Enterprise Concept Development

Review of FY2024 – 2026 Proposed Portfolio

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Presented to: REDAC / NAS Ops

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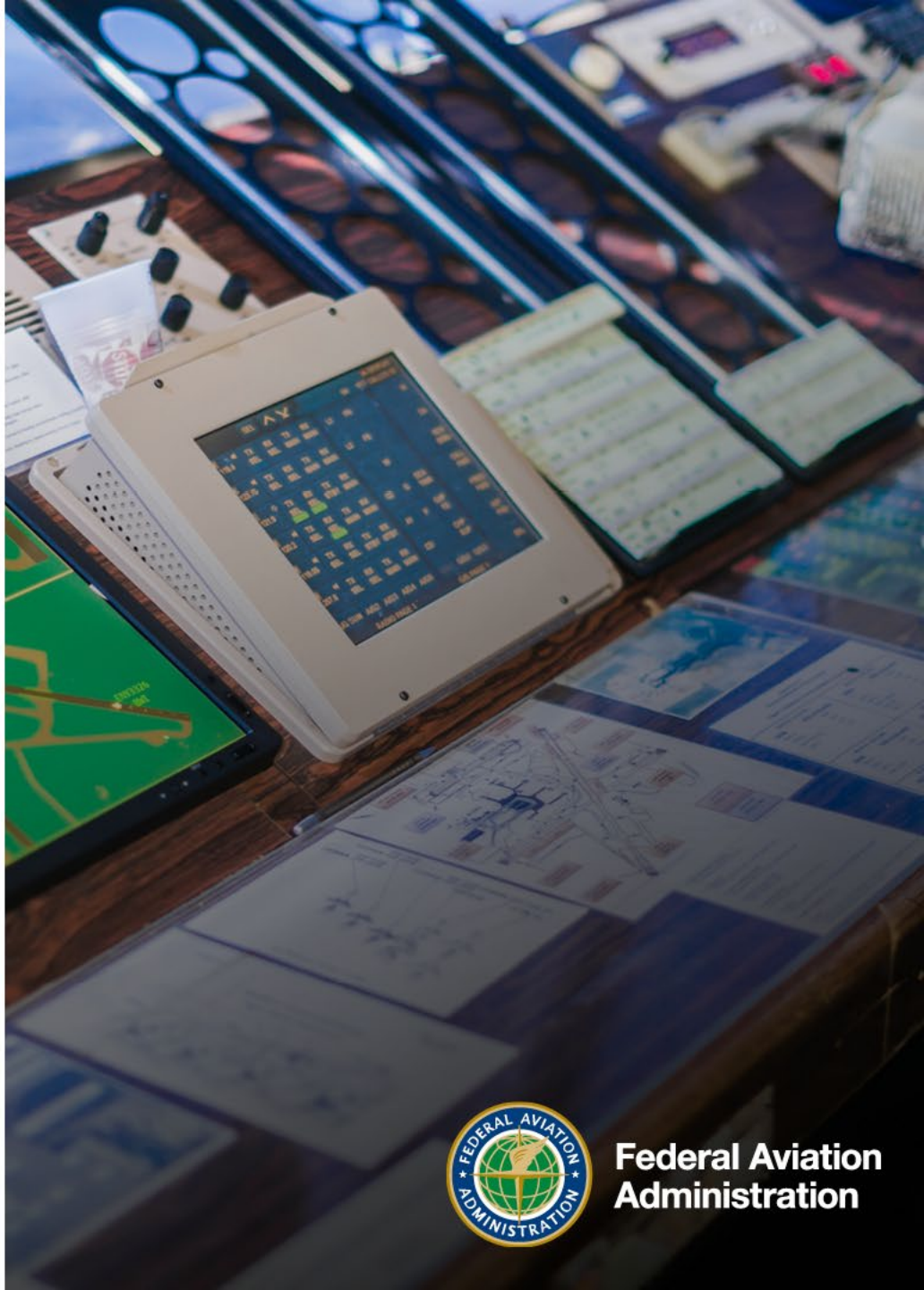

Enterprise Concept Development Overview

What are the benefits to the FAA

- The Enterprise Concept Development program is used to identify and assess early NextGen concepts and conduct validation activities (i.e., modeling and real-time simulations) that will transform the National Airspace System (NAS) into the Next Generation of the NAS. Areas of interest include, but are not limited to, trajectory-based coordination, the use of artificial intelligence in the NAS and the potential of unmanned aircraft systems for urban transportation. When appropriate, concept activities will be considered from a global perspective including International Civil Aviation Organization (ICAO) requirements for global aircraft tracking and network communication.
- Validated operational concepts and feedback from stakeholders have led to advancements in research and pre-implementation work to determine the feasibility of advanced concepts and maximize benefits and flexibility for NAS users.
- This program executes research, engineering analysis, demonstrations and evaluations in support of service analysis and strategic planning.

