



**FEDERAL AVIATION ADMINISTRATION –
Operational Concepts, Validation, and Requirements (AJV-7)
1A01C: NextGen – Ops Concept Validation – Infrastructure Evolution**

Program: **ATDP - 1A01C: NextGen
Ops Concept Validation – Infrastructure Evolution**

Purpose: **REDAC/NAS Ops Subcommittee Review**

Submission Date: **July 08, 2014**

Overview:

The ATDP Ops Concept Validation – Infrastructure Evolution program develops and validates operational concepts that are key to the FAA's modernization programs and the Next Generation Air Transportation System (NextGen). This program conducts analysis and planning to support NAS evolution. It executes research, engineering analysis, and evaluation in support of mission and service analysis, ensuring the linkage of proposed solutions back to validated operational needs. This program develops and maintains detailed concepts that support validation and requirements development. This work ensures that the operational concept and sustainment activities are integrated and consistent with the overall NAS Enterprise Architecture. In addition, this project supports the development and sustainment of analytical and computer models used to assess and validate operational changes to the NAS.

This program assesses the interaction of changing roles and responsibilities of NAS service providers and pilots, airspace changes, procedural changes and new mechanized systems for distributing weather, traffic and other flight related information. It tests the assumptions behind common situational awareness and distributed information processing.

Specifically, the program supports the following activities:

- Conduct analyses to support assessments of new air traffic control operational concepts.
- Develop common concept development, validation, and measurement methodologies to support Single European Sky ATM Research (SESAR) Joint Undertaking.
- Develop concepts of use to describe the operational use of new communication, navigation, automation, and surveillance capabilities.
- Produce reports on concept development and validation findings including lower-level concepts, fast-time analyses and human-in-the-loop simulations.
- Develop operational, information and performance requirements.

Accomplishments:

In FY13 this program transitioned to ATO (AJV-7). Since that time it has had many accomplishments within each concept area, as outlined below.

Unmanned Aircraft Systems (UAS) Concept Maturation:

- Developed UAS Stakeholder Concept Validation External Stakeholder Engagement Plan
- Detailed UAS Concept Maturation & Validation accomplishments:

Mature State Integration:

- Performed initial assessment of gaps and concept elements in need of maturation associated with the UAS ConOps Version 2.0 document
- Modified existing scenarios and created new scenarios deemed necessary through tabletop discussions with working group ATC and UAS SMEs
- Updated initial concept level operational requirements based on scenario development/modifications and tabletop discussions with working group SMEs
- Vetted scenarios with ATC SMEs



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- Updated concept level operational requirements based on scenario vetting sessions with ATC SMEs and other key stakeholders

Mid-term Timeframe 2018-2020

- Conducted analysis to establish framework and assumptions for mid-term environment
- Projected NAS capabilities and traffic projections
- Identified mature state concept elements that may be applicable in the mid-term
- Developed operational scenarios that investigated specific mid-term impacts on ATC/ATM operations
- Derived initial set of operational requirements from scenario development and tabletop discussions with ATC and UAS SMEs
- Vetted scenarios with ATC SMEs (other than working group SMEs) & other key stakeholders
- Updated operational requirements based on scenario vetting sessions with ATC SMEs & other key stakeholders

Operational Integration Analysis:

- Developed operational representation of operational changes to reduce potential risk when implementing mid-term enhancements / capabilities / initiatives
- Performed and documented operational integration analysis/vetting using scenarios for several phases of flight and the NSIP Alpha and Bravo segments. Was conducted with SMEs for En Route, TRACON, Oceanic and En Route Cruise Flight Operations. Analysis
- Illustrated mid-term capability interactions
- Identified key integration and interoperability risk areas (holes, gaps, opportunities)
- Developed potential mitigations for the identified potential risk
- Utilized this program methodology to establish a baseline for assessing future changes

National Special Activity Airspace (NSAAP):

- Developed NSAAP Strategic Plan and Multi-Year Project Plan once leadership of NSAAP was transitioned to AJV-7 (2013).
- Conducted analysis of project artifacts at time of leadership change
- Initiated shortfall analyses and ConUse development, and maturation activities
- Identified requirements gaps between NSAAP and other ongoing activities
- Developed “As is” case and identified the shortfalls for ERAM-SAA Integration for ERAM Sector Enhancement
- Developed SAA-ATM Integration Shortfalls
- Provided SAMS-ERAM integration options/recommendations for ERAM Sector Enhancement
- Continued shortfall analysis and operational scenario development activities for other operational domains
- Identified new requirements for SAMS
- Briefed the National Customer Forum on current and planned activities

Enterprise IDS (E-IDS):

- Identified AT information integration shortfalls and recommended mitigations
- Conducted Stakeholder meetings to review overall investment and future activities
- Developed budget and schedule estimates to prepare for a CRD RD for the emerging investment later this year



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- Finalized program Shortfalls Assessment Documentation

RTCA:

This program contributes to the FAA's support for the RTCA, a non-profit association that develops standards based on manufacturers, government, and aviation operator inputs. RTCA also recommends operational improvements to increase the efficiency of air transportation.

- Continued support and analysis of International standard and public/private collaboration.