



# V&V Role and NextGen Capabilities

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**FAA**

# Discussion Purpose and Agenda

- Discuss the I2I Background
- V&V, EA, and Requirements within the I2I Context
  - ✦ What's Different?
- How Does This Look in the Real World?
- Next Steps

# New Paradigm: The Reason for I2I

*The Foundation for Success analysis effort identified the following four key areas of improvement:*

## Governance

- The FAA would benefit from **tighter alignment and closer integration of NextGen elements**
  - Program management will benefit from elevated visibility and consistency
- NextGen needs the ability and authority to **bridge the strategic requirements with its tactical implementation**

## Capabilities

- While pockets of best practices exist, as a whole the FAA needs to bolster key **individual and organizational capabilities** necessary to fully support and develop NextGen
- These capabilities span multiple areas, including **program management, systems integration, software engineering** and **communication**

## Processes

- The current set of processes implemented to support NextGen **do not adequately manage its complexity** and scope
- These processes, as implemented, tend to **overlook rather than overcome organizational boundaries**

## Culture

- A number of **cultural barriers** need to be addressed within NextGen-related activities to **mitigate their negative effect** on the program
- These include **the lack of information sharing, discomfort with managing uncertainty, and the struggle to bridge tactical and strategic viewpoints**

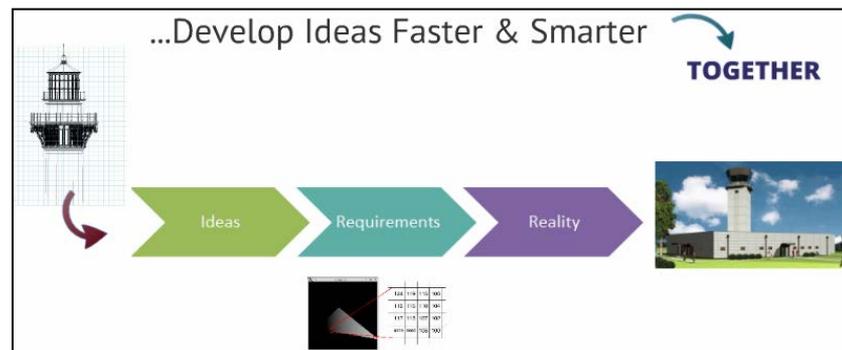
Ultimately accountable for ensuring NextGen benefits realization throughout the "Idea to In-Service Management" Process



# From I2I Process to the New Organization

The I2I process reflects the underlying principles for the NextGen Organization.

- ✦ Ensure appropriate assignment and recognition of responsibility, accountability and authority
- ✦ Ensure sufficient and consistent integration and communication
  - Amongst planning, program management, and operating group
  - Across all lines of business in NextGen activities
- ✦ Ensure the NextGen effort is receiving attention and resources necessary to successfully achieve vision
- ✦ Ensure NextGen operating model creates a platform for end-to-end management of investment portfolios to ensure the expected benefits are being achieved as scheduled through the planned investments.



Idea

In-Service



# I2I Benefits for NextGen

I2I is the Agency's process – all parts of the agency participated in the development and have bought-in

## I2I will support our need to...

- Realize *capabilities that transcend* NAS systems
- *Understand our organizational functions* more clearly as well as the role we play in NextGen
- Begin to institutionalize *portfolio management* (focusing on multiple programs across the NAS)
- Incorporate *sustainment* and *future capability development* into one plan
- Have *requirements traceability* from concept through programs
- Ensure *early user involvement* and continuity as products mature through lifecycle
- Capture *commitment* across all stakeholders



# What's Different for V&V with I2I?

Idea

To

In-Service

I2I  
What's Different?

