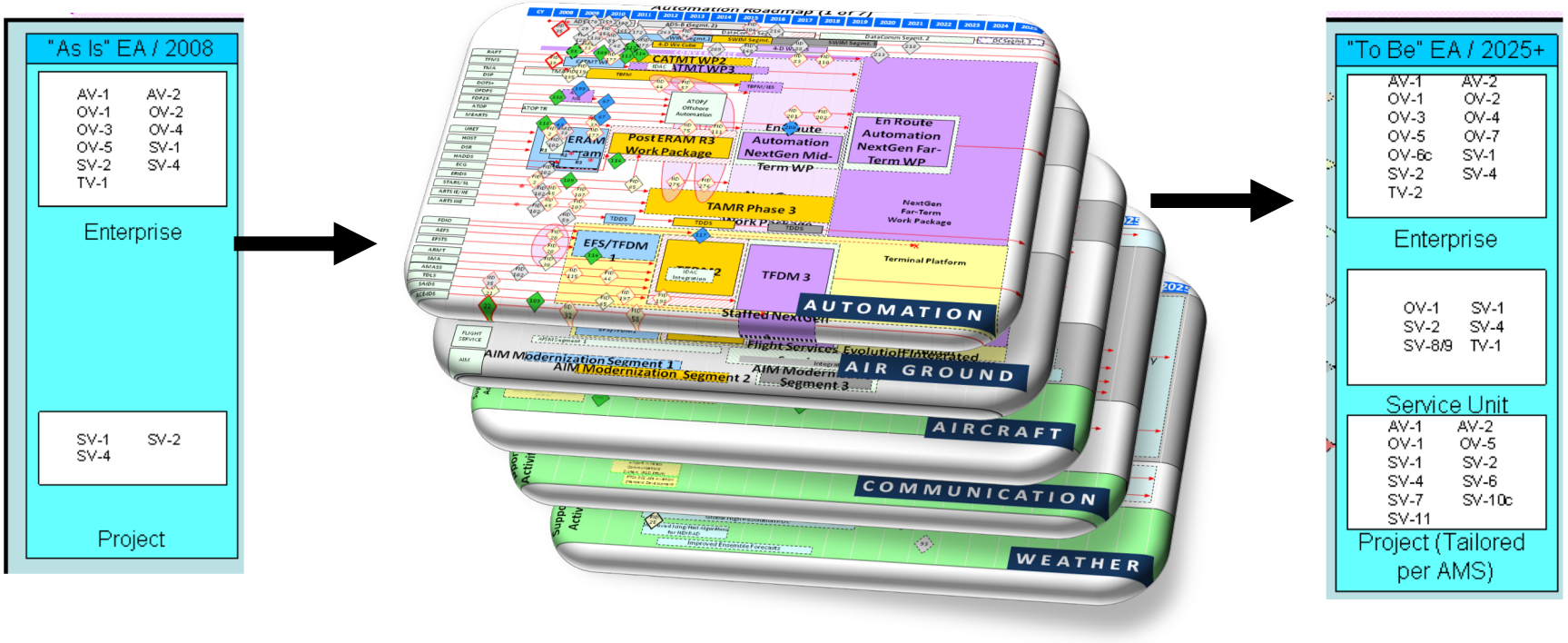
Integrated Management Framework



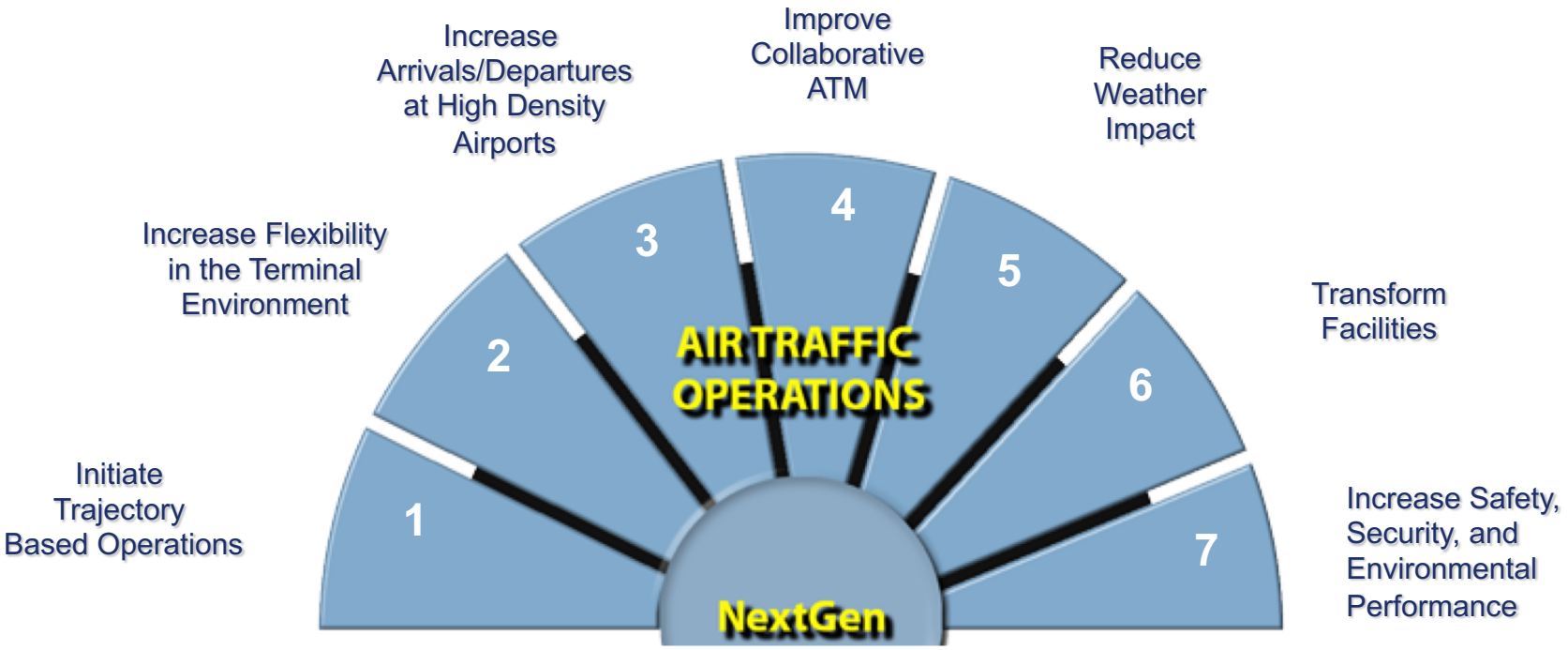
Governance Processes Are in Place

ARCHITECTURE	INVESTMENT	IMPLEMENTATION
• Develop and maintain enterprise architecture • Review, reconcile and approve segment architecture for the agency's core lines of business and common IT services	