Federal Aviation Administration

Review of FY 2018 Proposed Portfolio

Operational Concepts

BLI Number: 1A11

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Portfolio Overview

- OCVM Funding ended in FY14
  - Future CD&V activities must be tied to Portfolios
    - FY16 proposed funding in Performance Based Navigation and Metroplex Portfolio (Optimized Route Capability)
    - FY17 proposed funding in Separation Management (Vertical Conformance Verification) and INDP Portfolios (Optimized Route Capability)
- Enhanced Services to Small Communities (ESSC)
    - FY18 proposed funding in Improved Surface/Terminal Flight Data Manager (TFDM) Portfolio

Financial Summary

PROGRAM	FY14	FY15	FY16	FY17	FY18
OCVM	$4,445,000*	Moved to Portfolios			
Total	$4,445,000*	-	-	-	-

* FY14 PLA: $2.2M; FY15 PLA: $2.245M

PROGRAM	PORTFOLIO	FY14	FY15	FY16	FY17	FY18
ESSC	TFDM		-	-	-	$2,000,000
PBTA (ORC)	INDP			$1,000,000	$1,000,000	$1,000,000
UAS	ODNI		-	-	-	$3,000,000
VCV	SEPMAN		-	-	$1,000,000	-
	Total	-	-	$1,000,000	$2,000,000	$6,000,000

FY15 Accomplishments

- Integrated NAS/SVO Simulation Model (Oct 2014)
- VCV Operational Improvement Assessment (Oct 2014)
- VCV Concept Assessment Report (Dec 2014)
- Completed End-to-End Operational Description for Dynamic RNP / Update to Dynamic RNP Concept (Worked with RTCA SC 214 / EUROCAE WG-78) (Jan 2015)
- ORC Initial Concept of Use: Automation Support and Procedures (Mar 2015)
- Draft Requirements Document for Second Additional Type of SVO (May 2015)
- ORC Procedural Mapping (Jul 2015)
- ORC Concept of Operations v2.0 (Sep 2015)
- ORC Site-Specific Analysis (Nov 2015)
- Prepare Generic 4D TBO Use-Cases / Scenarios (Sep 2015)
- Draft Concept Reports for Class A&B (Sep 2015)
- NextGen Operational Analysis of UAS Operations in Class A&B Airspace (Sep 2015)

FY16 Accomplishments

- Final Requirements Document for Second Additional Type of SVO (Oct 2015)
- ORC Initial Integration Analysis/Model Development Report (Nov 2015)
- ORC Algorithm (Dec 2015)
- UAS Concept for Modified IFR (Feb 2016)

FY16 Planned Activities

- UAS Low Altitude Operating Concepts Paper (Modified IFR) (Apr 2016)
- NAS automation and ATC procedural needs for improved vertical airspace management prior to ADS-B (Aug 2016)
- ORC Quantitative Shortfalls Analysis Report (Jun 2016)
- Identify NAS Automation and ATC Procedural Needs for Improved Vertical Airspace Management Prior to ADS-B (Aug 2016)
- SVO Data Requirements Definitions (Aug 2016)
- SMDP Single Airport Phase 2 Model (Aug 2016)

FY17 Planned Activities

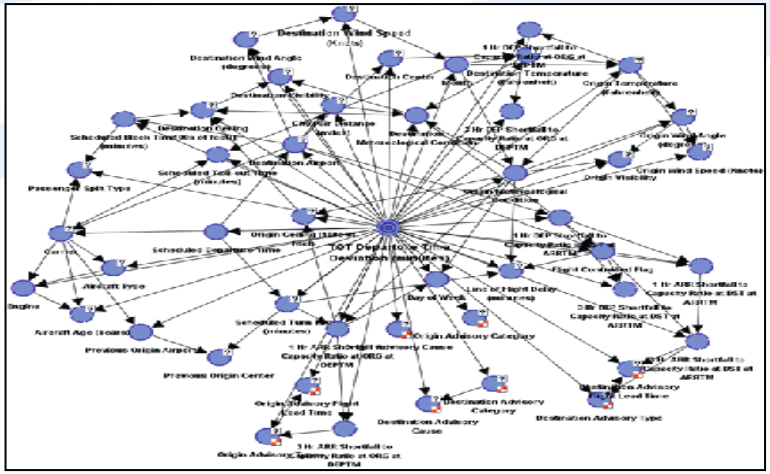
OCVM

- Initial data elements for FIXM (SVO) (Nov 2016)
- TMI Attribute Standardization (TAS) Initial Requirements (Dec 2016)
- 4D Trajectory Concept for SVO (Mar 2017)
- SMDP Core 30 Phase 2 Model (Apr 2017)
- TAS Standardization Requirements (May 2017)
- Debris Mitigation Failure Mode Analysis Report (Jun 2017)

