NextGEN

NextGen Implementation Plan 2015

From the **Administrator**

May 2015

In 2015, the FAA will complete implementation of the majority of NextGen's foundational infrastructure. While most of that technology supports FAA in-house advancements, the upgrades were necessary to deploy future enhancements that will provide direct benefits to external aviation stakeholders.

Within the pages of this Implementation Plan, you will find status updates and milestone information on six programs that are changing the way the National Airspace System (NAS) operates:

- Automatic Dependent Surveillance–Broadcast (ADS-B)
- Data Communications (Data Comm)
- En Route Automation Modernization (ERAM)
- Terminal Automation Modernization and Replacement (TAMR)
- NAS Voice System (NVS)
- System Wide Information Management (SWIM)

These six programs are primarily FAA internal system upgrades that are necessary to deploy additional capabilities. The second half of this report provides a look at the timelines for new capabilities that are being developed and matured through a set of implementation portfolios.

We completed the baseline deployment of all ADS-B ground stations and made ADS-B available nationwide. As of this month, all 20 air route traffic control centers are using ERAM, and we're making tremendous progress in modernizing and standardizing the automation platforms used by our terminal air traffic controllers. More information is available on the NextGen website, www.faa.gov/nextgen.

The future of NextGen looks just as bright. We're working in partnership with industry to provide the capabilities in which the aviation community is most interested, in the areas where they are most needed.

The NextGen Interagency Planning Office is working with our partner agencies to develop integrated plans, adapt existing technologies and continue the research and development needed to ensure our air transportation system keeps pace with evolving needs and technology.

I am pleased to provide you with the 2015 NextGen Implementation Plan. I trust you will find it of value. Should you have any questions about the information reported in this document, please contact me or Molly Harris, Acting Assistant Administrator for Government and Industry Affairs, at (202) 267-8206.

Sincerely,

Michael P. Huerta
Administrator

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APPENDIX

NEXTGEN PROGRAMS

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST

Automatic Dependent Surveillance–Broadcast (ADS-B) is the more precise, satellite-based successor to radar. ADS-B Out uses GPS to determine an aircraft's location, airspeed and other data. It broadcasts that information to a network of ground stations (which relays the data to air traffic controllers) and to nearby aircraft equipped to receive the data via ADS-B In. ADS-B In provides operators of properly equipped aircraft with weather and traffic information delivered directly to the cockpit.

ADS-B Out equipage has been mandated in most controlled airspace — generally where transponders are required today — by January 1, 2020. ADS-B In equipage is not currently mandated.

TARGET USERS

Aircraft owners and pilots flying in most controlled airspace, air traffic controllers, airport surface vehicle operators

EQUIPAGE REQUIREMENTS

Avionics equipment requirements for operators and installers are detailed in FAA Advisory Circular 90-114 and Technical Standard Orders TSO-C166b and TSO-C154c. To meet the ADS-B Out mandate, aircraft require a position source (GPS) and a compatible transmitter. A display device is needed for ADS-B In.

- Aircraft operating above 18,000 feet (FL180) or internationally require a Mode S transponder operating on 1090 MHz with Extended Squitter (1090ES). A 1090 MHz receiver is needed to process Traffic Information Service-Broadcast (TIS-B) information. Flight Information Services-Broadcast (FIS-B) is not available with 1090ES.
- Aircraft operating within U.S. airspace below FL180 can use either a 1090ES or a Universal Access Transceiver (UAT) operating on 978 MHz. UAT is capable of receiving TIS-B and FIS-B.

OPERATIONAL CAPABILITIES

ADS-B Out avionics transmit position, airspeed and other data to ground receivers that in turn relay the information to controllers and aircraft equipped for ADS-B In. ADS-B In requires

additional aircraft equipage to receive and display data from ground stations and ADS-B Out-equipped aircraft.

SERVICE CAPABILITIES

ADS-B In-equipped aircraft have access to the following additional broadcast services:

- FIS-B: Broadcasts graphical weather to the cockpit as well as text-based advisories, including Notices to Airmen and significant weather activity. Available only with a UAT.
- TIS-B: Provides altitude, ground track, speed and distance of aircraft flying in radar contact with controllers, and within a 15-nautical mile radius, up to 3,500 feet above or below the receiving aircraft's position.
- Automatic Dependent Surveillance–Rebroadcast (ADS-R): ADS-B Out information can be broadcast on two frequencies, 1090 MHz and 978 MHz. ADS-R rebroadcasts data from one frequency to the other, providing aircraft operating on both ADS-B links the ability to see each other on their traffic displays.

IMPLEMENTATION

The FAA completed the baseline deployment of 634 ground stations in 2014. ADS-B has now been integrated into the automation platforms at 22 of 24 en route air traffic control facilities (19 of 20 En Route Automation Modernization systems and three of four Microprocessor En Route Automated Radar Tracking systems), which control high-altitude traffic. ADS-B traffic and weather broadcasts are now available nationwide. Similar system upgrades in our terminal radar approach control facilities are also on track and will be completed by 2016.

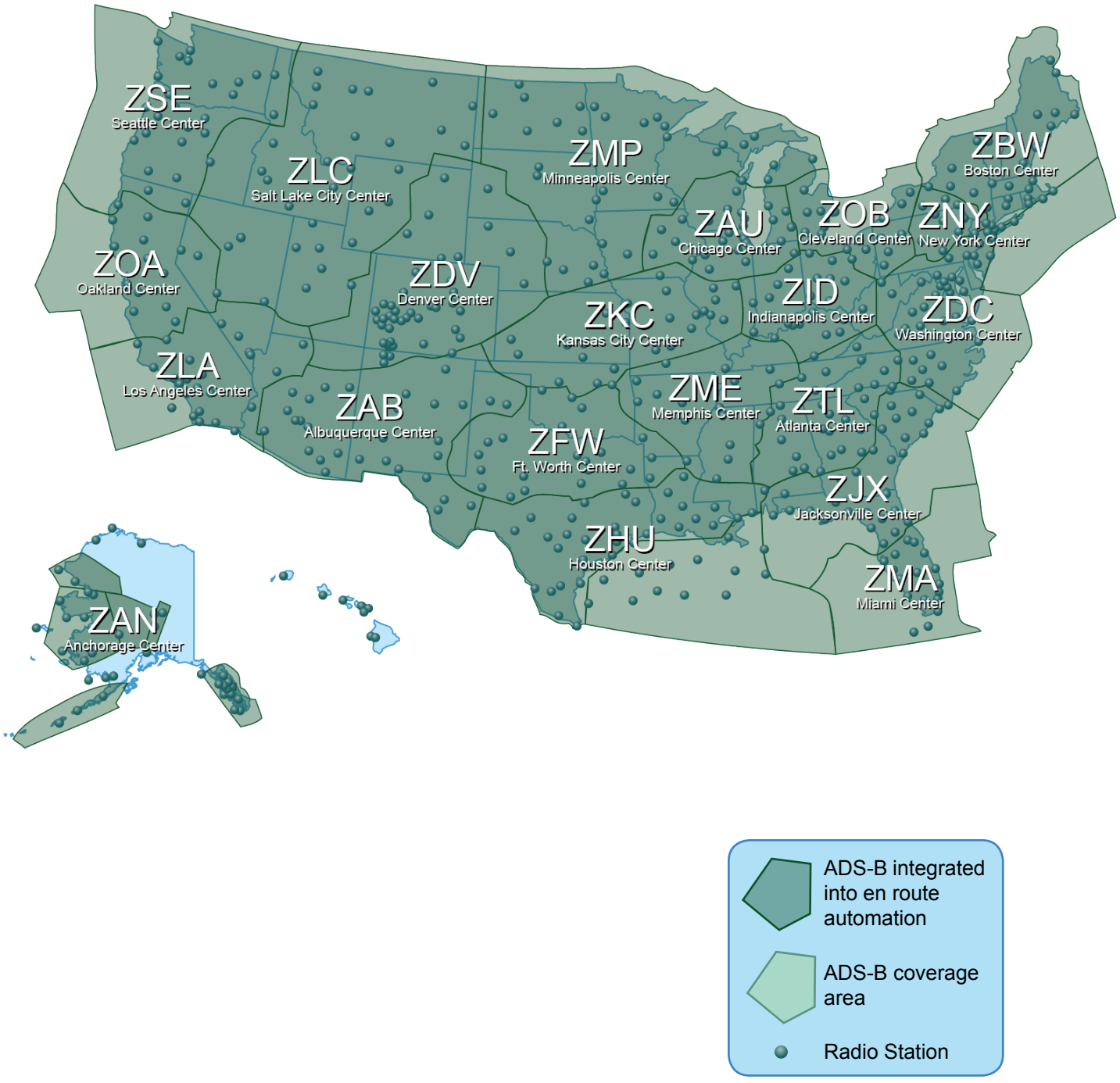
BENEFITS ACHIEVED TO DATE

The FAA declared ADS-B Initial Operating Capability (IOC) in the Gulf of Mexico on December 17, 2009, providing improved communications, weather and surveillance services to operators in the Gulf region. Of the 458 helicopters servicing oil platforms in the Gulf, more than 100 are now equipped with ADS-B avionics.

- ADS-B surveillance permits reduced separation between helicopters in the Gulf from a single aircraft inside a 20-by-20-mile block of airspace to 5 nautical miles (nm). This allows direct routing clearances for ADS-B-equipped helicopters, which has shortened trips by about 14 nm and saved about 14 gallons of fuel per flight. The FAA estimates over 300,000 nm in flight savings from December 2009 to February 2014.
- Helicopter operator PHI reports an increase in annual flight hours during periods of low visibility from 1,500 to 20,000.
- JetBlue Airways has become a pioneer for airline use of ADS-B over the Gulf of Mexico where there is no radar coverage. When severe weather blocks the usual flight plan between Florida and California, the airline is able to fly a more efficient ADS-B route over the Gulf as opposed to the typical over-land reroute. Flights that use the ADS-B route during severe weather save between 7 and 11 minutes of flight time on average, burning less fuel and creating fewer emissions than flights on the typical reroute.
- General aviation pilots in properly equipped aircraft have subscription-free access to traffic and weather. As of October 2014, more than 6,000 general aviation aircraft and 225 commercial aircraft have been equipped with ADS-B avionics.

ADS-B COVERAGE AND EN ROUTE INTEGRATION

As of April 2015



PROGRAM MILESTONES	DATE
ADS-B Segment 1 and Segment 2 Investment Decision	August 2007
Segment 1 Surveillance and Broadcast Services Interim Situation Display for ADS-B	September 2010
Initial Operating Capability (IOC) ADS-B Capability on Common -Automated Radar Terminal System IIIE at New York TRACON	July 2011
IOC ADS-B Capability on Standard Terminal Automation Replacement System at Houston TRACON	March 2012
Manufacture "Boards"	March 2012
IOC ERAM Release 3 with ADS-B Capability at Houston Center	April 2012
Flight Testing	June 2013
Traffic Situational Awareness with Alerts - RTCA Releases DO-3178	March 2014
Achieve En Route Separation Services IOC at the 12th site	March 2014
Achieve 12 of 16 Remote Units sending Airport Service Surveillance Capability data to Air Traffic Control Tower equipment at SFO	March 2014
Achievement of critical Services Implementation Service Acceptance Test at all 306 Service Volumes (Services encompass ADS-B Out, ADS-B In, TIS-B, FIS-B)	March 2014
Complete baseline ADS-B radio station infrastructure deployment	March 2014
Achieve Terminal Separation Services IOC at the 55th site	June 2014
Investment Analysis Readiness Decision for ADS-B In Applications Planning Milestone	September 2014
Complete IOC Surface Advisory Services at all 35 Airport Surface Detection Equipment, Model X sites	September 2014
Investment Analysis Readiness Decision for ADS-B In Applications Planning Milestones	June 2015
Complete IOC at last (24th) En Route site	September 2015
Final Investment Decision for ADS-B In Applications Planning Milestone	June 2016
Oceanic In-Trail Procedures operation at Oakland, New York and Anchorage	September 2017
Complete all Terminal and Surface IOCs	2019
ADS-B Out Rule Compliance (aircraft equipage deadline)	January 1, 2020

DATA COMMUNICATIONS

Data Communications (Data Comm) enables controllers and pilots to communicate with digitally-delivered messages, rather than rely solely on radio voice communications. With the push of a button, controllers will be able to electronically send routine instructions, such as departure clearances (DCL) and weather-avoiding reroutes, directly to the flight deck. Messages will appear only on the cockpit display of the aircraft to which they apply, reducing the potential for miscommunication that can occur from radio voice exchanges.

TARGET USERS

Air traffic controllers, airline pilots, airline dispatchers

EQUIPAGE REQUIREMENTS

Future Air Navigation System 1/A (direct data link between pilot and controller).

VHF Digital Link Mode 2 avionics for en route services.

VHF Digital Link Mode 0 avionics will be accommodated for tower services.

OPERATIONAL CAPABILITIES

- Data Comm will initially deliver digital tower pre-departure clearance services, including route revisions.
- Data Comm services will be provided in en route airspace, enabling controllers to provide pilots with frequency handoffs, altitude changes and inflight reroutes. Pilots can also send digital messages to controllers.
- Collectively, these services will save time and increase controller and pilot productivity, leading to greater efficiency, improved routing around weather and congestion, increased flexibility and accommodation of user requests, and reduce the potential for miscommunication as controllers send digital messages to each aircraft.

IMPLEMENTATION

In October 2014, the FAA made the Final Investment Decision for initial en route services, with initial Data Comm capabilities expected in high-altitude airspace beginning in 2019. These services will expand to full operational capability at all 20 air route traffic control centers in the continental United States in 2021.

The FAA is encouraging Data Comm equipage on the flight decks of 1,900 aircraft by 2019. Under the Data Comm equipage incentive program, eight airlines have agreed to equip their aircraft with Data Comm avionics with the first aircraft being so equipped in 2014.

At the beginning of Fiscal Year 2014, the FAA agreed with the NextGen Advisory Committee (NAC) to continue operating the Data Comm prototype for 15 additional months at Memphis and Newark. These trials began in 2013 and are resulting in 60-80 operations per day that use Data Comm at both airports. The FAA plans to deploy Data Comm to towers at 56 airports

starting in 2016 and finishing in 2019. In alignment with NAC recommendations, the FAA is working to accelerate deployment of Data Comm tower services to begin in summer 2015 at Salt Lake City, Houston Intercontinental and Houston Hobby airports with the remaining tower deployment planned for 2016.

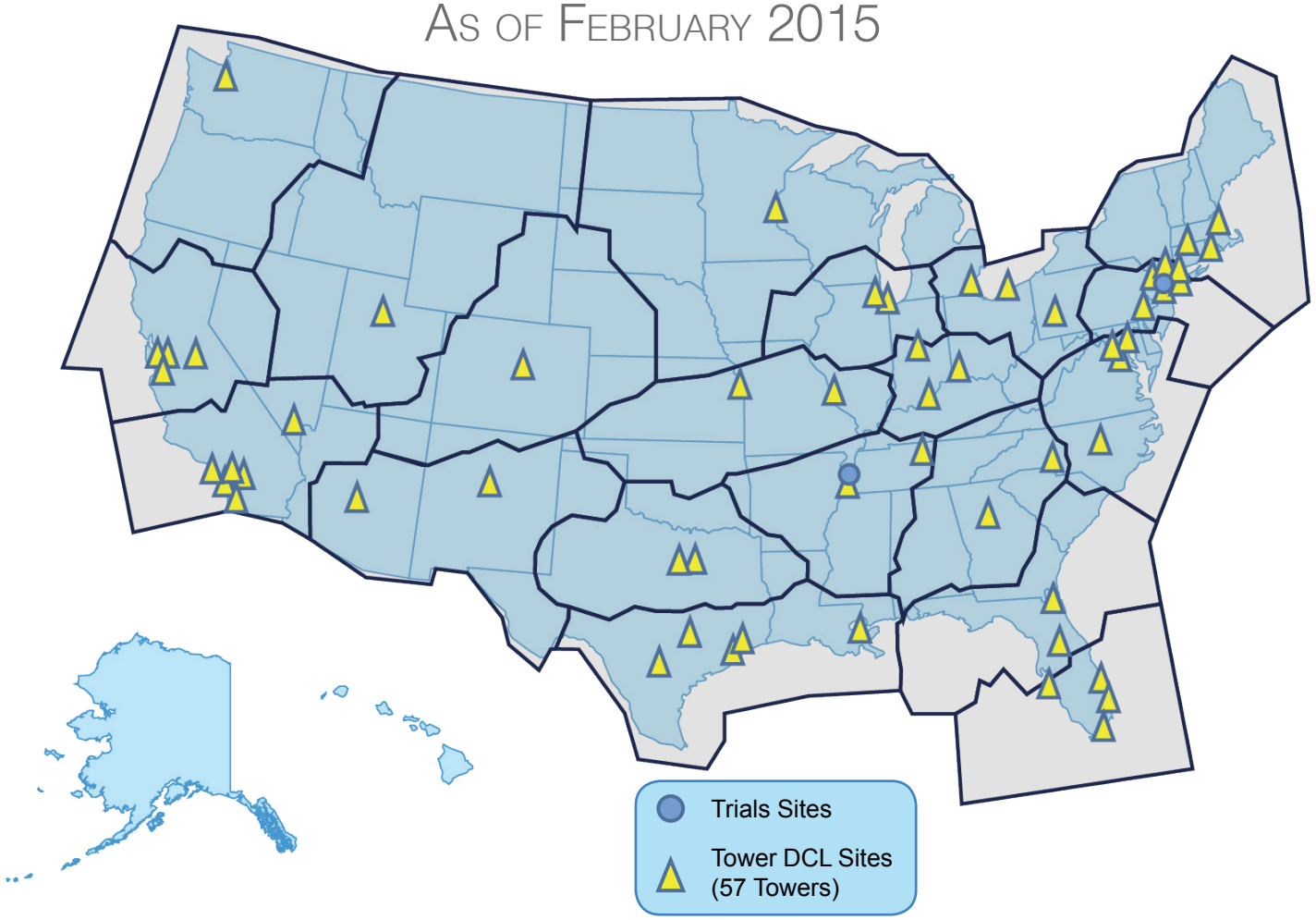
There are no current plans for deployment to terminal radar approach control facilities, which control traffic arriving at and departing from our nation's airports.