• Select IT initiatives to define the agency's IT investment portfolio • Control IT investments • Evaluate IT investments	• Develop and maintain segment architecture • Develop IT program management plan • Execute IT projects

END-TO-END GOVERNANCE



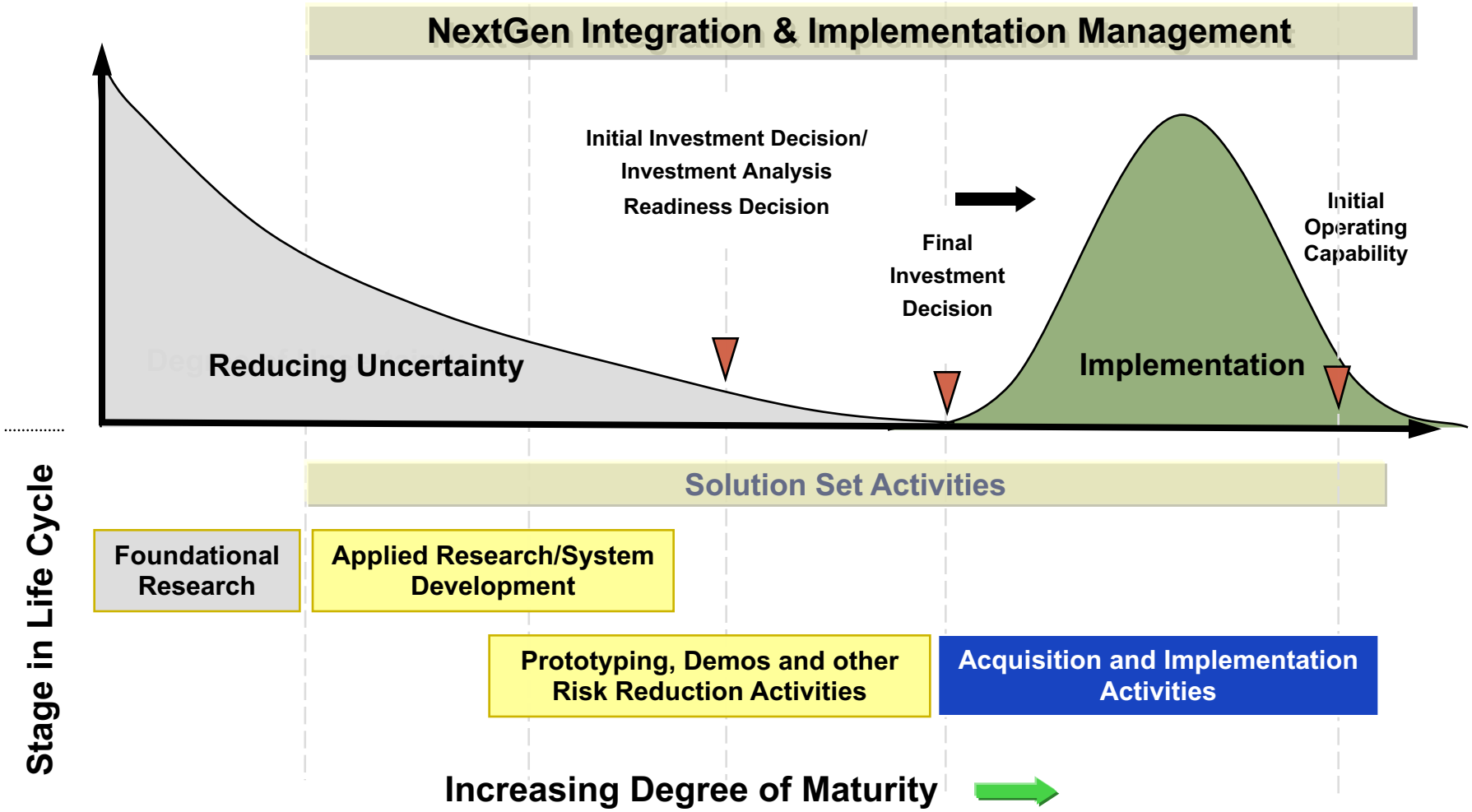
NextGen Capabilities
Implemented by Solution Set Portfolios