SEPMAN

- Preliminary VCV Concept of Operations (Mar 2017)
- Feasibility Analysis of Interim Vertical Solutions Prior to ADS-B (Mar 2017)

Statistical Methods for Departure Predictability (SMDP)



Description:

- SMDP research will develop a probabilistic directed acyclic graphical model for improving departure time predictions by developing a Bayesian Belief Network (BBN) model.
- BBN model will utilize historical data to improve the reliability of departure time predictions for real-time traffic flow management.

Partnerships:

- FAA Mission Support (AJV)

Funding:

FY14	FY15	FY16	FY17	FY18
$695,000*	-	-	-	-

** FY15 PLA*

Accomplishments:

- BBN Model Approach document (Oct 2013)
- Bayesian Belief Network (BBN) of NAS Model (Jun 2014)
- BBN Model (Jun 2014)
- Obtain TFMS Historical Database (Feb 2016)

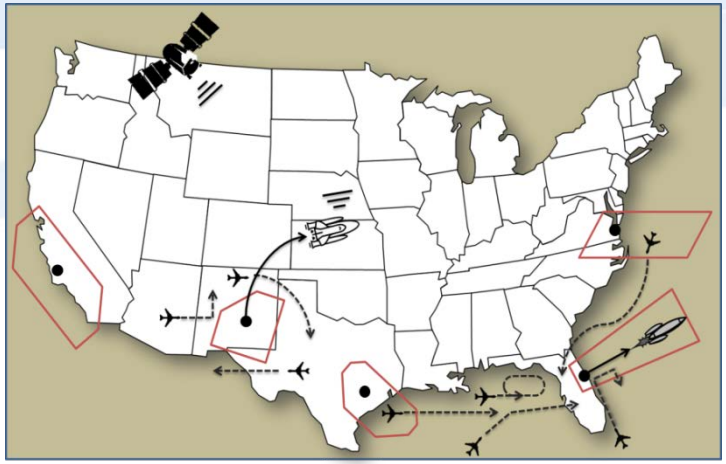
Plans:

- SMDP Single Airport Phase 2 Model (Aug 2016)
- SMDP Core 30 Phase 2 Model (Apr 2017)

FAA

NextGEN

Space Vehicle Operations (SVO)



Description:

- SVO research facilitates synchronization of FAA's NextGen, Commercial Space, and Air Traffic Organization offices with the Center of Excellence for Commercial Space Transportation (COE CST) and industry stakeholders to develop a concept that will enable integration of air and space traffic management in the NextGen timeframe.

Partnerships:

- FAA Commercial Space Transportation (AST)
- Air Traffic Organization Space Operations
- Stanford University
- William J. Hughes Technical Center
- ACTA
- Volpe Center
- Mosaic ATM

Funding:

FY14	FY15	FY16	FY17	FY18
$1,270,000*	-	-	-	-

** FY14 PLA: $800,000; FY15 PLA: $470,000*

Accomplishments:

- Final Requirements Document for Second Additional Type of SVO (Oct 2015)

Plans:

- Define Data Requirements for SVO (Aug 2016)
- Initial data elements for FIXM (Nov 2016)
- 4D Trajectory Concept for SVO (Mar 2017)
- Debris Mitigation Failure Mode Analysis Report (Jun 2017)