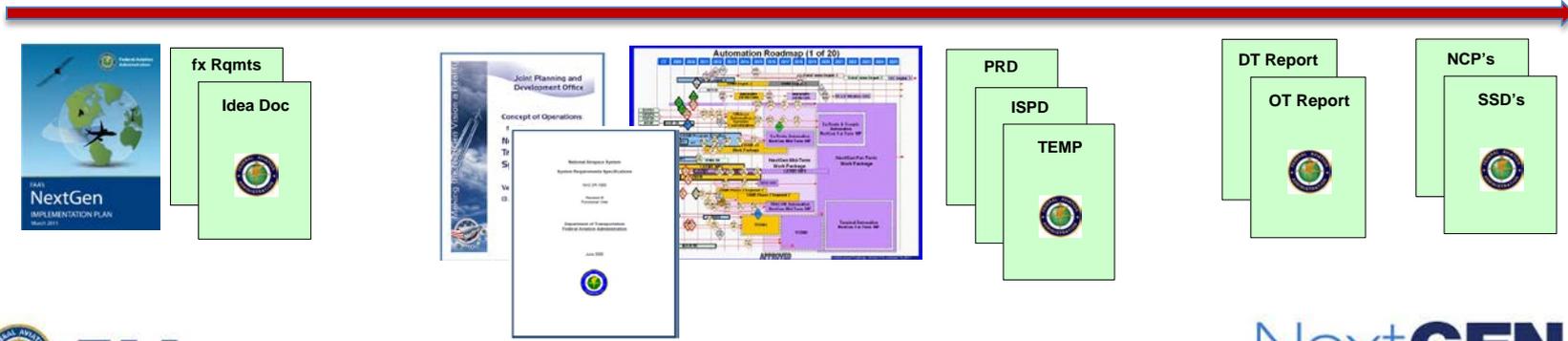


Earlier V&V Involvement

- Iterative V&V throughout each phase
- United perspectives through Capture Teams, from CRD through implementation
- Capture Team collaboration to ensure Requirements and EA products stay traceable to programs and the enterprise
- Informed decisions based on real data

More informed final V&V products with a portfolio focus

Products



# How Does This Look in the Real World?

## Surveillance and Broadcast Services (SBS) program

- SBS exemplifies the need for the I2I process.
- The program interjected new technology into the NAS to provide **many new operational capabilities** with requirements spanning **multiple NAS subsystems**, processors, displays, avionics
  - ✦ (e.g., Wide Area Multilateration- fills gaps in radar surveillance coverage and Interval Management Spacing IM-S capabilities)

### **IM-S: The Most Recent SBS Capability**

- The arrival IM-S concept will use Automatic Dependent Surveillance – Broadcast (ADS-B), which is being deployed throughout the National Airspace System (NAS) through the SBS
- IM-S includes both Flight-deck and Ground-deck based IM for supporting the flight crews and ground operations, respectively

# SBS Challenges and Best Practices

Challenges	Related Best Practices Applied to I2I
<p><b>Collaboration:</b> Collaboration across program offices, test teams, systems engineering offices and other stakeholder groups to define and manage requirements throughout the AMS lifecycle</p>	<ul style="list-style-type: none"> <li>• Now V&amp;V, Requirements and EA will all be engaged early on; working with cross-agency stakeholders; facilitating seamless transitions across phases. Capture teams bring stakeholders together.</li> </ul>
<p><b>Planning:</b> Identifying priorities for “bandwidth” within each program and sequencing development across programs and commitment to implementation</p>	<ul style="list-style-type: none"> <li>• The concept of OCIP also comes into play here (Operational Capability Integration Plan) which is intended to clearly lay out the commitments necessary for the operational capability to be achieved</li> </ul>
<p><b>Document Management:</b> Managing documentation spanning multiple programs and systems engineering offices</p>	<ul style="list-style-type: none"> <li>• NAS Requirements Management is using DOORS to establish traceability of operational capability requirements to the programs allocated to implement them</li> <li>• The NAS ORD concept in the I2I is intended to help engineers move from thinking in terms of equipment requirements to the contribution of all operational elements</li> </ul>

**I2I Supports our need to demonstrate these and other best practices in the future!**



# Key Take-Aways As We Focus On The Future

- NextGen facilitates more comprehensive implementation efforts and technological integration across the NAS, requiring a broadened focus on portfolios
- The V&V and T&E roles are critical for enhancing and sustaining the quality and reliability of NextGen capabilities
- Your V&V activities, through I2I, enable us to accurately and safely implement complex systems of systems

## What We Need from YOU:

- Continue to get more engaged early and more often (e.g., service analysis, validation of concepts)
- Participate in capture teams (when applicable) and approach V&V with a systemic lens
- Stay tuned for information on immediate changes that impact V&V and the program/system as a whole
- Partner with Requirements and EA to provide quality V&V from ideas to in-service