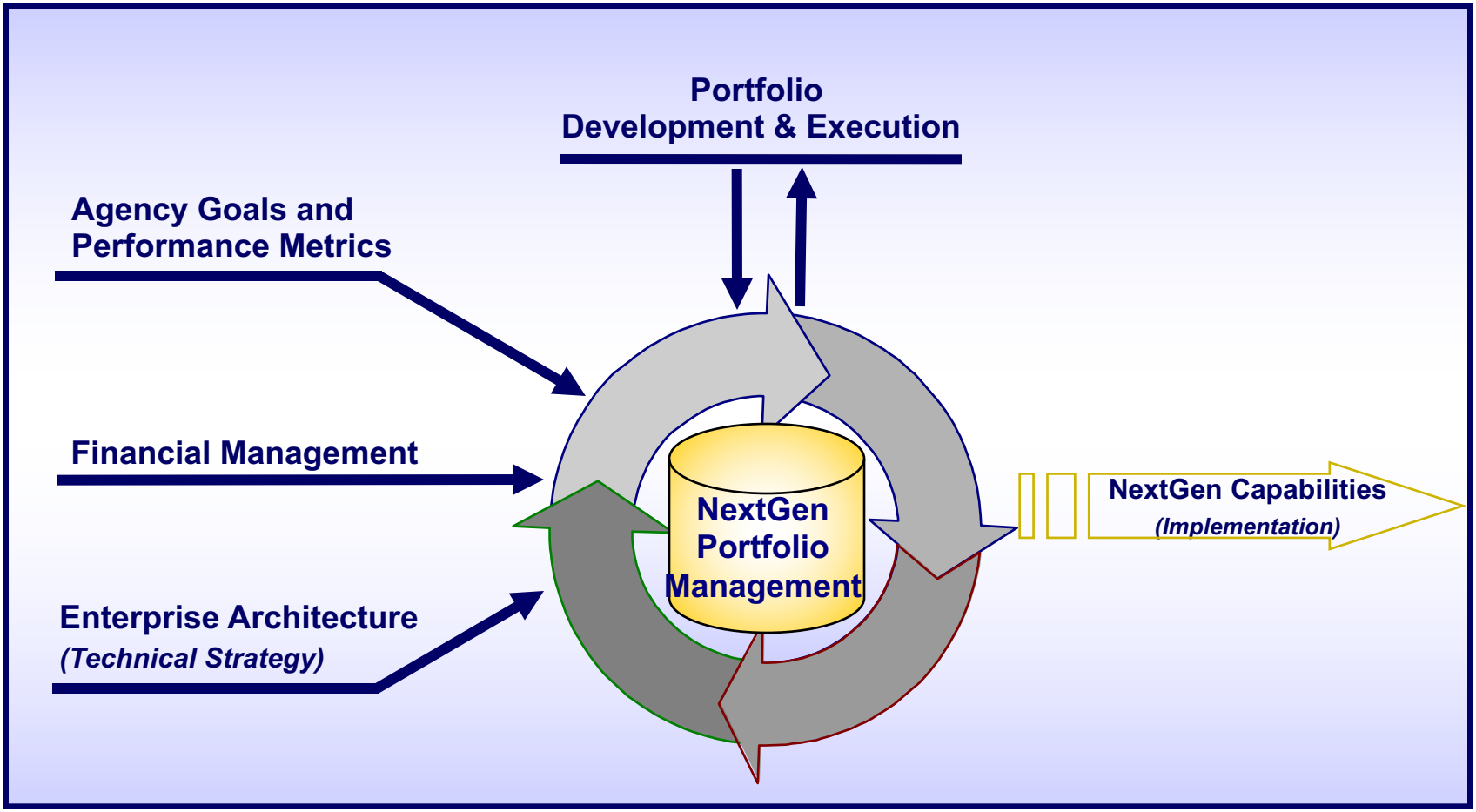
Each solution set is a portfolio of capabilities