BENEFITS ACHIEVED TO DATE

Preliminary qualitative benefits seen during trials in Memphis and Newark include reduced communications time resulting in faster taxi outs, reduced delays and reduced pilot and controller workload.

DATA COMMUNICATIONS DEPARTURE CLEARANCE TOWER SERVICE

As of February 2015



PROGRAM MILESTONES	DATE
SEGMENT 1	
Data Comm Segment 1 Phase 1 Final Investment Decision (FID) for En Route Automation Modernization (ERAM) and Tower Data Link System (TDLS)	May 2012
Data Comm Segment 1 Phase 1 Data Comm Integrated Services Contract Award	September 2012
Data Comm Segment 1 Phase 1 TDLS Preliminary Design Review complete	July 2013
Data Comm Segment 1 Phase 1 ERAM Initial Test Release (ITR)	April 2014
ERAM R4 ITR	June 2014
TDLS V12 ITR	July 2014
Deliver Data Comm Network Service Build 1 to William J. Hughes Technical Center	September 2014
Complete Program Level Integrated Baseline Review	September 2014
Complete Data Comm Informal Integration and Interface Service Test	September 2014
Data Comm Segment 1 Phase 2 Initial En Route Services FID	October 2014
Data Comm Segment 1 Phase 1 Operational Test and Evaluation	November 2015
Data Comm Segment 1 Phase 2 Full En Route Services FID planning date	December 2015
Data Comm Segment 1 Phase 1 IOC at first site	March 2016
Data Comm Segment 1 Phase 1 In-Service Decision	December 2016
Data Comm Segment 1 Phase 1 Site Operational Readiness Decision	April 2017
Data Comm Segment 1 Phase 1 IOC at last site	May 2019
Data Comm Segment 1 Phase 2 IOC at first site	October 2019
Data Comm Segment 1 Phase 2 IOC at last site	October 2021
TOWER TRIALS	
Initiate Departure Clearance (DCL) tower trials at MEM	January 2013
Initiate DCL tower trials at EWR	April 2013
Complete DCL tower trials	September 2014

DEPARTURE CLEARANCE TOWER SERVICES CHALLENGE MILESTONES

The NextGen Priorities Joint Implementation Plan commits the FAA to begin delivering departure clearances at 56 airports under the Data Comm program's Segment 1 Phase 1. The baseline calls for this work to be completed by the end of 2019 but the agency is working toward challenge dates that would have services at all 56 locations in place by the end of CY 2016 (see chart below for specifics). The order of the towers may move within the groups based on operational requirements; however, the FAA and industry will work together to manage these changes.

KEYSITE (3 TOWERS)			
SITE NAME	SITE ID	ARTCC ID	IOC (CY)
KS 1: Salt Lake City	SLC	ZLC	Q2 2015
KS 2: Houston Intel	IAH	ZHU	Q3 2015
KS 3: Houston Hbby	HOU	ZHU	Q3 2015

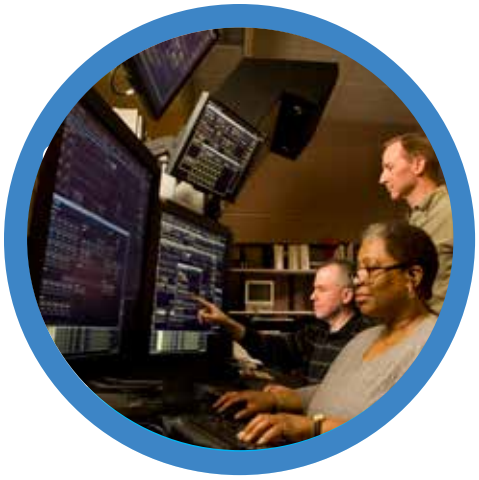
GROUP A (19 TOWERS)			
SITE NAME	SITE ID	ARTCC ID	IOC (CY)
New Orleans	MSY	ZHU	Q1 2016
Austin	AUS	ZHU	Q1 2016
San Antonio	SAT	ZHU	Q1 2016
Los Angeles	LAX	ZLA	Q1 2016
Las Vegas	LAS	ZLA	Q1 2016
San Diego	SAN	ZLA	Q2 2016
John Wayne	SNA	ZLA	Q2 2016
Bob Hope	BUR	ZLA	Q2 2016
Ontario	ONT	ZLA	Q2 2016
San Francisco	SFO	ZOA	Q2 2016
Oakland	OAK	ZOA	Q2 2016
San Jose	SJC	ZOA	Q3 2016
Sacramento	SMF	ZOA	Q3 2016
Phoenix	PHX	ZAB	Q3 2016
Albuquerque	ABQ	ZAB	Q3 2016
Seattle	SEA	ZSE	Q3 2016
Dallas Love	DAL	ZFW	Q4 2016
Dallas/Fort Worth (x2)	DFW	ZFW	Q4 2016

GROUP B (17 TOWERS)			
SITE NAME	SITE ID	ARTCC ID	IOC (CY)
Louisville	SDF	ZID	Q1 2016
Indianapolis	IND	ZID	Q1 2016
Cincinnati	CVG	ZID	Q1 2016
Memphis	MEM	ZME	Q2 2016
Nashville	BNA	ZME	Q1 2016
Denver	DEN	ZDV	Q2 2016
Atlanta	ATL	ZTL	Q2 2016
Charlotte	CLT	ZTL	Q2 2016
Jacksonville	JAX	ZJX	Q2 2016
Orlando	MCO	ZJX	Q3 2016
Miami	MIA	ZMA	Q2 2016
Fort Landerdale	FLL	ZMA	Q3 2016
Tampa	TPA	ZMA	Q3 2016
Palm Beach	PBI	ZMA	Q3 2016
St. Louis	STL	ZKC	Q4 2016
Kansas City	MCI	ZKC	Q3 2016
Minneapolis-St. Paul	MSP	ZMP	Q4 2016

GROUP C (18 TOWERS)			
SITE NAME	SITE ID	ARTCC ID	IOC (CY)
Newark	EWR	ZNY	Q1 2016
New York John F. Kennedy	JFK	ZNY	Q1 2016
New York La Guardia	LGA	ZNY	Q1 2016
Philadelphia	PHL	ZNY	Q2 2016
Teterboro	TEB	ZNY	Q1 2016
Westchester	HPN	ZNY	Q2 2016
Boston	BOS	ZBW	Q2 2016
Providence	PVD	ZBW	Q2 2016
Bradley	BDL	ZBW	Q2 2016
Detroit	DTW	ZOB	Q3 2016
Cleveland	CLE	ZDC	Q2 2016
Pittsburgh	PIT	ZDC	Q3 2016
Baltimore-Washington	BWI	ZDC	Q3 2016
Washington Dulles	IAD	ZDC	Q3 2016
Washington Reagan	DCA	ZDC	Q3 2016
Raleigh/Durham	RDU	ZDC	Q4 2016
Chicago Midway	MDW	ZAU	Q4 2016
Chicago O'Hare	ORD	ZAU	Q4 2016

EN ROUTE AUTOMATION MODERNIZATION

En Route Automation Modernization (ERAM) replaces the legacy HOST automation system at 20 of the FAA's network of en route centers, which control high-altitude traffic. This scalable system combines flight plan information with information from surveillance sources to automate many air traffic control functions and support controller decisions. The ERAM base program is not a NextGen program, but it is foundational to the success of many NextGen capabilities. For instance, ERAM serves as the platform upon which NextGen capabilities such as data sharing, digital communications and trajectory-based operations will reside.



TARGET USERS

Air traffic controllers at air route traffic control centers

EQUIPAGE REQUIREMENTS

Additional equipage not required for National Airspace System (NAS) users.

OPERATIONAL CAPABILITIES

- ERAM combines flight plan information with surveillance data from Automatic Dependent Surveillance–Broadcast, Wide Area Multilateration and radar to automate a number of air traffic control functions such as tracking aircraft, providing conflict alerts and minimum safe altitude warnings, and recording air traffic events.
- ERAM enables controllers to see beyond the boundaries of the airspace managed by their own center, enabling them to handle traffic more efficiently. This extended coverage is possible because ERAM processes data from 64 radars, compared with 24 for HOST.
- ERAM can track 1,900 aircraft at a time, compared with 1,100 for HOST.

IMPLEMENTATION

The FAA considers an ERAM site fully implemented once it has accomplished three phases — initial operating capability (IOC), continuous operations and operational readiness demonstration (ORD). The agency has completed installation and conducted IOC at all 20 facilities.

As of January 2015, 16 of the 20 facilities have achieved the ORD milestone, and three of the remaining four are using ERAM on a continuous basis. All 20 centers are expected to achieve final implementation and declare the ORD milestone by March 2015. Other air traffic facilities and agencies will be connected to the centers via ERAM.

The FAA has baselined the next segment of ERAM – System Enhancements and Tech Refresh. These will include initial technical refresh and deployment of enhanced capabilities that go above and beyond the core ERAM deployment. These capabilities were identified by users and will enhance the operational effectiveness of ERAM in the NAS. ERAM tech refresh and system enhancement will continue through 2017.

BENEFITS ACHIEVED TO DATE

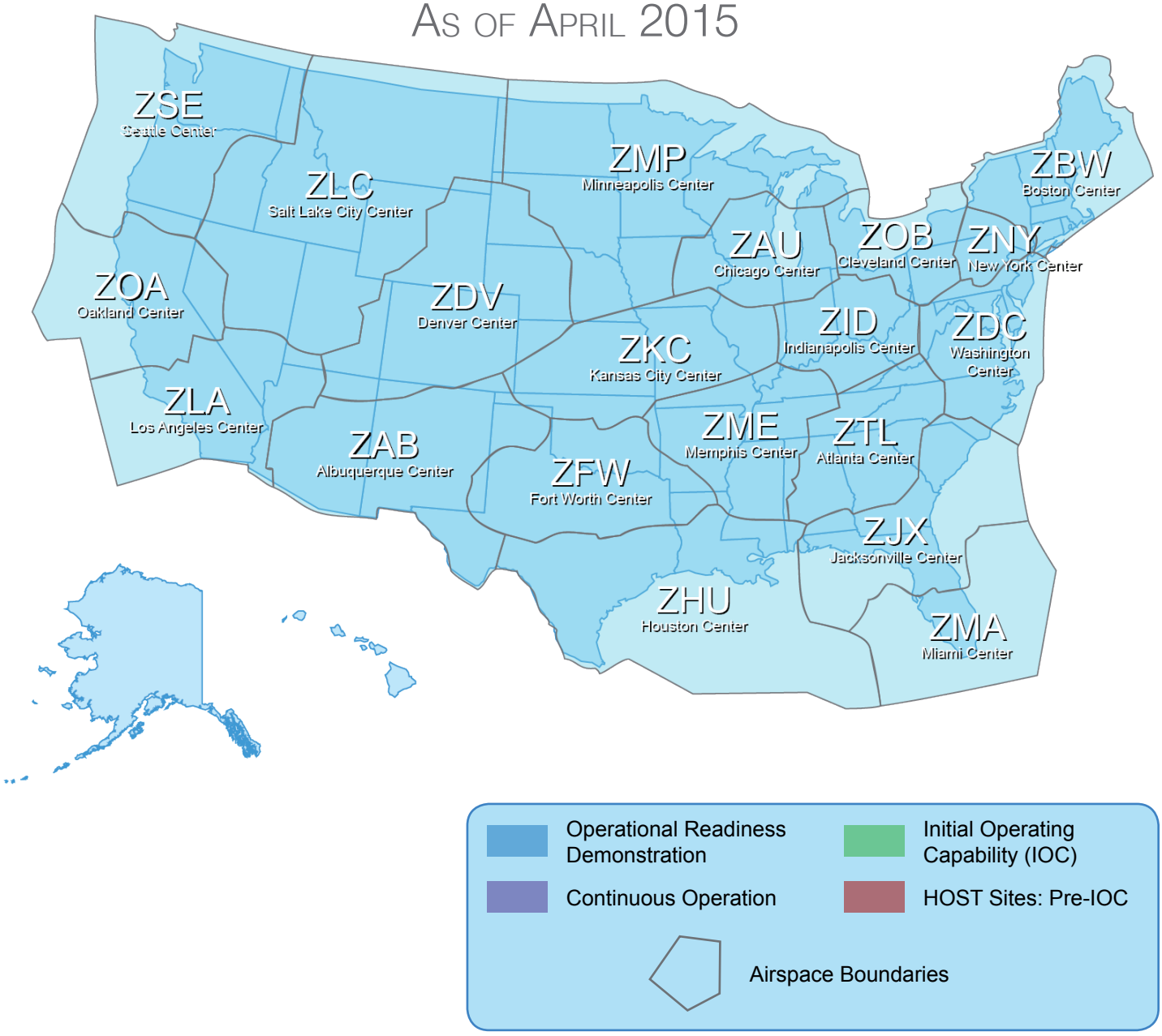
ERAM detects conflicts between two aircraft, reducing the number of missed alerts and false conflicts.

The system provides for routine maintenance without interrupting air traffic control services, eliminating planned outages.

New color screens used with ERAM no longer reflect glare, which allows brighter light levels in radar rooms. ERAM also gives controllers the ability to customize what they see. For example, a controller could turn all of the airplanes in a sector to a single color, such as blue, to distinguish them from others in nearby airspace.

EN ROUTE AUTOMATION

As of April 2015



PROGRAM MILESTONES	DATE
Final Investment Decision (FID) for ERAM	June 2003
ERAM Release 1: Systems Integration Milestone	November 2006
ERAM Release 1: William J. Hughes Technical Center general aviation	October 2007
ERAM Release 1: Key site - general aviation	April 2008
ERAM In Service Decision	March 2011
ERAM Release 2: Key site Operation Readiness Demonstration (ORD)	March 2012
ERAM Release 3: First site ORD	August 2012
System Enhancement and Tech Refresh FID	February 2014
Collaborative Air Traffic Management (CATM) - Airborne Reroute (ABRR) - S/W Build EAC 1500 Release	May 2014
Investment Analysis Readiness Decision for ERAM Sector Enhancement Planning Milestone	June 2014
Investment Analysis Readiness Decision for ERAM Sector Enhancements	July 2014
Achieve Initial Operating Capability at last two sites (Jacksonville and Atlanta)	September 2014
Complete installation of En Route Information Display System (ERIDS) equipment components of first site	March 2015
Last site ORD	March 2015
FID for ERAM Sector Enhancement Planning Milestone	September 2015
Deploy first ERAM release containing system enhancements	September 2015
Complete installation of En Route Communication Gateway (ECG) router firewall equipment at last site	September 2015
Complete installation of ERIDS equipment components at last site	September 2015
Complete installation of ECG router firewall equipment at last site	March 2016
CATM - ABRR - ABRR capability operationally available	December 2016
Deploy last ERAM release containing system enhancements	September 2017

TERMINAL AUTOMATION MODERNIZATION AND REPLACEMENT

Air traffic controllers use different automation platforms depending on whether the airspace involved is near airports or at high altitude. The Terminal Automation Modernization and Replacement (TAMR) program converts terminal air traffic control facilities to a single, common automation platform: the Standard Terminal Automation Replacement System (STARS). TAMR is funding a technology refresh at the 55 sites where STARS is already in operational use while replacing older automation platforms at 108 other facilities. TAMR is not a NextGen program but, like ERAM, the successful transition to this common automation platform is foundational to successfully deploying other NextGen capabilities.