What determines program success

- This program is necessary to assess the feasibility of proposed NextGen capabilities during the early phases of the Acquisition Management Systems lifecycle. The program develops and conducts studies that prove out NAS concepts to ensure feasibility and viability within the NAS.

Responsible Artificial Intelligence (AI) Framework Analysis

As the FAA embarks on development and implementation of systems and applications with an aviation-specific AI or Machine Learning (ML) components, it is important to have a structured approach toward understanding, utilizing, and implementing responsible AI practices contextualized to the FAA strategic imperatives. This project provides a platform for the FAA to engage and collaborate with NASA and a group of companies to establish a consortium that works together to develop an aviation-specific responsible AI framework. The project will include activity to create FAA/Aviation definitions of responsible AI, gain better understanding of where efforts are already being made to bring responsible AI to the forefront, cross pollinate best practices, and identify principals applicable to the FAA operations.

Planned Research Activities

- Industry Consortium Collaboration on Responsible AI Framework
- AI Operational Capability Identification

Expected Research Products

- Responsible AI Use Cases
- AI Operational Capabilities Document
- Aviation-Specific RAI Framework Version 1.0

Smart Airports

Smart Airports looks to explore microservices that enable ICN operations at large airports and bring them to small, towered airports in a lightweight, low-cost way. The project will take a top down, operations focused approach that seeks to describe the basic functions and interfaces for tower and surface operations and the data exchange necessary to enable those operations. It will also focus on identifying high level scenarios and use cases for small, towered airports in the ICN environment. later phases of this project will focus on Concept of Operations Development and expansion to medium-sized airports.

Planned Research Activities

- Define the operational context of small towered airport operations, from surface movement, departure, and arrival in the future Info Centric NAS environment.
- Identify high level scenarios and use cases for small towered airports in the ICN environment

Expected Research Products

- Small Towered Airport Operational Description
- Small Airport Microservice Allocation
- Smart Airport High Level Scenario and Use Cases

Current FY24 Accomplishments

- Aviation RAI Consortium Agreement
- FAA-NASA RAI Roadmap and RAI Process Description Document
- Aviation-Specific RAI Engagement Coordination Package
- Aviation-Specific RAI Framework Version 1.0

Anticipated Research in FY25

Planned Research Activities

- Identify high level scenarios and use cases for small towered airports in the ICN environment
- NAS 2040
- Responsible AI Framework updated Concept of Operations Development

Expected Research Products

- Smart Airports Functional Analysis and Concept of Operations
- NAS 2040 Conops
- Updated RAI Framework 2.0

Emerging FY26 Focal Areas

- Create Xtm flight rules and metrics for performance elements, establish cooperative volume for airspace users to operative given individual requirements.

- Complete research and gap analysis on ubiquitous communication in the NAS.

Enterprise Concept Development

Research Requirements

This program will validate new concepts and generate information supporting the validity of identified capability shortfalls, future service needs, and capability requirements that will foster increased system capacity, efficiency, and throughput. Validated operational concepts will identify technical and operational requirements (including airspace procedures) and automation requirements needed to realize the capacity gains.

Outputs/Outcomes

- Aviation RAI Consortium Agreement
- FAA-NASA RAI Roadmap and RAI Process Description Document
- Aviation-Specific RAI Engagement Coordination Package
- Aviation-Specific RAI Framework Version 1.0

Create Xtm flight rules and metrics for performance elements, establish cooperative volume for airspace users to operative given individual requirements.

Complete research and gap analysis on ubiquitous communication in the NAS.

Out Year Funding Requirements

F&E

FY24	FY25	FY26	FY27	FY28	FY29
$ 1.5M	$1.5 M	$2.0 M	$2.0 M	$2.0 M	$2.0 M