NextGen Integration and Implementation

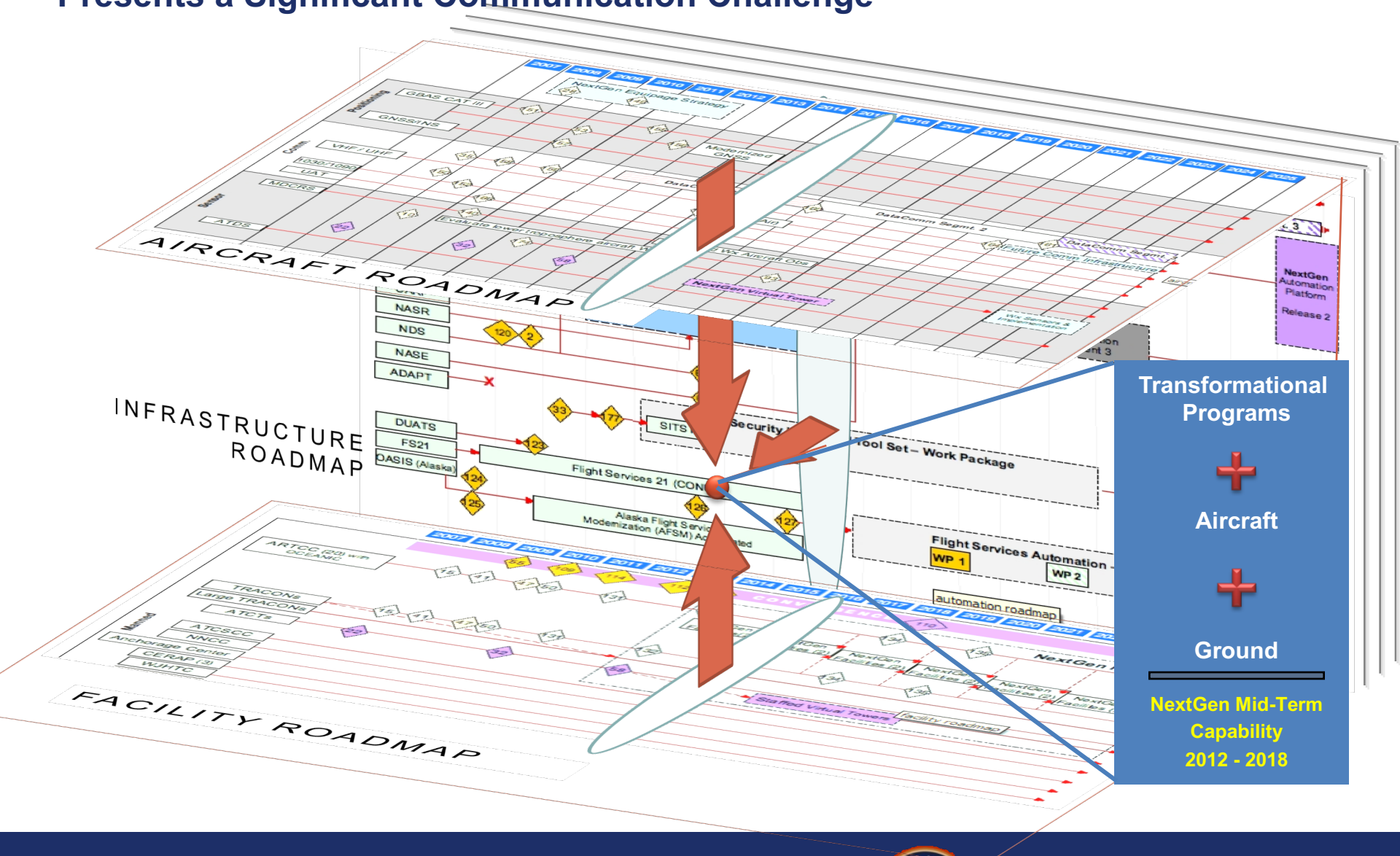
Spans the Full Life Cycle



NextGen Integration …*Portfolio Management*



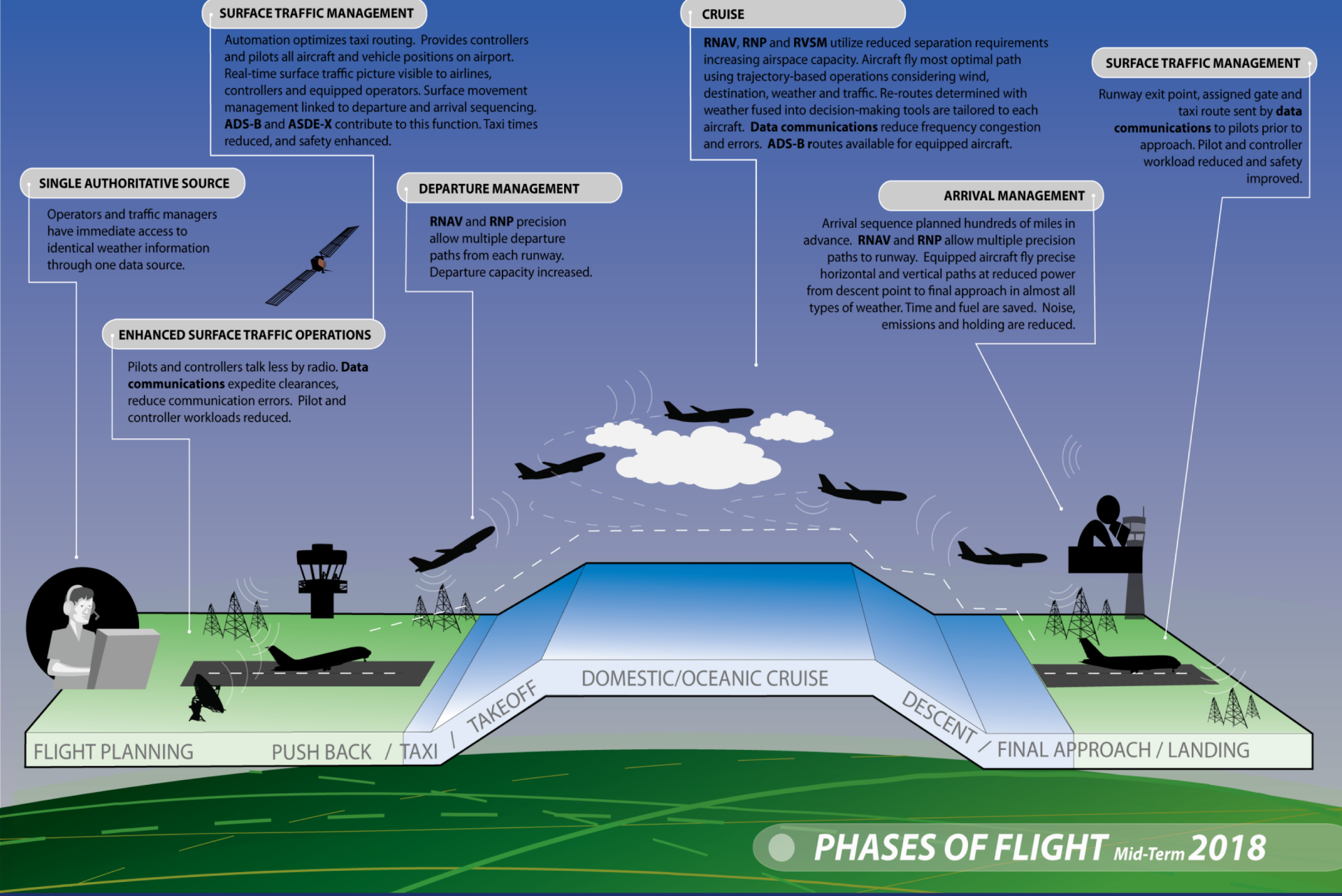
NextGen Complexity
Presents a Significant Communication Challenge