TARGET USERS

Air traffic controllers at towers and Terminal Radar Approach Control (TRACON) facilities

EQUIPAGE REQUIREMENTS

Additional equipage not required for National Airspace System (NAS) users.

OPERATIONAL CAPABILITIES

STARS provides individual preference settings for controllers. STARS meets operational requirements for core NextGen capabilities, such as Automatic Dependent Surveillance–Broadcast (ADS-B). It further provides data-recording capability and quadruple redundancy. The system significantly improves flight plan processing with a 4-D trajectory — lateral, vertical and horizontal plus time — of every flight from takeoff to landing. This improves a controller's situational awareness, allowing for better decision making and more efficient routing of aircraft.

IMPLEMENTATION

TAMR is being implemented in three phases.

- Phase 1 is a technology refresh of the existing STARS platform at 47 sites by 2020.
- Phase 2, completed in 2008, replaced automation systems with STARS at four TRACONs: Anchorage, Alaska; Corpus Christi, Texas; Pensacola, Florida; and Wichita, Kansas. It also modernized aging air traffic controller displays and system processors at four additional TRACONs: Chicago, Denver, St. Louis and Minneapolis/St. Paul.
- Phase 3 is replacing the remaining 100+ automation systems with STARS to support the increasing demand for air traffic services. Phase 3 is occurring in two segments defined by the type of automation systems being replaced by STARS.
    - Phase 3 (Segment 1) will replace Common Automated Radar Terminal System IIIE

(CARTS IIIE) at 11 facilities by 2017. CARTS IIIE consists of a common software baseline capable of operating on three terminal automation platforms, ARTS IIIEs, ARTS IIEs and ARTS IEs.

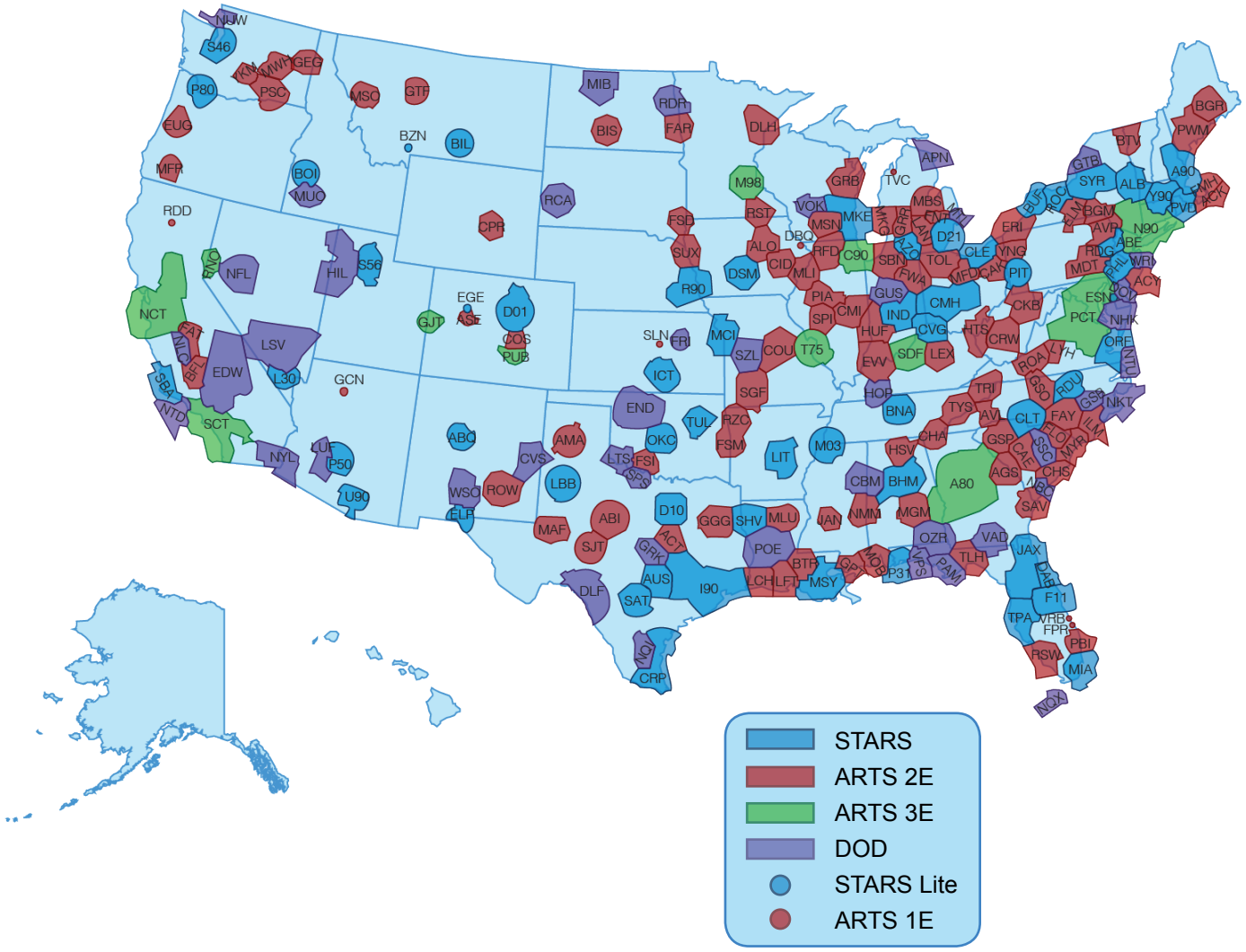
- Phase 3 (Segment 2) replaces CARTS IIE and IE at 97 facilities by 2019. In April 2014, IOC was achieved at the first Phase 3 (Segment 2) site, Allentown, Pennsylvania, TRACON.
- Full deployment of TAMR is planned for 2020.

BENEFITS ACHIEVED TO DATE

LCD screens cut electricity use by 67 percent, take less time to maintain and are more reliable than the previous CRT screens.

TERMINAL AUTOMATION

As of February 2015



PROGRAM MILESTONES	DATE
TAMR PHASE 1	
TAMR Phase 1 Final Investment Decision (FID)	September 2012
TAMR Phase 1 complete Initial Operating Capability (IOC) at key site	December 2012
TAMR Phase 1 Software Build R26 (STARS) complete	August 2013
TAMR Phase 1 National STARS Release Build 26	August 2013
TAMR Phase 1 Software Build 37C (CARTS) complete	September 2013
TAMR Phase 1 National CARTS Release 37C	September 2013
TAMR Phase 1 complete IOC at 2nd site	January 2014
TAMR Phase 1 complete IOC at 26th site	December 2017
TAMR Phase 1 complete IOC at 39th site	March 2019
TAMR Phase 1 complete IOC at last (48th) site	February 2020
TAMR PHASE 3 SEGMENT 1	
TAMR Phase 3 Segment 1 Authorization to Proceed	December 2010
TAMR Phase 3 Segment 1 Contract Award - 11 STARS Systems (NTE)	December 2010
TAMR Phase 3 Segment 1 Final Investment Decision (FID)	December 2011
TAMR Phase 3 Segment 1 first site hardware delivery	April 2012
TAMR Phase 3 Segment 1 complete installation and checkout of upgraded hardware for CARTS IIIE system at N90	May 2012
TAMR Phase 3 Segment 1 Contract Definitization	July 2012
TAMR Phase 3 Segment 1 complete IOC at key site on E1 - D10	May 2013
TAMR Phase 3 Segment 1 complete IOC at key site on E2 - D10	September 2014
TAMR Phase 3 Segment 1 complete Operational Readiness Demonstration (ORD) at key site on E2 - D10	May 2015
TAMR Phase 3 Segment 1 complete IOC at 5th site	October 2015
TAMR Phase 3 Segment 1 Software Build S6R4 (CARTS/STARS) Complete Planning Milestone	February 2016
TAMR Phase 3 Segment 1 complete IOC at last (11th) site	October 2016
TAMR Phase 3 Segment 1 complete ORD at last (11th) site	October 2017
TAMR PHASE 3 SEGMENT 2	
TAMR Phase 3 Segment 2 first site hardware delivery (ARTS IIE)	August 2013
TAMR Phase 3 Segment 2 complete STARS ELITE OT&E	February 2014
TAMR Phase 3 Segment 2 complete IOC at first site (ARTS IIE)	August 2014
TAMR Phase 3 Segment 2 complete IOC at 12th site (ARTS IIE)	December 2015
TAMR Phase 3 Segment 2 complete IOC at 34th site (ARTS IIE)	December 2016
TAMR Phase 3 Segment 2 complete IOC at 65th site (ARTS IIE)	December 2017
TAMR Phase 3 Segment 2 complete IOC at last (91st) site (ARTS IIE)	March 2019
TAMR Phase 3 Segment 2 complete ORD at last site	June 2019

NAS VOICE SYSTEM

The National Airspace System (NAS) Voice System (NVS) replaces the current voice switches operated independently at individual facilities. NVS will use router-based communications linked through the FAA Telecommunications Infrastructure (FTI) network. NVS and FTI will provide the FAA with a nationwide capability for routing, monitoring and sharing communication assets among facilities, enabling greater flexibility for the development and usage of airspace/traffic assignments in all airspace.

TARGET USERS

Air traffic controllers, pilots, including pilots of Unmanned Aircraft Systems (UAS)

EQUIPAGE REQUIREMENTS

Additional equipage not required for NAS users.

OPERATIONAL CAPABILITIES

- NVS provides the FAA increased flexibility to shift controller workload from one air route traffic control center to another as needed. For example, NVS will allow adjacent facilities to share communication resources to mitigate the effect of bad weather on air traffic. If an air traffic facility is out of commission for any reason, the control of aircraft can be shifted to another facility.
- NVS will enable direct communication between air traffic controllers and pilots, including UAS pilots.

IMPLEMENTATION

The NVS contract was awarded on August 24, 2012. A demonstration of NextGen capabilities was completed on November 20, 2013, using three networked demonstration systems. These systems are located at the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center and a vendor facility in Melbourne, Florida, operated by Harris Corporation. The FAA made a Final Investment Decision (FID) in September 2014 to develop NVS, with Seattle Center as the initial site. Two systems will be deployed for testing and three key site systems are planned to
be procured in order to achieve an In-Service Decision in FY 2019. A second FID is planned in fiscal year 2017 for approval of the deployment of production systems. Once certified NVS production systems are available in 2020, the FAA will begin installing them in both terminal and en route facilities.

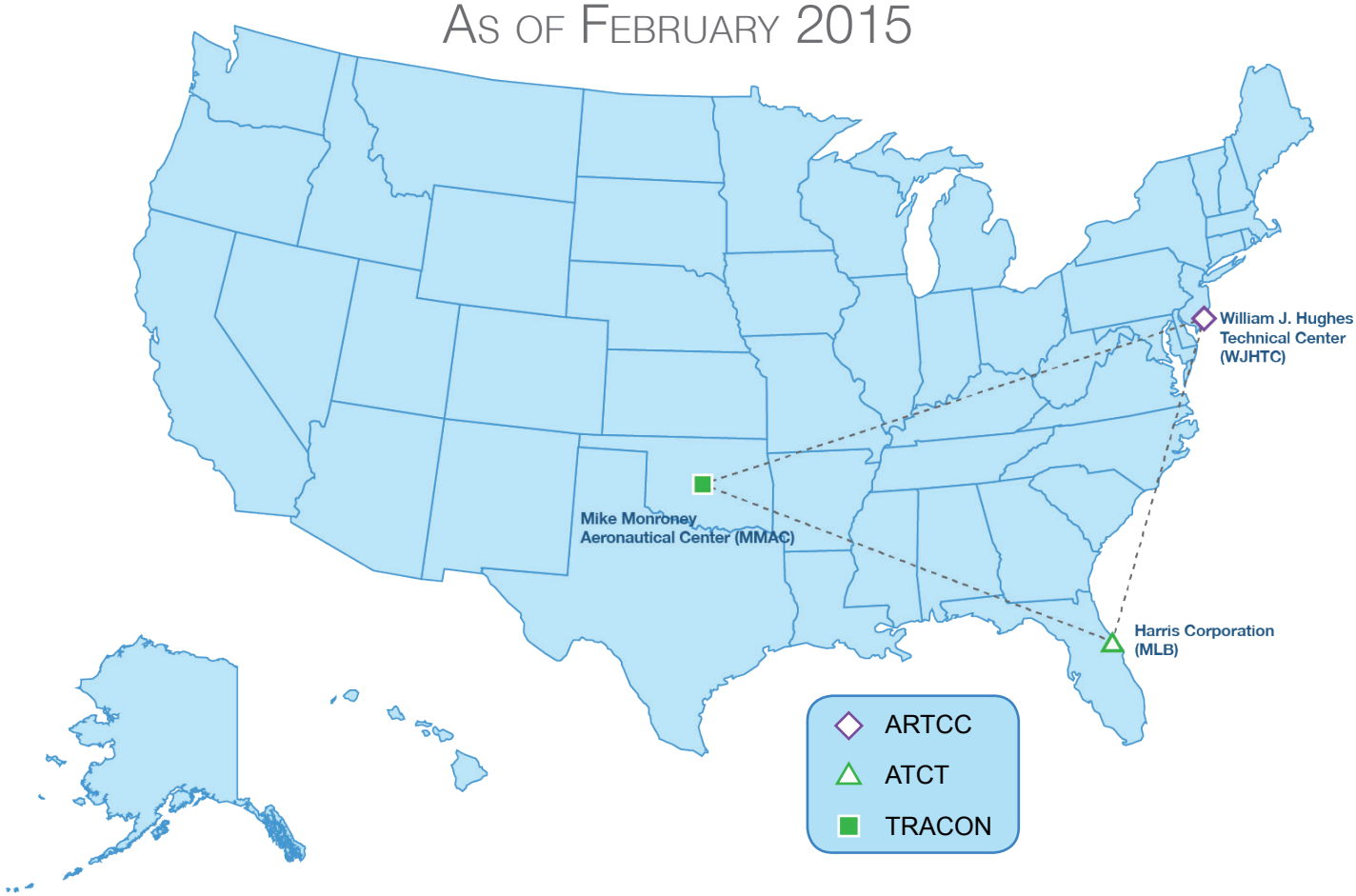
BENEFITS ACHIEVED TO DATE

Not applicable, capability still in development.

PROGRAM MILESTONES	DATE
NVS Contract Award	March 2012
Demonstrate the Business Continuity Plan, which is part of the NVS NextGen Capabilities Validation and Demonstration	March 2014
Preliminary Design Review completed	July 2014
Achieve NVS Segment 2 Final Investment Decision (FID) for Qualification Phase	September 2014
Critical Design Review completed	June 2015
Achieve NVS FID for Deployment Approval of Operational Systems	September 2017
Functional Configuration Audit and Physical Configuration completed	October 2017
Contractor Acceptance Inspection of Equipment at key sites	March 2019
Operational Test and Evaluation completed	May 2019
Key sites Initial Operating Capability	September 2019
In-Service Decision	March 2020
Production and Deployment of NVS Operational Systems	2019-2026

NAS VOICE SYSTEM

As of February 2015



SYSTEM WIDE INFORMATION MANAGEMENT

System Wide Information Management (SWIM) is the digital data-sharing backbone of NextGen. SWIM infrastructure enables air traffic management (ATM)-related information sharing among diverse, qualified systems. SWIM also provides information governance.

SWIM has been distributing weather and flight planning information to National Airspace System (NAS) users, mainly airline operations centers, since 2010 and will continue to develop and add services.