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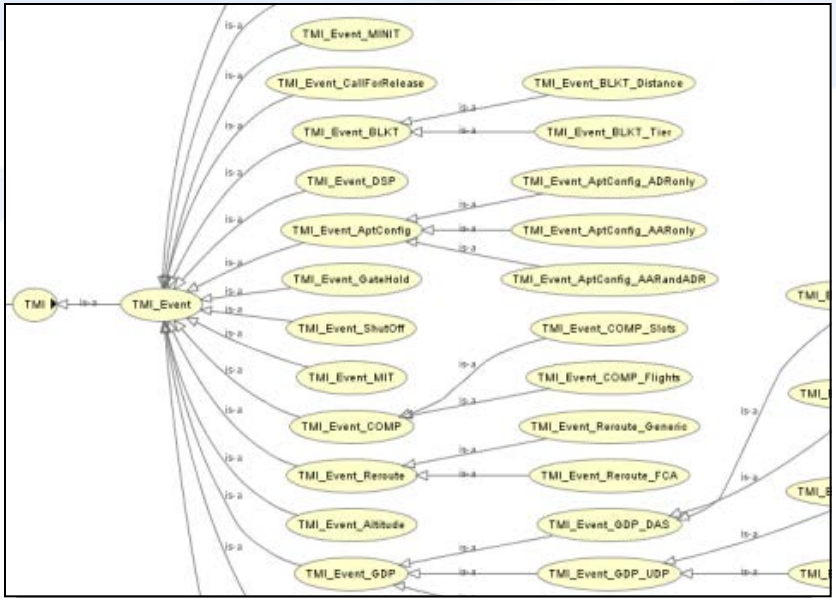
NextGEN

TMI Attribute Standardization (TAS)



Description:

- TAS research utilizes historical and current Traffic Management Initiative (TMI) data to define a system model in which TMI attributes are categorized in a manner that will facilitate real-time TMI information and feedback to NAS users, unified TMI modeling, post-event analysis, and continuous flight day evaluation.
- This research will also result in standardized TMI entry, parsing, and tracking, by enhancing functionality currently provided by NTML.

Partnerships:

- Volpe Center
- Mosaic ATM
- FAA Mission Support (AJV)

Funding:

FY14	FY15	FY16	FY17	FY18
$290,000*	-	-	-	-

** FY15 PLA*

Accomplishments:

- Conduct Research of TMIs (Nov 2013)
- Develop TMI Taxonomy (Jun 2014)
- TMI Attribute Standardization Report (Jun 2014)

Plans:

- Initial Requirements (Dec 2016)
- Coordinate with AJV Advanced Methods (May 2017)
- TAS Standardization Requirements (May 2017)

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NextGEN

Enhanced Services to Small Communities (ESSC)

The ESSC program will develop an approach to expanding low-cost service capability to small communities that are currently served by non-towered airports or airports with limited Air Traffic Control (ATC) services.

ESSC will identify and group airports based on similar configurations. The program will recommend and evaluate a group of airports based on their required level of service and potential benefits to be achieved.

Description:

- ESSC evaluates procedures and technologies, and leverages NextGen surveillance, communications, data sharing and new optical technologies to provide ATC tower-like services at airports that do not currently meet the criteria for an ATC Tower.
- ESSC will identify and develop the recommended changes to controller equipment, standards, procedures and policies to provide the required surveillance, communications and other capabilities to support improved air traffic services and improved access to smaller airports. These services may be performed from a remote location..

TFDM: Improved Surface/Terminal Flight Data Manager

Partnerships:

- TBD

Funding:

FY14	FY15	FY16	FY17	FY18
-	-	-	-	$2,000,000

Plans:

- Analyze current airport operational capabilities and configurations
- Draft ESSC alternatives analysis document
- Draft ESSC feasibility study document
- Draft Concept of Operations (ConOps) document for ESSC

Performance Based Trajectory Allocation (PBTA)

* Leverages Optimized Route Capability (ORC) functionality

(INDP Portfolio)

Description:

- The addition of many new PBN routes and playbook options significantly increases complexity of optimal route selection and coordination
- PBTA expands ORC algorithm functionality to take advantage of emerging technologies and PBN routing options in support of the joint FAA/NASA Airspace Technology Demonstration–3 (ATD-3)

INDP: Integrated National Airspace Design and Procedures Planning

Partnerships:

- NASA

Funding:

FY14	FY15	FY16	FY17	FY18
-	-	$1,000,000*	$1,000,000*	$1,000,000*

** Proposed follow-on funding*

Plans:

- Platform integration Operational Strategy and Guidance (Sep 2019)
- Preliminary PBN Route Optimization Plan (Oct 2019)
- ATD-3 Integration Analysis (Dec 2020)

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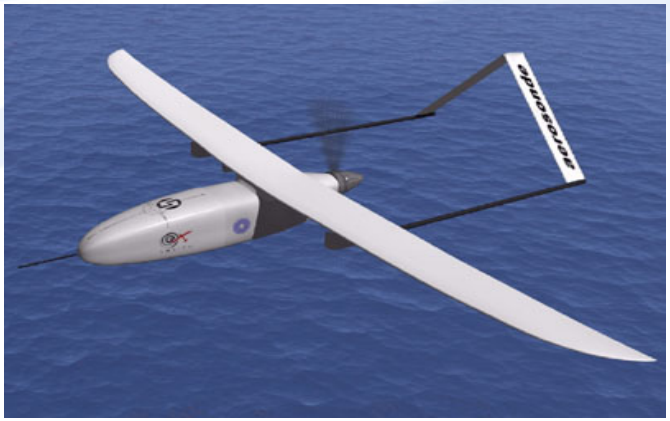
NextGEN

UAS Integration into the NAS



(ODNI Portfolio)

Description:

Mature concept of operations for UAS integration into the NAS

- Ensure NextGen systems and capabilities are prepared for increased numbers of UAS operations
- Develop and describe operating concepts outside the scope of the UAS ConOps to enable nearer term operations
- Develop concept and system requirements for Common Support Services (CSS) notification system for small UAS

ODNI: On Demand NAS Information

Partnerships/Stakeholders

- AJV-7
- AFS-80
- ANG-C2
- AIR-130
- AFS-400

Funding (OCVM)

FY14	FY15	FY16	FY17	FY18
$360,535	-	-	-	-

Funding

FY14	FY15	FY16	FY17	FY18
-	-	-	-	$3,000,000

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Accomplishments:

- NextGen Operational Analysis of UAS Operations in Class A&B Airspace (Sep 2015)

Plans:

- UAS Low Altitude Operating Concepts Paper (aka Modified IFR) (Apr 2016)
- Functional Analysis for CSS Notification system for small UAS (Sep 2019)
- Analysis and development of system requirements for CSS Notification system for small UAS (Sep 2019)

NextGEN

Vertical Conformance Verification (VCV)

Description:

- Misjudgment of aircraft rate of climb and descent during Converging/Opposite Direction operations is among the top 5 risks to the NAS (FAA Safety Office)
- VCV researches the impact of new technologies on primary surveillance parameters, and how to mitigate the effects on ATC ability to leverage historical methods to mentally calculate vertical rate
- Providing near real time VR information will aid ATC in assessing conformance and promote more efficient airspace utilization

SEPMAN: Separation Management

Partnerships:

- Boeing

Funding:

FY14	FY15	FY16	FY17	FY18
-	$490,000*	-	$1,000,000	-

** FY15 PLA*

Accomplishments:

- Research Management Plan (Jan 2016)

Plans:

- Recommendations for Interim solutions prior to ADS-B (May 2016)
- Identify NAS automation and ATC procedural needs for improved vertical airspace management prior to ADS-B (Aug 2016)
- VCV Concept of Operations (Mar 2017)
- Feasibility Analysis and preliminary Implementation Plan of interim vertical solutions prior to ADS-B (Mar 2017)

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NextGEN

Acronyms

ESSC	Enhanced Services to Small Communities
INDP	Integrated National Airspace Design and Procedures Planning portfolio
ODNI	On Demand NAS Information portfolio
ORC	Optimized Route Capability
PBTA	Performance Based Trajectory Allocation
SEPMAN	Separation Management Portfolio
SMDP	Statistical Methods for Departure Predictability
SVO	Space Vehicle Operations
TAS	TMI Attribute Standardization
TBO	Trajectory-Based Operations
TFDM	Improved Surface/Terminal Flight Data Manager (TFDM) Portfolio
TMI	Traffic Management Initiative
UAS	Unmanned Aircraft System
VCV	Vertical Conformance Verification