2009 NextGen Implementation Plan

www.faa.gov/nextgen

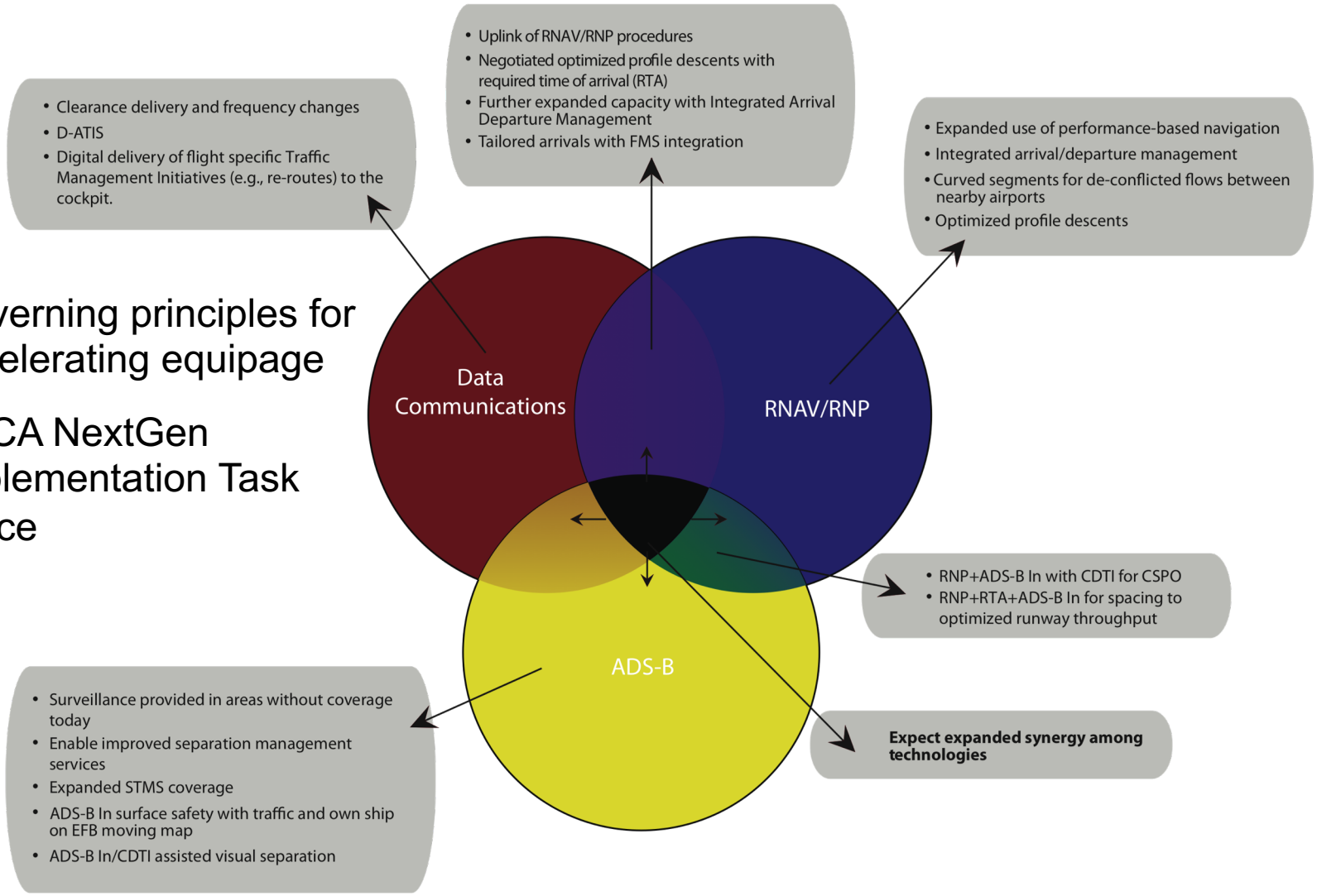
- **Aligns with FAA budget cycle and Architecture update schedule**
- **Address key industry questions:**
  - What will the NAS Look like in 2018?
  - What avionics will be required?
  - What benefits will be realized?


SURFACE TRAFFIC MANAGEMENT
Automation optimizes taxi routing. Provides controllers and pilots all aircraft and vehicle positions on airport. Real-time surface traffic picture visible to airlines, controllers and equipped operators. Surface movement management linked to departure and arrival sequencing. ADS-B and ASDE-X contribute to this function. Taxi times reduced, and safety enhanced.
CRUISE
RNAV, RNP and RVSM utilize reduced separation requirements increasing airspace capacity. Aircraft fly most optimal path using trajectory-based operations considering wind, destination, weather and traffic. Re-routes determined with weather fused into decision-making tools are tailored to each aircraft. Data communications reduce frequency congestion and errors. ADS-B routes available for equipped aircraft.
SURFACE TRAFFIC MANAGEMENT
Runway exit point, assigned gate and taxi route sent by data communications to pilots prior to approach. Pilot and controller workload reduced and safety improved.
SINGLE AUTHORITATIVE SOURCE
Operators and traffic managers have immediate access to identical weather information through one data source.
DEPARTURE MANAGEMENT
RNAV and RNP precision allow multiple departure paths from each runway. Departure capacity increased.
ARRIVAL MANAGEMENT
Arrival sequence planned hundreds of miles in advance. RNAV and RNP allow multiple precision paths to runway. Equipped aircraft fly precise horizontal and vertical paths at reduced power from descent point to final approach in almost all types of weather. Time and fuel are saved. Noise, emissions and holding are reduced.
ENHANCED SURFACE TRAFFIC OPERATIONS
Pilots and controllers talk less by radio. Data communications expedite clearances, reduce communication errors. Pilot and controller workloads reduced.
FLIGHT PLANNING
PUSH BACK / TAXI
TAKEOFF
DOMESTIC/OCEANIC CRUISE
DESCENT
FINAL APPROACH / LANDING
PHASES OF FLIGHT Mid-Term 2018