TARGET USERS

Air traffic controllers, operators in the NAS including airlines, cargo carriers, business jet operators and airports

EQUIPAGE REQUIREMENTS

Minimal equipage is required for NAS users.

OPERATIONAL CAPABILITIES

- SWIM Terminal Data Distribution System (STDDS) converts raw surface data from airport towers into accessible information to share the picture being seen by controllers in the air traffic control tower with controllers in the corresponding Terminal Radar Approach Control (TRACON) facility. STDDS is currently installed at 38 TRACONS. The TRACON makes information available to airlines and airports through SWIM messaging services. STDDS will provide surface data to the Traffic Flow Management System, which controllers use to balance traffic demands with capacity across the NAS. Controllers can better calculate end-to-end trajectories. In August 2013, Miami TRACON became the first facility to start distributing data from towers in its coverage area to an airline via STDDS.
- SWIM Flight Data Publication Service (SFDPS), currently available in the SWIM research and development domain, will improve flight data sharing. It will also ensure consistency of this data across the NAS via standards and consolidation of flight data currently maintained by multiple systems into a common repository. SFDPS is the first system to provide data using the standard Flight Information Exchange Model (FIXM) with a Globally Unique Flight Identifier. SFDPS also makes information available to airlines and airports through SWIM messaging services.

IMPLEMENTATION

SWIM Segment 2 consists of two parts.
Segment 2a (2015) includes:

- capabilities added to the NAS Enterprise Messaging Services (NEMS), an information-sharing infrastructure that enables the publication and sharing of NAS data

- NEMS nodes at all air route traffic control centers (e.g., currently at Atlanta, Boston, Chicago, Fort Worth, Los Angeles, Minneapolis, Miami, Salt Lake City, Seattle and Washington)
- increased security capabilities
- the ability for consumers to self-manage data subscriptions
- an enriched set of traffic flow data for external consumers to maintain common situational awareness of the NAS

Segment 2b builds upon the infrastructure foundation laid by Segment 2a, and

- increases and improves products from SFDPS
- increases the security of NAS data flows with identify verification and access management that provides a certificate management service to enable more secure data exchanges with outside partners
- builds upon the monitoring capability of the existing infrastructure by adding status information about producers and consumers (this aims to build end-to-end situational awareness of all elements of, or participants in, an information exchange)
- adds additional terminal data to the list of STDDS published information and enriches the functionality of existing services
- adds new data query functionality to the NAS: NAS Common Reference (NCR) supports complex data queries for NAS flight weather and aeronautical information
- enables the efficient transition to global harmonization of information standards, including the Aeronautical Information Exchange, Weather Information Exchange and FIXM

BENEFITS ACHIEVED TO DATE

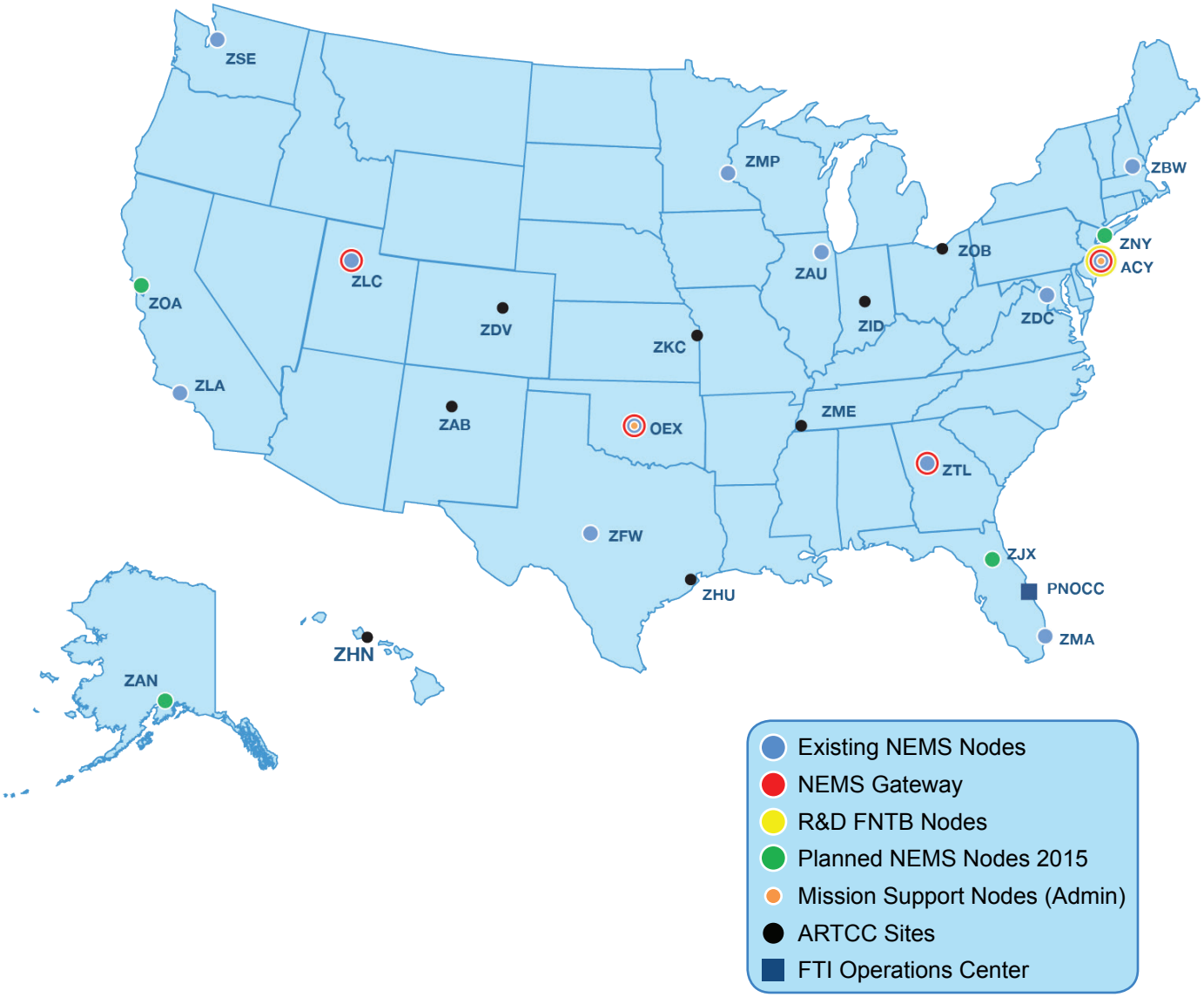
SWIM provides increased ground situational awareness with data shared from STDDS via NEMS to TRACONS and airport authorities (e.g., Southern California TRACON and Los Angeles runway construction, operational April 2014; San Francisco runway construction, operational May 2014). The FAA has already installed the SWIM Visualization Tool (SVT) at the New York, Chicago, Houston, Boston and Louisville TRACONs in 2015, enabling controllers to see aircraft moving on the surface at airports they serve. SVT is installed at nine TRACON Traffic Management Unit (TMU) stations providing situational awareness during peak traffic and during airport construction and runway closures. The initial SVT deployment to these nine sites has supported the Terminal Flight Data Manager (TFDM) early implementation strategy.

The FAA Notices to Airmen (NOTAM) Distribution Service (NDS) has made digital NOTAM data available on request using SWIM. NDS will be expanded to a publication-subscription capability in 2015. This modernization of the NOTAM system provides more timely information that can be electronically sorted to suit the needs of pilots flying a particular route. The Department of Defense has recently adopted this service and is progressively expanding their capabilities within the SWIM environment.

SWIM INFRASTRUCTURE DEPLOYMENT

NAS ENTERPRISE MESSAGING SERVICE (NEMS)

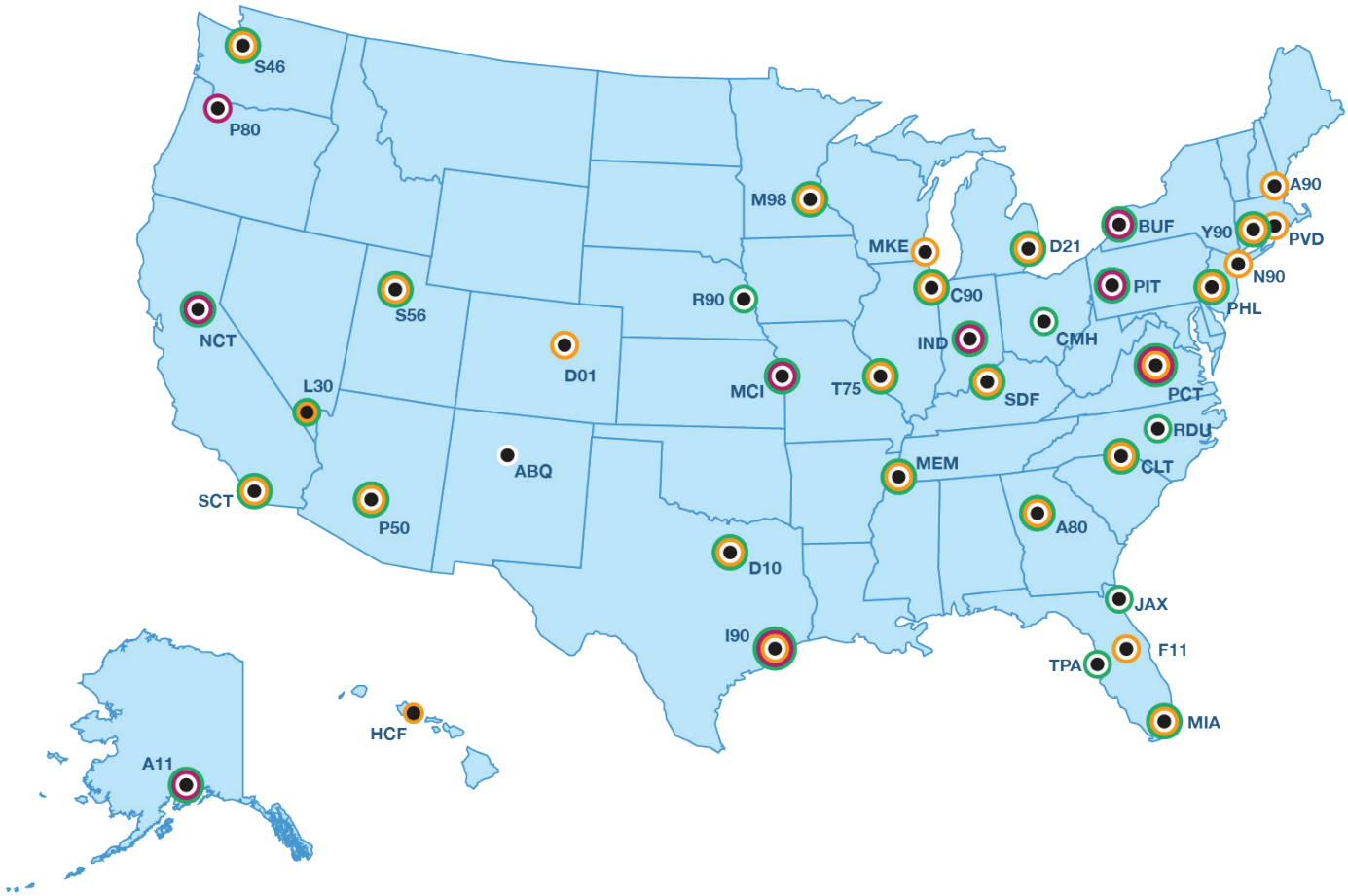
As of February 2015



SWIM TERMINAL DATA DISTRIBUTION SYSTEM

(STDDS) BY TRACON

As of February 2015



- Tower Data Link Services (TDLS)
- Runway Visual Range
- Airport Surface Detection Equipment, Model X
- Airport Surface Surveillance Capability
- Electronic Flight Strip Transfer System
- STDDS Completed Installation
- STDDS Completed System Acceptance Test

PROGRAM MILESTONES	DATE
SEGMENT 1	
SWIM Segment 1 Final Investment Decision (FID)	July 2009
SWIM Segment 1 Corridor Integrated Weather System (CIWS) Publication operational - SWIM Implementation Programs (SIP) = CIWS	September 2010
SWIM Segment 1 Special Use Airspace (SUA) Automated Data Exchange operational - SIP=Aeronautical Information Management (AIM)	December 2010
SWIM Segment 1 Integrated Terminal Weather Service (ITWS) Publication operational - SIP=ITWS	January 2011
SWIM Segment 1 Reroute Data Exchange operational - SIP=Traffic Flow Management (TFM)	June 2011
SWIM Segment 1 Terminal Data Distribution operational - SIP=SWIM Terminal Data Distribution System (STDDS)	May 2012
SWIM Segment 1 Pilot Report Data Publication operational - SIP=Weather Switching Center Replacement (WMSCR)	June 2012
SWIM Segment 1 Flight Data Publication - Initial Flight Data Services operational - SIP=En Route Automation Modernization	December 2012
Miami TRACON distributes data to airline via STDDS	August 2013
Complete NextGen Capabilities Packages	September 2013
SWIM Segment 1 Operational Test and Evaluation complete - Flight Data Publication Service (FDPS) - SIP=FDPS	March 2014
SWIM Segment 1 Runway Visual Range (RVR) Publication Service operational - SIP=STDDS	June 2014
SWIM Segment 1 Flow Information Publication operational - SIP=TFM	December 2014
SWIM Segment 1 Flight Data Publication operational - SIP=FDPS	July 2015
SWIM Segment 1 SWIM Tool Kits (Core Services) - complete implementation	September 2015
SEGMENT 2	
SWIM Segment 2a Authorization to Proceed	November 2010
SWIM Segment 2a FID for SWIM Segment 2a Planning Milestone	July 2012
SWIM Segment 2a complete NEMS Demand Assessment and Associated Deployment of new NEMS Nodes - Phase I	April 2013
SWIM Segment 2a complete NEMS Dynamic Subscription Capability Development	June 2013
SWIM Segment 2a complete on-ramping of ITWS using SWIM NEMS	June 2013
SWIM Segment 2a complete NEMS Web Services Capability development	June 2013
SWIM Segment 2a complete on-ramping of CIWS and WMSCR using SWIM NAS Enterprise Messaging Service (NEMS)	September 2013
Complete on-ramping of EWINS using SWIM NEMS	November 2013
SWIM Segment 2a complete Enhanced Weather Information Network Server (EWINS) using SWIM NEMS	November 2013
SWIM Segment 2a complete NEMS Demand Assessment and Associated Deployment of new NEMS Nodes - Phase II	April 2014
SWIM Segment 2a complete on-ramping of Time Based Flow Management using SWIM NEMS	April 2014
Complete on-ramping of AIM SUA using SWIM NEMS	September 2014
SWIM Segment 2a complete NEMS Security Services Capability development	February 2015
SWIM Segment 2a complete NEMS Demand Assessment and Associated Deployment of new NEMS Nodes - Phase III	April 2015
SWIM Segment 2b FID for SWIM Segment 2b Planning Milestone	June 2015
SWIM Segment 2a complete NEMS Demand Assessment and Associated Deployment of new NEMS Nodes - Phase IV	April 2016
SWIM Segment 2a completion	December 2017

NEXTGEN PORTFOLIOS

IMPROVED SURFACE OPERATIONS

Improved Surface Operations will improve safety, efficiency and flexibility on the airport surface by implementing new traffic management capabilities for pilots and controllers using shared surface movement data. The capabilities in the portfolio address surface movement and the exchange of information between controllers, pilots and air traffic managers that occur for departing aircraft from the gate to departure of the aircraft from the airport; and for landing traffic from exiting the runway to arriving at the terminal gate.

The increments in this portfolio will achieve success by tracking the movement of surface vehicles and aircraft, incorporating the movement data into the airport surveillance infrastructure and sharing the information with controllers, pilots and airline operations managers.

TARGET USERS

Air traffic controllers, operators, airports

TARGET AREAS

Surface, terminal, en route

ANTICIPATED BENEFITS

FLEXIBILITY

Capabilities in this portfolio will improve the timely exchange of data to enable aircraft operators to more accurately adjust their departure and arrival times for the most efficient use of available runways, taxiways and gates:

- Permitting taxi operations to occur that support low visibility operations for takeoff, improving access during those times
- Reducing effects of weather-related delays

EFFICIENCY

Capabilities in this portfolio improve efficiency:

- Enabling more effective scheduling that includes runway, departure fix and Traffic Flow Management ground-management constraints with automatic reassessment and update of the departure schedule based on the ability of departing flights to meet the designated departure schedule
- Enhancing the ability to react to changing airport conditions, such as severe

weather, by issuing digital pre-departure clearances, including routing revisions, using Data Communications (Data Comm)

- Improving awareness of surface congestion at major hub airports, greatly streamlining the coordination of corrective action and improving the resilience of the system
- Reducing fuel burn and operating costs related to long departure queues
- Reducing delays by improving event data quality and adherence to controlled departure times
- Reducing FAA operating costs through the use of advanced electronic flight strips

SAFETY

Capabilities in this portfolio enhance safety on the airport surface by improving pilot and controller awareness of surface traffic through ground-based automation, data distribution and flight deck capabilities.