NextGen Implementation Plan

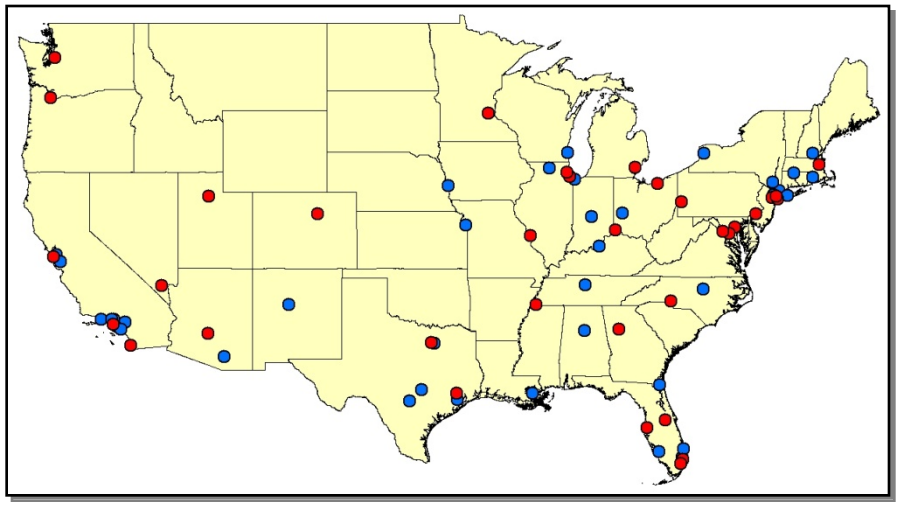
Equipage is Critical for NextGen Success

- Governing principles for accelerating equipage
- RTCA NextGen Implementation Task Force

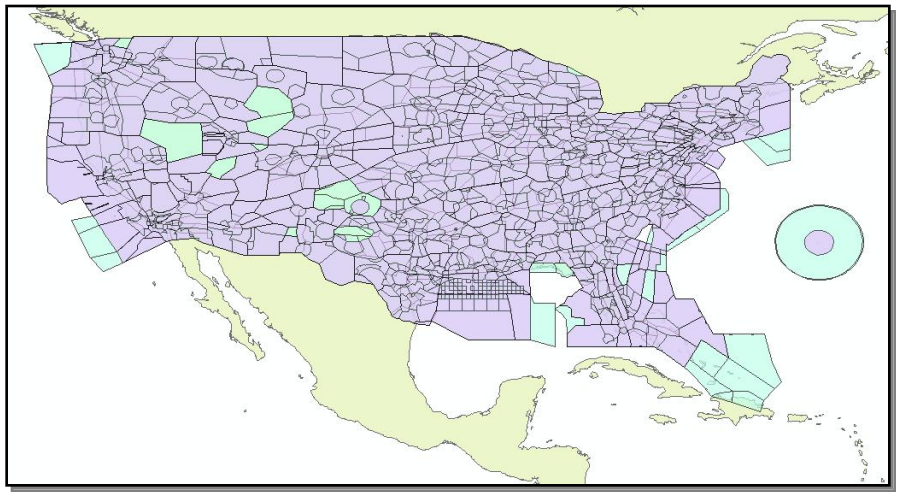


Understanding NextGen Benefits

Advanced performance simulation capability is required for decision-making

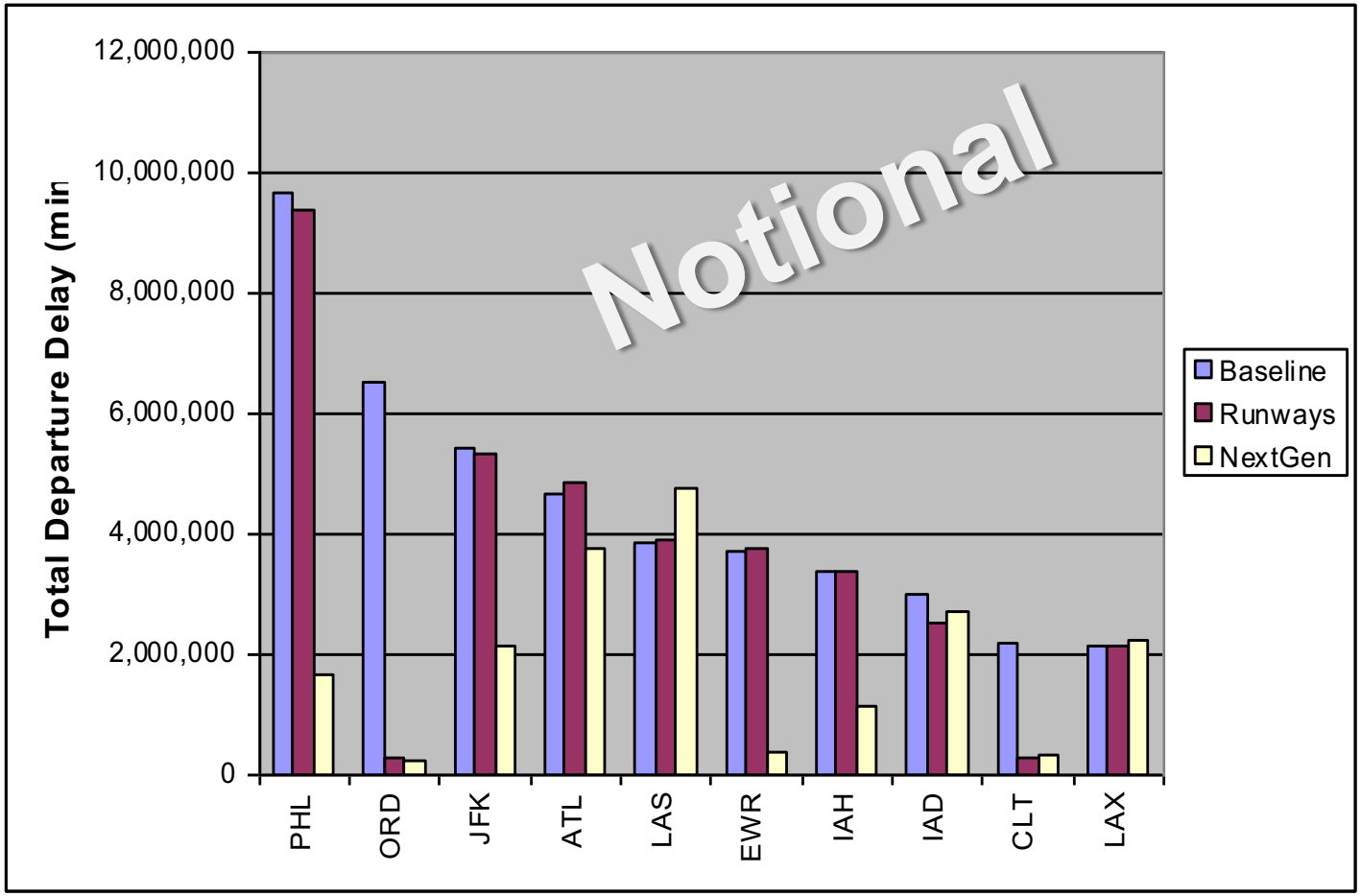


Airport Modeling



Airspace Modeling

Total Departure Delay, 2018



Departure Delay ≡ Simulated Taxi-Out Time - Unimpeded Taxi-Out Time

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NextGen Implementation Plan

Governing Principles for Accelerating NextGen Equipage

Governing Principles

1. **Target equipage and associated capabilities to maximize operational benefits for specific locations or airspace to elevate system performance and to satisfy demand**
   a. Leverage and maximize the benefit of existing equipage
   b. Take advantage of normal maintenance cycles to minimize disruptions
   c. Leverage operational evals & other cooperative arrangements to accelerate equipage
2. **Consistent with safe and efficient operations, provide "best-equipped, best-served" priority in the NAS to early adopters**
3. **Minimize the business risk associated with early deployment of NextGen equipage; FAA may assume portions of that risk or otherwise incentivize operators**
4. **Target government-provided financial incentives for new equipment toward aircraft that will meet evolving environmental requirements**
5. **Harmonize operations, performance requirements and avionics solutions globally to ensure maximum benefits to operators who fly internationally**

FAA Expectations for Task Force

- **Foster collaboration & consensus on critical NextGen issues – *a new level of engagement with industry***

- **Task Force focus:**
  - Maximizing NextGen benefits
  - Facilitating business case for industry investment

- **FAA needs recommendations on:**
  - Strategies & means to maximize benefits
  - Strategies to encourage equipage
  - Policies & other means to implement governing principles
  - Recommended disposition of R&P WG comments

Moving Forward

- **Solid framework in place for NextGen implementation**
- **Maximizing benefits & ensuring equipage will be keys to achieving success**
- **Modeling and simulation capabilities will be significant drivers**