Enhancements to Aviation Safety Information Analysis and Sharing system will support NextGen with in-depth analysis of safety data from industry and government sources:

- Identifying existing or prospective operational risks that exist in the National Airspace System
- Revealing potential improvements for efficiency and capacity

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FUNDING

SUPPORTED BY AIRPORT SURFACE SURVEILLANCE CAPABILITY

OI 102406 – Provide Full Surface Situation Information

SUPPORTED BY AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST

OI 102406 – Provide Full Surface Situation Information

SUPPORTED BY NEXTGEN DATA COMM

OI 104208 – Enhanced Departure Flow Operations

SUPPORTED BY NEXTGEN IMPROVED SURFACE OPERATIONS PORTFOLIO

OI 104209 – Initial Surface Traffic Management

IMPROVED SURFACE OPERATIONS				
	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Surface Tactical Flow	Concept Development and Validation for Future Terminal Flight Data Manager (TFDM) Work Packages			
TFDM	Business Case Development and Acquisition Management System work for TFDM			
Implementation Phase:				
Airport Surface Detection System – Model X (ASDE-X) & Automatic Dependent Surveillance – Broadcast (ADS-B)ASDE-X and ADS-B: Situational Awareness and Alerting of Ground Vehicles	ADS-B Out equipment available for installation in airport vehicles that regularly operate in the movement area.			
Increment implemented: • 102406-11 Situational Awareness and Alerting of Ground Vehicles				
TFDM Early Implementation	Early Implementation Scope includes Electronic Flight Strip Transfer System Technology Refresh, Advanced Electronic Flight Strips Deployment, Traffic Flow Management System Modifications to Extend Flight Operator Data Exchange			
Increment implemented: • 104209-17 Surface Situational Awareness for Traffic Management • 104209-31 Electronic Flight Data Exchange				
Airport Surface Surveillance Capability	Installation of Airport Surface Surveillance Capability at nine ASDE-3/Airport Movement Area Safety System airports.			

[1] Moved from 103207-13

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

IMPROVED SURFACE OPERATIONS

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Data Communications (Data Comm)	Revised Departure Clearance (DCL) Development			Revised DCL Deployment
Increment implemented: • 104208-12 Revised DCL via Data Comm[2]				
TFDM (Segment 1 and 2)				Development to begin following Final Investment Decision in FY 2016 timeframe
Increment implemented: • 104209-13 TFDM Scheduler/Sequencer • 104209-31 Electronic Flight Data Exchange • 104209-27 Departure Reservoir Management (DRM)				
TFDM Future Work Package				Development to occur following implementation of TFDM Segment 2 (FY 2021)
Increment implemented: • 104209-27 DRM				

[2] Moved from 104207-11

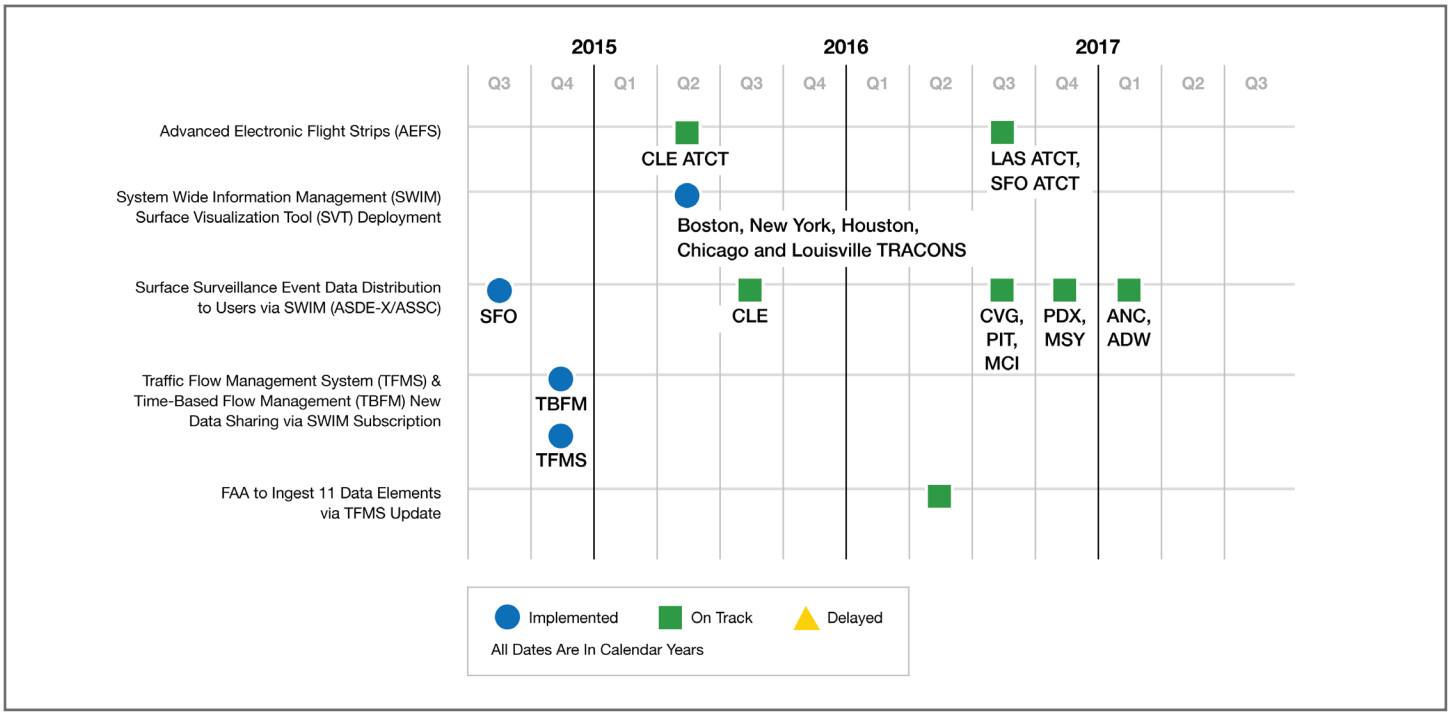
Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

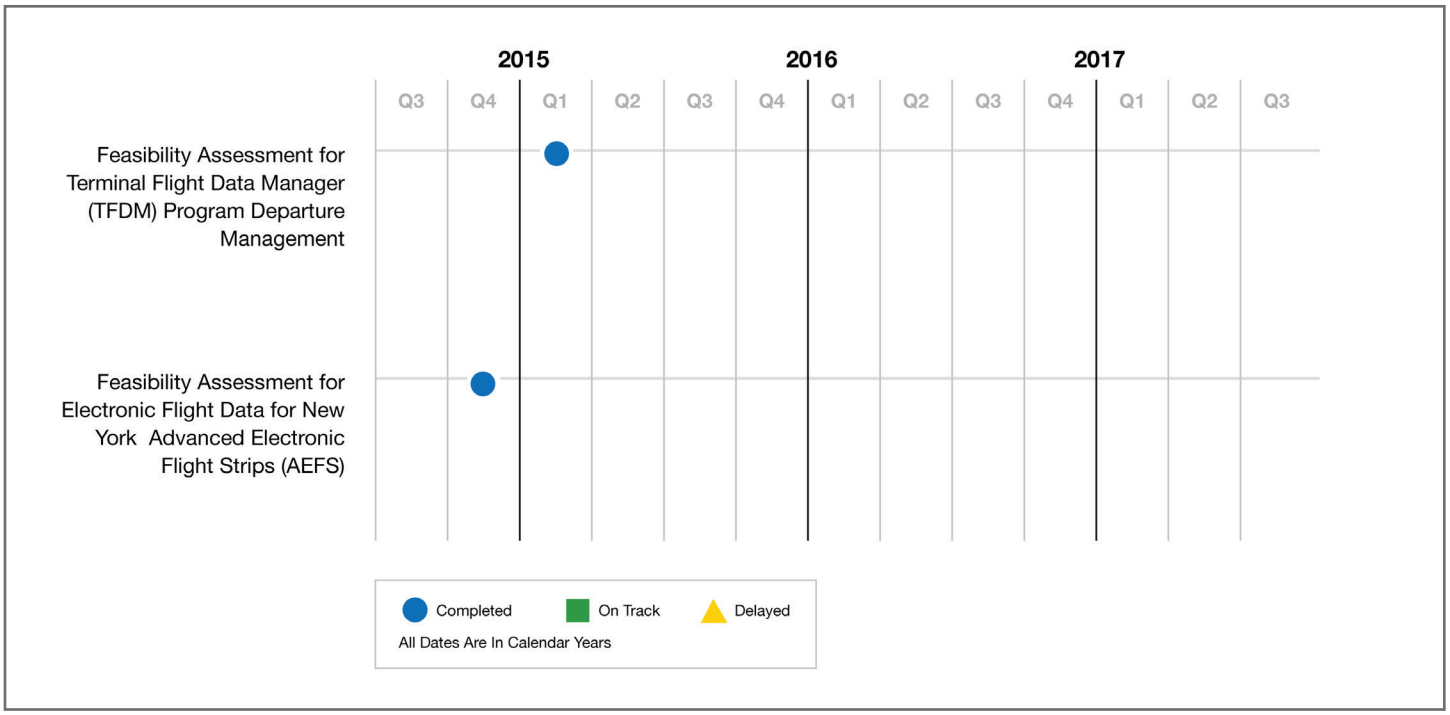
† NextGen Advisory Committee/NextGen Integration Working Group Commitment

Some of the greatest efficiencies can be gained while an aircraft is still on the ground. The FAA commits to implementing near-term surface improvements, sharing more data with stakeholders, and completing feasibility assessments of other capabilities of interest. The goal of these enhancements is to measurably increase predictability and provide actionable and measurable surface efficiency improvements. These commitments are a subset of the overall series of programs and activities the FAA is planning to improve operations in these domains.

NEXTGEN PRIORITIES JOINT IMPLEMENTATION COMMITMENTS



NEXTGEN PRIORITIES JOINT PRE-IMPLEMENTATION COMMITMENTS



IMPROVED APPROACHES AND LOW-VISIBILITY OPERATIONS

Improved Approaches and Low-Visibility Operations include capabilities designed to increase airport approach and arrival access and flexibility. This will be accomplished through a combination of procedural changes, improved aircraft capabilities and improved precision approach guidance. The procedural changes allow for more efficient flight tracks, which lead to reduced fuel use and emissions while keeping aircraft safely separated through the use of Optimized Profile Descents (OPD). The Enhanced Flight Vision System (EFVS) and other similar flight deck capabilities provide access to more runways when visibility is low, leading to increased throughput and reduced delay. Ground Based Augmentation Systems will provide Category II/III precision-approach guidance with one system per airport instead of one instrument landing system per runway end.

The increments in this portfolio will achieve success through a combination of effective procedure design and implementation, air traffic controller training, and aircraft equipage and approval. Some increments also require installation and certification of ground infrastructure.

TARGET USERS

Air traffic controllers, pilots

TARGET AREAS

Terminal

ANTICIPATED BENEFITS

ACCESS AND EQUITY

Capabilities in this portfolio provide greater access to airports (approach and landing) during periods of low visibility or low cloud ceiling, through the use of:

- Global Navigation Satellite System
- Required Navigation Performance procedures
- EFVS
- Other flight deck technologies

EFFICIENCY

The use of OPDs will lead to fuel efficiency benefits:

- Meeting the airspace design objective of separating different flows of traffic
- Allowing for more efficient descent profiles, e.g. profiles that reduce level-offs and engine power-ups

ENVIRONMENT

Capabilities in this portfolio will, where feasible:

- Enable equipped aircraft to fly precise and more fuel-efficient vertical and horizontal paths from high-altitude airspace down to the runway
- Save time, fuel and emissions while allowing for the potential to limit overflight of environmentally sensitive areas

FUNDING

SUPPORTED BY OPERATIONS APPROPRIATIONS

OI 107115 – Low-Visibility/Ceiling Takeoff and Departure Operations

OI 107117 – Low-Visibility/Ceiling Approach and Landing Operations

OI 107202 – Low-Visibility Surface Operations

SUPPORTED BY NEXTGEN FLEXIBLE TERMINAL ENVIRONMENT/IMPROVED MULTIPLE RUNWAY OPERATIONS PORTFOLIO

OI 107107 – Ground Based Augmentation System Precision Approaches

IMPROVED APPROACHES AND LOW-VISIBILITY OPERATIONS

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Ground Based Augmentation Systems (GBAS)	Category (CAT) II/III Standards Validation Development Work		CAT II/III Non-Federal Approval Development Work	
Synthetic Vision Guidance System (SVGS) for Approach	Work Supports Post FY 2016 Capabilities			
Enhanced Flight Vision System (EFVS) for Landing	Work Supports Post FY 2015 Capabilities of Aircraft and Operations Approval			
EFVS[1]	EFVS Improved Low-Vis Taxi Development			
Implementation Phase:				
GBAS				GBAS CAT II/III Standards: Ground System Design Approval and Validation
Increment implemented: • 107107-11 GBAS CAT I Non-Federal System Approval • 107107-21 GBAS CAT II/III Standards *Note: The GBAS CAT I/II/III validation provides approval for non-federal acquisition and use of the GBAS CAT I/II/III systems. For this reason, the implementation strategy beyond the FAA approval is dependent on external acquisition and deployment of GBAS capability.*				
EFVS for Approach	EFVS for approach is approved and ready for continued expansion.			
Increment implemented: • 107117-11 EFVS for Approach[2]				
SVGS for Approach				SVGS used by suitably equipped operators
Increment implemented: • 107117-12 SVGS for Approach[3]				

[1] Moved from Improved Surface portfolio
[2] Renamed
[3] Renamed

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

IMPROVED APPROACHES AND LOW-VISIBILITY OPERATIONS

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
EFVS for Takeoff	Operationally available to suitably equipped operators			
Increment implemented: • 107115-11 EFVS for Takeoff				
EFVS for Landing		Operationally available for suitably equipped operators		
Increment implemented: • 107117-13 EFVS for Landing[4]				
EFVS			Improved Low Visibility Taxi Implementation	
Increment implemented: • 107202-22 EFVS/Accurate Position Information for Taxi[5]				

[4] Renamed and renumbered
[5] Moved from Improved Surface portfolio and renamed

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

IMPROVED MULTIPLE RUNWAY OPERATIONS

Improved Multiple Runway Operations (IMRO) improves access to closely spaced parallel runways (CSPR). This will enable more arrivals and departures, which will increase efficiency and capacity at those airports while reducing flight delays. The capabilities in this portfolio will enable the use of simultaneous approaches (two aircraft on the approach path at the same time) during periods of reduced visibility, decrease the required separations between aircraft on dependent approaches (staggered aircraft arrivals on parallel runways) and departure procedures, and alleviate the effects of wake turbulence that normally require increased separation between aircraft in terminal airspace (airspace surrounding airports).

The increments in this portfolio will achieve success through the approval of procedures via authorization of FAA orders. After analysis is complete to determine the required procedure and separation standards, the FAA follows safety risk management processes for approval of the separation changes, and controller training is performed as needed prior to operational use.

TARGET USERS

Air traffic controllers, pilots, airports

TARGET AREAS

Terminal

ANTICIPATED BENEFITS

ACCESS AND EQUITY

Capabilities in this portfolio will improve access to parallel, intersecting and converging runways through new procedures, standards, guidance and decision support tools.

CAPACITY

This portfolio increases airport capacity through the introduction of capabilities that:

- Safely reduce separation standards for closely spaced parallel operations and makes this capability available at additional airports
- Improve air traffic controller awareness of all relevant airborne traffic approaching runways that converge or intersect, or whose flight paths converge or intersect
- Reduce wait time between departures

FUNDING

SUPPORTED BY NEXTGEN FLEXIBLE TERMINAL ENVIRONMENT/IMRO PORTFOLIO

OI 102140 – Improved Wake Turbulence Mitigation for Departures

OI 102141 – Improved Parallel Runway Operations

OI 102144 – Wake Turbulence Mitigation for Arrivals: CSPRs

IMPROVED MULTIPLE RUNWAY OPERATIONS

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Closely Spaced Parallel Operations (CSPO): Simultaneous Dual Approaches for CSPRs spaced >3600'	Orders effective at ATL†			
CSPO: 1.0 nautical mile (nm) Dependent Stagger for Closely Spaced Parallel Runways (CSPR) spaced >2500' & <3600'	Procedure design and authorization to be completed in FY 2015		Orders effective beginning FY 2015 through FY2016 at MSP, JFK, SEA, PDX, RDU, DAL and MEM†	Orders effective at SFO and BOS†
CSPO: Simultaneous Dual Approaches with Offset	Concept validation initiated in FY 2013 and planned for completion in FY 2014	Procedure design and authorization to be completed in FY 2016	Order effective in FY 2016 at JFK†	Orders effective in FY 2017 at PDX, MSP and DTW†
CSPO: Simultaneous Triple Approaches	Concept validation initiated in FY 2013 and planned for completion in FY 2015		Procedure design and authorization to be completed in FY 2016	Orders effective in FY 2017 at ATL and IAD†
CSPO: Enable Additional Approach Options for New Independent Runway Separation Standards	Procedure design and authorization FY 2013-FY 2015			
CSPO: Simultaneous Approaches with High Update Radar Surveillance Required	Concept validation and analysis initiated in FY 2013 and planned for completion in FY 2015		Procedure design and authorization to be completed in FY 2017 Orders effective in FY 2018+	
CSPO: Paired Approach for Category (CAT) I	Concept validation and analysis initiated in FY 2009 and planned for completion in FY 2018			
				Orders to be effective in FY 2020+

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

IMPROVED MULTIPLE RUNWAY OPERATIONS

	FY 2014	FY 2015	FY 2016	FY2 017+
Implementation Phase:				
CSPO: Simultaneous Dual Approaches for CSPRs spaced >3600’	Procedures implemented at ATL†			
Increments implemented: • 102141-13: Amend Independent Runway Separation Standards in Order 7110.65 (including Blunder Model Analysis)				
CSPO: 1.0 nm Dependent Stagger for CSPRs spaced >2500’ & <3600’			Procedures implemented beginning FY 2015 through FY2016 at MSP, JFK, SEA, PDX, RDU, DAL and MEM†	Procedures implemented at SFO and BOS†
Increments implemented: • 102141-14: Amend Dependent Runway Separation Standards in Order 7110.65				
CSPO: Simultaneous Dual Approaches with Offset			Procedures implemented in FY 2016 at JFK†	Procedures implemented in FY 2017 at PDX, MSP and DTW†
Increments implemented: • 102141-22: Amend Standards for Simultaneous Independent Approaches – Dual with Offset				
CSPO: Simultaneous Triple Approaches				Procedures implemented in FY 2017 at ATL and IAD†
Increments implemented: • 102141-24: Amend Standards for Simultaneous Independent Approaches – Triple				

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

IMPROVED MULTIPLE RUNWAY OPERATIONS

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
CSPO: Simultaneous Approaches with High Update Radar Surveillance Required				Procedures implemented in FY 2018+
Increments implemented: • 102141-23: Simultaneous Independent Closely Spaced Approaches – High Update Rate Surveillance Required				
CSPO: Enable Additional Approach Options for New Independent Runway Separation Standards	Revise standards in Order 7110.65 to set lower runway separation standards for LNAV/ VNAV, RNP, and RNP AR approaches in SIPIA operations without high-update surveillance			
Increments implemented: • 102141-15: Enable Additional Approach Options for New Independent Runway Separation Standards				
CSPO: Paired Approach for CAT I				Procedures implemented in FY 2020+
Increments implemented: • 102157-21: Paired Approaches for Runways Spaced <2500' (CAT I)				

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

IMPROVED MULTIPLE RUNWAY OPERATIONS

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Wake Turbulence Mitigation for Departures (WTMD)		Benefits Decision for WTMD to support implementation at BOS, EWR, MIA, SEA, DTW, STL and PHL†		
Wake Turbulence Mitigation for Arrivals - Procedure (WTMA-P)	Procedure design and safety analysis for PHL and DTW† was completed in FY 2014. Safety analysis for ATL will be completed in FY 2015†			
Wake Turbulence Mitigation for Arrivals - System (WTMA-S) for CSPRs Spaced <2500' Apart			Work Supports Post FY 2016 Capabilities	
Implementation Phase:				
WTMD	Deployments at SFO, IAH, and MEM initiated in FY 2013 to validate benefits prior to further deployment at up to seven more sites through FY 2016			
Increment implemented: • 102140-01: WTMD				
WTMA-P		Orders effective starting in FY 2015 at PHL, ATL and DTW, with consideration to more sites pending safety and benefits analysis		
Increment implemented: • 102144-11: WTMA-P for Heavy/B757 Aircraft				

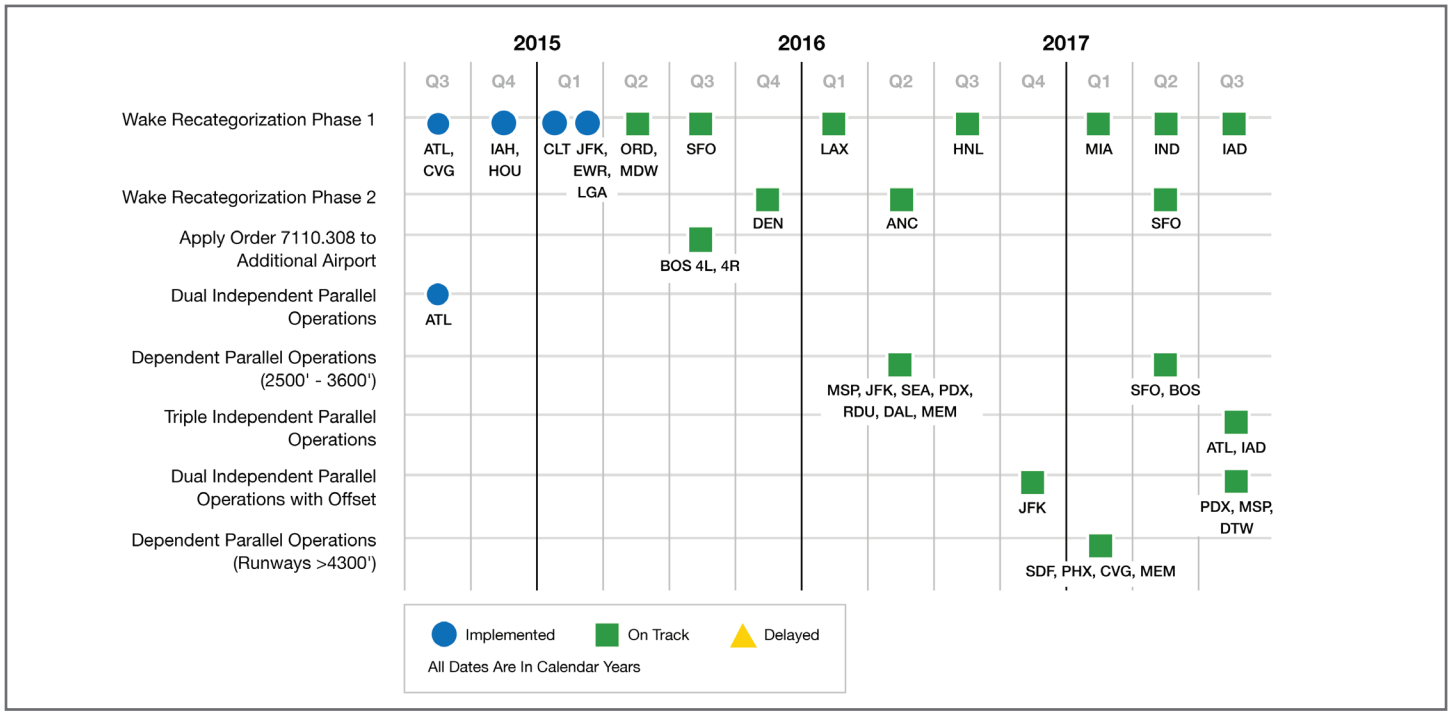
Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

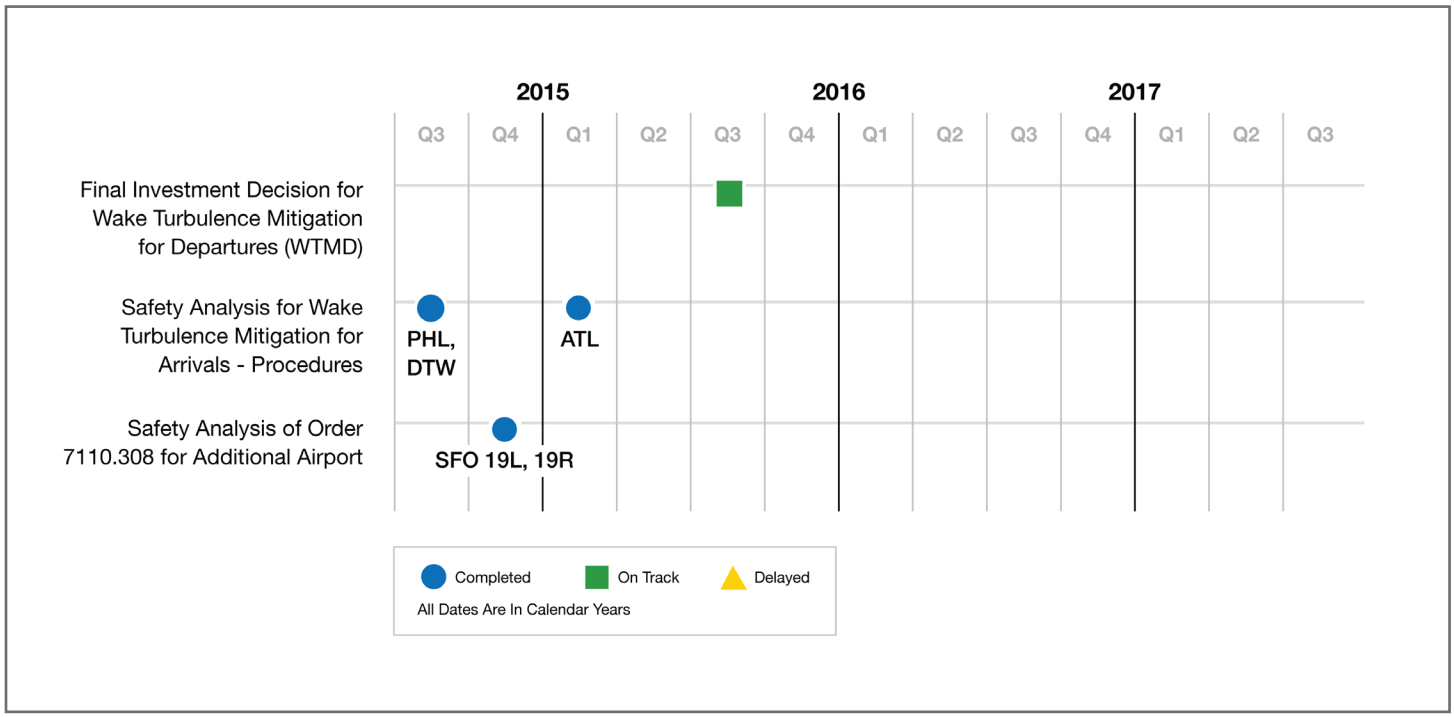
† NextGen Advisory Committee/NextGen Integration Working Group Commitment

The efficiency of parallel runways, particularly those that are closely spaced, has been limited by the interplay of wake vortices with nearby aircraft. Multiple Runway Operations capabilities improve access to these runways and can increase basic runway capacity and throughput by reducing separation between aircraft based on improved wake categorization standards. Improved access will enable more arrivals and/or departures during less than visual meteorological conditions, which will increase efficiency and reduce flight delays. These commitments are a subset of the overall series of programs and activities the FAA has planned to address these issues.

NEXTGEN PRIORITIES JOINT IMPLEMENTATION COMMITMENTS



NEXTGEN PRIORITIES JOINT PRE-IMPLEMENTATION COMMITMENTS



PERFORMANCE BASED NAVIGATION

Performance Based Navigation (PBN) uses Area Navigation (RNAV) and Required Navigation Performance (RNP) to improve access and flexibility in the National Airspace System (NAS) with the goal of providing the most efficient aircraft routes from departure runway to arrival runway. PBN defines the performance requirements for routes and procedures that enable aircraft to navigate with greater precision and accuracy. It provides a basis for designing and implementing new flight paths, redesigning airspace and providing safe obstacle clearance. Progressive stages of PBN capabilities include the safe implementation of more closely spaced flight paths for departure, arrival and approach. The portfolio also looks to right-size the navigation assets in the NAS through reviews of procedures and infrastructure to determine whether they are still useful, require revision or can be removed.

The increments in this portfolio will achieve success through the development of high- and low-altitude routes and terminal procedures that allow for integrated operations connecting airports from runway to runway. New PBN operations will provide more direct flight operations while continuing to provide routing flexibility for operations and air traffic controllers. Procedures will be prioritized and implemented based on new FAA PBN Orders. National standards for reduced separation and divergence, vertical design guidance and criteria will be developed to further advance PBN capabilities. Teams are continuing work at several Metroplex[1] sites to study current operations, identify design improvements and implement new procedures. The combination of new procedures, separation standards and methods reduce the dependency on ground-based navigation structure.

TARGET USERS

Air traffic controllers, pilots

TARGET AREAS

Selected areas of the NAS

ANTICIPATED BENEFITS

ACCESS AND EQUITY

Capabilities in this portfolio provide improved benefits by defining navigation performance specifications for an aircraft along a route, during a procedure, or in airspace. In addition, certain capabilities provide an access benefit to all qualified runway ends, especially for those runway

[1] Metroplex is an effort to expedite PBN in large metropolitan areas that include several commercial and general aviation airports.

ends not equipped with Instrument Landing System (ILS). It also provides a flexibility benefit at ILS airports by providing an alternative instrument approach to continue operations if the ILS fails.

- Optimization of arrival and departure vertical profiles
- Reductions in lateral track distances
- Repeatable, predictable flight paths

CAPACITY

Capabilities in this portfolio improve capacity by removing level-offs on arrivals, segregating arrival routes to deconflict flows, adding departure points, expediting departures, adding new high-altitude PBN routes and realigning airspace to enhance the NAS.

- Increased capacity in transition airspace for arrivals and departures
- Improved collaboration within and between air traffic control (ATC) facilities
- Improved opportunity for traffic flow managers to more fully exploit the use of available NAS resources

EFFICIENCY

Capabilities promote flight efficiency by ensuring that flights obtain the most efficient requested or assigned routing for which the flight is performance qualified, given the ATC situation. RNAV- and RNP-equipped aircraft have access to performance-restricted routes, without creating additional workload for controllers.

- Reduced ATC task complexity and pilot/controller communications due to reduced radar vectoring
- Reduced need for traffic management initiatives due to provision of additional exit points/earlier route divergence
- Reduced emissions and fuel burn through operational improvements

FUNDING

SUPPORTED BY NEXTGEN PBN-METROPLEX RNAV/RNP/PBN & METROPLEX PORTFOLIO/OPERATIONS APPROPRIATIONS

OI 108209 – Increase Capacity and Efficiency Using RNAV and RNP

SUPPORTED BY OPERATIONS APPROPRIATIONS

OI 107103 – RNAV Standard Instrument Departures, Standard Terminal Arrival Routes and Approaches

SUPPORTED BY SYSTEM DEVELOPMENT

OI 104123 – Time Based Metering Using RNAV and RNP Route Assignments

PERFORMANCE BASED NAVIGATION

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Metroplex – Study Phase	Study Phase work began in FY 2011 at DC and North Texas Metroplexes and will continue across approximately 12 sites			
Metroplex – Design Phase	Design Phase work began in FY 2011 at DC and North Texas Metroplexes and will continue across approximately 12 sites			
Metroplex – Evaluation Phase	Evaluation Phase work began in FY 2012 at Houston and DC Metroplexes and will continue across approximately 12 sites			
Integration of National Airspace System (NAS) Design and Procedure Planning – PBN Initiatives	Modeling, simulation and safety analysis for new Area Navigation (RNAV)/Required Navigation Performance (RNP) procedure development			
Equivalent Lateral Spacing Operation Standard (ELSO)	ELSO safety analysis research†			
Implementation Phase:				
Metroplex - Implementation Phase	Implementation Phase work began in FY 2013 at Houston Metroplex and will continue across approximately 12 sites			
Increment implemented: • 2015: Complete Northern California Metroplex implementation activities† • 2015: Complete Washington DC Metroplex implementation activities • 2015: Complete North Texas Metroplex implementation activities • 2016: Complete Southern California Metroplex implementation activities • 2017: Complete Atlanta Metroplex implementation activities† • 2017: Complete Charlotte Metroplex implementation activities†				
Metroplex - Post Implementation Phase	Post Implementation Phase work is expected to begin in Q3 of FY 2014 at Houston Metroplex and will continue across approximately 12 sites			
Increment implemented: • 108209-12 Metroplex PBN Procedures				
Integration of NAS Design and Procedure Planning – PBN Initiatives				PBN Initiatives implementation complete at 2nd location.
Increment implemented: • 108209-20 Advanced and Efficient RNP				

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

PERFORMANCE BASED NAVIGATION

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Large Scale Redesign of Airspace Leveraging PBN	Timeline reflects most recent Congressional guidance on New York/New Jersey/ Philadelphia Metropolitan Area Airspace Redesign			
Increment implemented: • 108209-13 Large Scale Redesign of Airspace Leveraging PBN				
Transition to PBN Routing for Cruise Operations	Complete PBN Route Structure Concept of Operation			
Increment implemented: • 108209-14 Transition to PBN Routing for Cruise Operations				
RNAV (GPS) Approaches	WAAS program			
Increment implemented: • 108209-19 RNAV (GPS) Approaches				
ELSO	Implement ELSO capability at one location in the NAS	Update of FAA Order 7110.65		
Increment implemented: • 108209-21 ELSO				
RNP Authorization Required (AR) Approaches	Certify, publish, and implement procedures outlined in H.R. 58 Section 213 a & b[1†]			
Increment implemented: • 107103-12 RNP AR Approaches				
RNAV SIDs and STARs at Single Sites	Certify, publish, and implement procedures outlined in H.R. 58 Section 213 a & b[2†]			
Increment implemented: • 107103-13 RNAV SIDs and STARs at Single Sites				

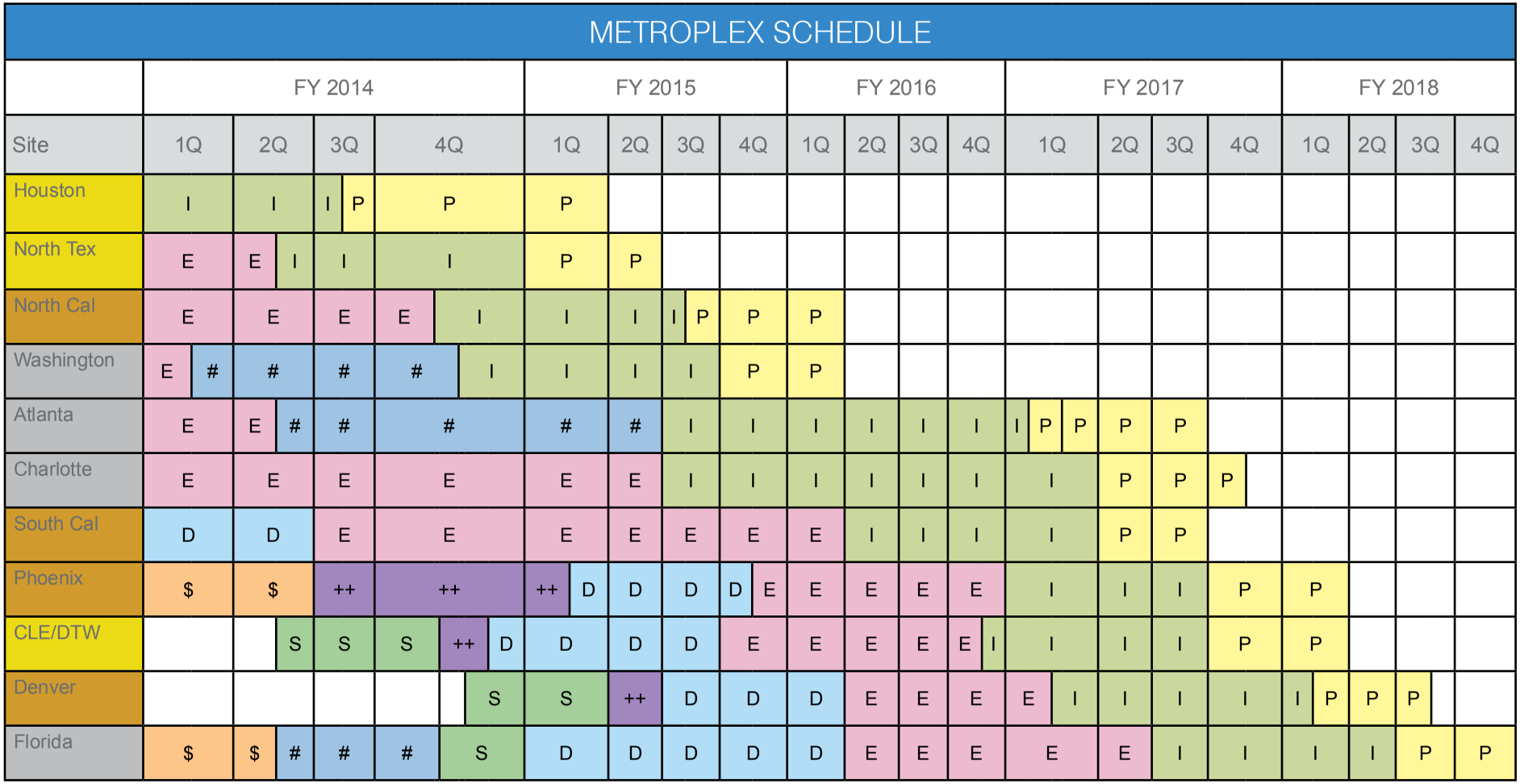
[1,2] Procedure development will continue through FAAO 7100.41 process

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

METROPLEX SCHEDULE

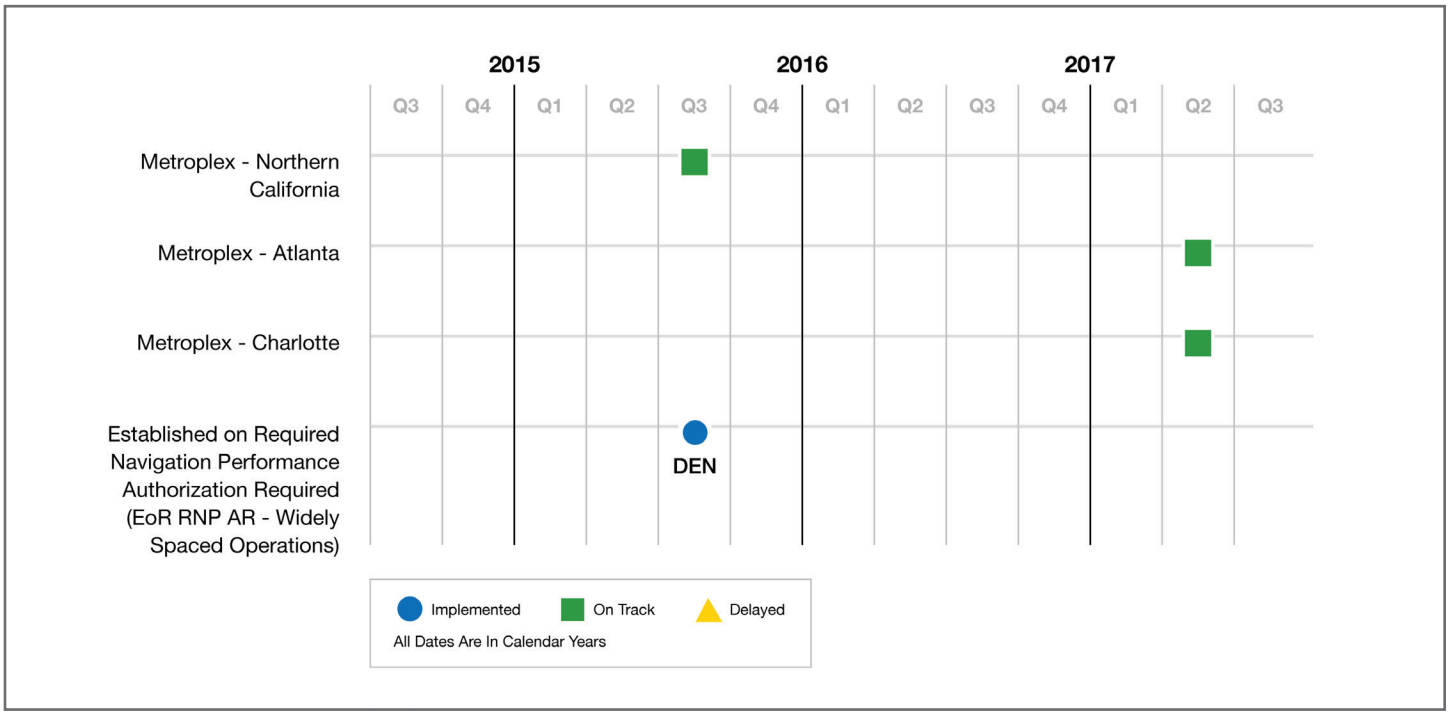


Milestone Leads Organizational Symbol	Functional Description
AJV-1	Airspace Services
AJV-121	Airspace Optimization Group
AJV-E	Mission Support, Eastern Service Center
AJV-C	Mission Support, Central Service Center
AJV-W	Mission Support, Western Service Center
AJV-114	Environmental Analysis
AJW-3	Aviation Systems Standards – Flight Checks

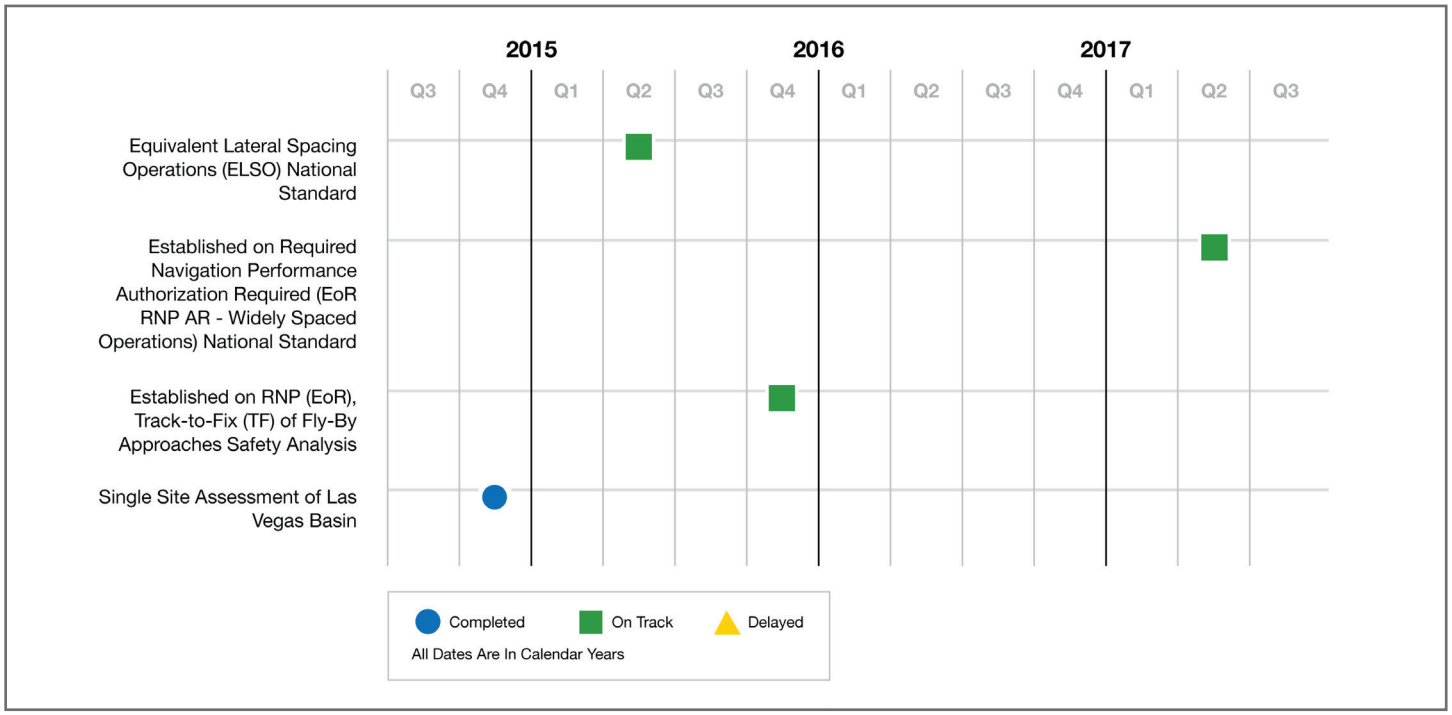
S	Study
D	Design
E	Eval
I	Implementation
P	Post Implementation
$	Budget Impact
F	Furlough Impact
#	ERAM Resource Impact
++	Facility Resource Issue

With PBN, the FAA delivers new routes and procedures that primarily use satellite-based navigation and on-board aircraft equipment to navigate with greater precision and accuracy. PBN provides a basis for designing and implementing automated flight paths, airspace redesign and obstacle clearance. Benefits include shorter and more direct flight paths, improved airport arrival rates, enhanced controller productivity, increased safety due to repeatable and predictable flight paths, fuel savings and a reduction in aviation's adverse environmental impact. These commitments are a subset of the overall series of PBN activities the FAA is planning to implement.

NEXTGEN PRIORITIES JOINT IMPLEMENTATION COMMITMENTS



NEXTGEN PRIORITIES JOINT PRE-IMPLEMENTATION COMMITMENTS



TIME BASED FLOW MANAGEMENT

Time Based Flow Management (TBFM) will enhance National Airspace System (NAS) efficiency by using the capabilities of the Traffic Management Advisor (TMA) decision-support tool, a system that is already deployed at all air route traffic control centers in the contiguous United States. In particular, improvements in TMA's core Time Based Metering (TBM) capability and its trajectory modeler, an expansion of TMA and its departure capabilities to additional locations, and enhancements to TMA's departure capabilities will enhance efficiency and optimize demand and capacity. Improvements will also be made to enable controllers to more accurately deliver aircraft to the Terminal Radar Approach Control facility while providing the opportunity for aircraft to fly optimized descents.

TARGET USERS

Air traffic controllers, operators

TARGET AREAS

NAS-wide

ANTICIPATED BENEFITS

EFFICIENCY

Efficiency is improved through the introduction of capabilities in this portfolio that will:

- Expand TBM and other advanced TBFM-based capabilities to additional geographical areas, as they provide more efficient traffic flow compared with traditional miles-in-trail traffic flow management
- Enable TBFM's use of more accurate trajectories, which will translate into more accurate estimated times of arrival resulting in more efficient slot and delay allocation
- Increase departure-time compliance by enabling control tower personnel to manage ground operations to meet self-scheduled, deconflicted departure times

ENVIRONMENT

More efficient flight paths have the potential to reduce fuel burn and emissions through reduced holding and improved delivery to optimized descents.

FUNDING

SUPPORTED BY AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST

OI 102118 – Interval Management – Spacing

SUPPORTED BY NEXTGEN TBFM/TBFM PORTFOLIO

OI 104115 – Current Tactical Management of Flow in En Route for Arrivals and Departures

OI 104117 – Improved Management of Arrival/Surface/Departure Flow Operations

OI 104120 – Point-in-Space Metering

OI 104123 – TBM Using Area Navigation and Required Navigation Performance Route Assignments

OI 104128 – TBM in the Terminal Environment

TIME BASED FLOW MANAGEMENT

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Time Based Flow Management (TBFM) Work Package (WP) 3	Investment Analysis WP 3 – Final Investment Decision expected in Q3 FY 2015			
TBFM Tech Refresh		Mission Analysis activities	Investment Analysis Activities	
Flight Operations Center (FOC) Preferences Incorporated into Metering			Work supports post-FY 2016 capabilities	
Interval Management – Spacing (IM-S) Cruise			Work supports post-FY 2016 capabilities	
IM-S Arrivals and Approach			Work supports post-FY 2016 capabilities	
Complex Clearances				
Implementation Phase:				
TBFM WP 2	Operationally Available for FY 2014 to FY 2017			
Increments implemented: • 104120-11 Extended Metering • 1104123-12 Ground-based Interval Management - Spacing[1] • 104115-11 Implement Traffic Management Advisor's (TMA) Adjacent Center Metering Capability at Additional Locations • 104115-12 Implement TMA at Additional Airports • 104123-11 Use Area Navigation (RNAV) Route Data to Calculate Trajectories Used to Conduct Time Based Metering (TBM) Operations[2] • 104117-11 Integrated Departure/Arrival Capability (IDAC)[3]				
TBFM Work Package 3				Operationally Available for FY 2018 to FY 2020
Increments implemented: • 104128-24 TBM in the Terminal Environment • 104117-11 IDAC[3]				
TBFM Tech Refresh				Operationally Available in FY 2019
Increment implemented: • N/A				

[1] Formerly Arrival Interval Management Using Ground Automation. Moved from OI 104120 to OI 104123.
[2] This increment now ends in FY 2014.
[3] Timeline extended to capture the remaining waterfall schedule of 15 sites.

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

TIME BASED FLOW MANAGEMENT				
	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
FOC Preferences Incorporated into Metering				Operationally Available in FY 2022
Increments implemented: • 104120-28 FOC Preferences Incorporated into Metering				
IM-S Cruise				Operationally Available in FY 2022
Increments implemented: • 102118-21 IM-S Cruise				
IM-S Arrivals and Approach				Operationally Available in FY 2020
Increments implemented: • 102118-23 IM-S Arrivals and Approach				
Complex Clearances				Operationally Available in FY 2021+
Increments implemented: • 104123-23 Complex Clearances				

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

COLLABORATIVE AIR TRAFFIC MANAGEMENT

Collaborative Air Traffic Management (CATM) coordinates flight and flow decision-making by flight planners and FAA traffic managers to improve overall efficiency of the National Airspace System (NAS), provide greater flexibility to the flight planners and make the best use of available airspace and airport capacity. The overall philosophy driving the delivery of CATM services is to accommodate user preferences to the maximum extent possible. Traffic managers impose Traffic Management Initiatives (TMI) to account for congestion, weather, special activity airspace or other constraints. TMIs are the means by which traffic managers manage constraints. These initiatives can alter users' flight plans. The effect of TMIs can be reduced by tailoring flow management actions to specific flights.

CATM services are targeted to deliver a combination of increased information on the users' preferred alternative routes, enhanced tools for assessing the impact of rerouting decisions, and improved communications and display of instructions to controllers in order to accommodate user preferences to the maximum extent possible.

TARGET USERS

Air traffic controllers, traffic managers, operators

TARGET AREAS

NAS-wide

ANTICIPATED BENEFITS

CAPACITY

This portfolio increases capacity through the introduction of capabilities that result in:

- Imposing fewer en route capacity constraints as congestion is resolved through tailored incremental congestion responses
- Automated congestion resolution tools matching user preferences to airspace with available capacity

FLEXIBILITY

Capabilities in this portfolio improve flexibility by:

- Increasing user route flexibility through negotiated trajectories for congestion resolutions
- Simplifying relieving departure queue and reducing surface delays through Integrated Departure Route Planning decision support
- Facilitating the ability of local traffic managers to balance workload even on days when there are no major impacts from severe weather
- Enabling improved/optimal runway assignments considering airspace configuration changes

EFFICIENCY

This portfolio provides efficiency benefits through:

- Increasing aggregate flight efficiency by factoring individual flight trajectories into the congestion solution
- Reducing arrival delay by identifying opportunities for reopening arrival airspace
- Advance forecast of impact and clearing enabling decision to hold arrivals at higher altitudes or on the ground, reducing fuel burn, emissions and terminal congestion
- Optimizing flight trajectory before take-off (pre-departure) or entry into oceanic airspace (pre-oceanic) to reduce fuel consumption and environmental impact of oceanic flights

FUNDING

SUPPORTED BY NEXTGEN CATM TECHNOLOGY/CATM PORTFOLIO

OI 101102 – Provide Full Flight Plan Constraint Evaluation with Feedback

OI 104208 – Enhanced Departure Flow Operations

OI 105208 – Traffic Management Initiatives with Flight-Specific Trajectories

OI 105302 – Continuous Flight Day Evaluations

SUPPORTED BY SEPARATION MANAGEMENT PORTFOLIO

OI 104102 – Interactive Planning using 4-D Trajectory Information in the Oceanic Environment

SUPPORTED BY IMPROVED SURFACE/TERMINAL FLIGHT DATA MANAGEMENT PORTFOLIO

OI 104117 – Improved Management of Arrival/Surface/Departure Flow Operations

SUPPORTED BY SYSTEM DEVELOPMENT

OI 105207 – Full Collaborative Decision-Making

COLLABORATIVE AIR TRAFFIC MANAGEMENT

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
CATM-T Work Package (WP) 4	Concept Validation, and FAA Acquisition Management System (AMS) Investment Analysis [Investment Analysis Readiness Decision (IARD), Initial Investment Decision (IID)			
CATM-T WP 5	IID and Final Investment Decision (FID) CATM-T WP 5 Concept exploration			Concept Validation, and FAA AMS Investment Analysis (IARD, IID, FID) through FY 2019
Airborne Rerouting with Data Communications	Concept exploration of automation systems and procedures for future enhancements to the airborne rerouting capability			
Implementation Phase:				
CATM-T WP 1	Fully Deployed by the end of FY 2016[1]			
Increments Implemented • 105208-11 Execution of Flow Strategies • 104208-11 Delivery of Pre-Departure Reroutes (PDRR) to Controllers				
CATM-T WP 2	Fully Deployed by the end of FY 2016[2]			
Increments Implemented • 101102-11 Collaborative Trajectory Options Program • 105302-11 Collaborative Airspace Constraint Resolution[2] • 101102-12 Route Availability Planning • 105208-21 Airborne Rerouting				
CATM-T WP 3	Fully deployed by the end of Calendar Year 2015			
Operational Improvements Supported • Collaborative Information Exchange - Completed • Traffic Flow Management (TFM) Remote Site Engineering				

[1]Timeline extended from FY 2015 to FY 2016

[2]Timeline extended from FY 2015 to FY 2016

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

COLLABORATIVE AIR TRAFFIC MANAGEMENT

	FY 2014	FY 2015	FY 2016	FY 2017+	
Implementation Phase:					
CATM-T WP 4			CATM-T WP 4 capability development up to FY 2019+		Operationally available FY 2019+
Increments Supported • 105207-26 Integrated Departure Route Planning • 105208-23 Arrival Route Availability Planning[1] • 105302-23 Integrate Traffic Management Initiative (TMI) Modeling • 105302-25 Airport Acceptance Rate Decision Support • 105302-21 Improve Demand Predictions					
CATM-T WP 5 and Future WPs				CATM-T WP 5 capability development up to FY 2020+	Operationally available in FY 2020+
Potential Increments Supported • 101103-25 Constraint Evaluation Feedback • 101102-22 Negotiate Mitigations • 104102-21 User Tactical Trajectory Feedback • 104117-31 Collaborative Airport and Airspace Configuration Management • 105207-28 Airborne Trajectory Negotiations with Flight Operations Centers • 105208-24 Aircraft Equipage Eligibility During TMIs • 105302-22 Probabilistic Constraint Prediction • 105302-24 Enhanced Post Operations • 105302-26 Improved Statistical Methods for Departure Predictions[2] • 105207-22 Daily Objectives Exchange[3]					
Airborne Rerouting Automation	Software development, procedure design, and key site testing		Solution Implementation		

[1] Previous number was 104208-23
[2] Previous number was 101102-21
[3] New Increment

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

SEPARATION MANAGEMENT

Separation Management focuses on the enhancement of aircraft separation assurance. Separation Management improvements will provide air traffic controllers with tools and procedures to separate aircraft with different kinds of navigation equipment and wake performance capabilities, in what is known as a mixed environment.

The increments in this portfolio will achieve success by enhancing current National Airspace System (NAS) infrastructure through the integration into air traffic control automation systems of enabling technologies, new standards and new procedures. Common Automated Radar Terminal System, Standard Terminal Automation Replacement System, Advanced Technologies and Oceanic Procedures and En Route Automation and Modernization are the key automation systems impacted by this portfolio.

TARGET USERS

Air traffic controllers, operators

TARGET AREAS

NAS-wide

ANTICIPATED BENEFITS

Capabilities in this portfolio will enhance aircraft separation assurance by safely reducing separation between aircraft, and as a result improve capacity, efficiency and safety in the NAS.

CAPACITY

Capabilities in this portfolio will support an increase in capacity by:

- Increasing airport throughput as a result of closer spacing of flights accepted from Terminal Radar Approach Control airspace and managed on final approach
- Enabling air traffic controllers and pilots through reduced separation between aircraft to manage increasing traffic levels in oceanic airspace

EFFICIENCY

This portfolio will provide improved efficiency through the introduction of capabilities that will:

- Enable more oceanic flights to ascend and descend to their preferred altitudes
- Allow controllers to approve additional pilot requests for direct routes and more efficient altitudes

SAFETY

This portfolio will provide controllers automated information about wake vortex separation requirements for any given aircraft pair, along with accurate wind data, which will help predict more accurate and safer separation standards.

FUNDING

SUPPORTED BY EN ROUTE AUTOMATION MODERNIZATION

OI 102146 – Flexible Routing

SUPPORTED BY FLEXIBLE TERMINAL ENVIRONMENT/IMPROVED MULTIPLE RUNWAY OPERATIONS PORTFOLIO

OI 102137 – Automation Support for Separation Management

OI 102144 – Wake Turbulence Mitigation for Arrivals: Closely Spaced Parallel Runways

SUPPORTED BY NEXTGEN SYSTEM DEVELOPMENT/SEPARATION MANAGEMENT PORTFOLIO

OI 102154 – Wake Re-Categorization

SUPPORTED BY NEXTGEN TRAJECTORY BASED OPERATIONS (TBO)

OI 104104 – Initial Conflict Resolution Advisories

SUPPORTED BY NEXTGEN TBO/SEPARATION MANAGEMENT PORTFOLIO

OI 102117 – Reduced Horizontal Separation Standards En Route – 3 Miles

OI 104102 – Interactive Planning using 4-D Trajectory Information in the Oceanic Environment

OI 108212 – Improved Management of Special Activity Airspace

OI 104122 – Integrated Arrival and Departure Airspace Management

OI 104127 – Automated Support for Conflict Resolution

SUPPORTED BY NEXTGEN TBO/SEPARATION MANAGEMENT PORTFOLIO AND AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST

OI 102108 – Oceanic In-Trail Climb and Descent

SEPARATION MANAGEMENT

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Oceanic Tactical Trajectory Management (OTTM) - Advanced Technologies and Oceanic Procedures (ATOP) Enhancement Work Package (WP) 1			ATOP WP 2 Work • Investment Analysis Readiness Decision (IARD) (ATOP WP1) – Targeted for 2nd Quarter Calendar Year 2016 • Final Investment Decision (FID) (ATOP WP 1) – Targeted for 2nd Quarter Calendar Year 2017	
OTTM - ATOP Concept Engineering	Concept Engineering in support of ATOP WP 1		Concept Engineering in support of ATOP Future WP	
Implementation Phase:				
Oceanic In-Trail Climb and Descent	Software build development and release to key site		Operational Readiness by 2016	
Increments implemented: • 102108-12 Enhanced Oceanic Climb/Descent Procedure via Automatic Dependent Surveillance-Contract Automation • 102108-13 Automatic Dependent Surveillance-Broadcast (ADS-B) Oceanic In-Trail Procedure and Automation †				
ATOP Enhancement WP[1]				Operational Readiness by 2022
Increments implemented: • 104102-22 Approval of User Requests in Oceanic Airspace - Auto Re-Probe • 104102-25 Preferred Routing in Constrained Oceanic Airspace (Data Exchange via System Wide Information Management) • 104102-26 Approval of User Requests in Oceanic Airspace - Conflict Resolution Advisory • 104102-30 Enhanced Conflict Probe for ATOP Surveillance Airspace				
En Route Automation Modernization (ERAM) Sector Enhancement Work Package			Operational Readiness by 2020	
Increments Implemented: • 101202-22 Unique Attributes for Unmanned Aircraft System (UAS) Flight Planning • 102112-22 UAS Air Traffic Control Direct Communications • 102117-21 Wake Turbulence Mitigations for En Route Controllers[1]				

[1]Formerly Wake Turbulence Alerts for En Route Controllers. Moved from OI 102137 to OI 102117.

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

SEPARATION MANAGEMENT				
	FY2014	FY2015	FY2016	FY2017+
Pre-Implementation Phase:				
Separation Management – ERAM Sector Enhancements – ERAM Enhancements Investment Analysis	IARD – Achieved successfully, July 2014 FID – Targeted 3rd Quarter, Calendar Year 2015		ERAM Future Segment Work	
Separation Management – Modern Procedures - ERAM Enhancement Concept Engineering	Concept Engineering in support of ERAM Sector Enhancement		Concept Engineering in support of ERAM System Enhancements Future Segment	
Trajectory Based Operations and UAS Integration Demonstration	Demonstration project			
Wake Turbulence Re-categorization (RECAT)	FAA Wake RECAT Phase II (Leader/Follower) Benefit Study FAA Wake RECAT Phase II (Leader/Follower) Safety Argument			
Alternative Positioning, Navigation, and Timing	Pre-implementation and Investment Analysis activities			

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

SEPARATION MANAGEMENT

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Wake RECAT, Phase 1	Approval for Wake RECAT Standards Change in 7110.608 Implementation of Wake RECAT phase 1 at 9 sites (A80, C90, N90, CLT, CVG, IAH, HOU, SDF, SFO) to be complete FY 2015 Q4 Implementation of Automated Terminal Proximity Alert (ATPA) at SDF, CLT, CVG, JFK/LGA/EWR, IAH/HOU completed in FY 2014 Q2			
Increments implemented: • 102154-11 Wake Re-Categorization Phase 1 - Aircraft Re-Categorization • 102137-15 ATPA for In-Trail Separation[2]				
Wake RECAT, Phase 2			• Complete changes to FAA Orders Order 7110.608 • Complete NCPand associated Safety Risk Management Document for WakeRECAT Phase II • Develop prototype software and adaptation changes for Phase II	Operational Readiness by 2017
Increments implemented: • 102154-21 Wake RECAT Phase 2 - Static Pair-wise Wake Separation Standards †				

[2] Formerly Closely Spaced Parallel Runway

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ON-DEMAND NAS INFORMATION

On-Demand National Airspace System (NAS) Information will provide flight planners, air traffic controllers and traffic managers, and flight crews with consistent and complete information related to changes in various areas of the NAS, such as temporary flight restrictions, temporary availability of special activity airspace (this includes military, TFRs, other), equipment outages and runway closures. The capabilities in this portfolio will be realized through net-enabled information access to and exchange of aeronautical and flight information using common data formatting and information exchange standards.

TARGET USERS

Air traffic controllers, traffic managers, flight planners, flight crews

TARGET AREAS

NAS-wide

ANTICIPATED BENEFITS

Improving the consistency, completeness and accuracy of the NAS advisory service information has the following anticipated benefits:

- Reduced fuel burn and operating costs related to planning around constraints that are not accurate representations of NAS status and airspace usage
- Increased flexibility of the NAS to enable users to adapt according to their own needs
- Maintenance and improved safety of the NAS

CAPACITY

Capabilities in this portfolio permit coordination of available schedules for special acitvity airspace, providing access to airspace that otherwise would not be available and thereby improving airspace capacity.

EFFICIENCY

Capabilities in this portfolio improve flight efficiency by reducing flight time and distance, which reduces fuel burn and emissions, for operators who opt for more efficient routes thrrough awareness of the availability of special activity airspace.

PREDICTABILITY

Capabilities in this portfolio provide real-time status of airspace, enabling operators to more predictably plan their schedules.

SAFETY

Capabilities in this portfolio provide an additional margin of safety by delivering real-time traffic, flight and NAS status information directly to the flight deck, providing flight crews information quickly and in a usable form.

FUNDING

SUPPORTED BY AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST (ADS-B)

OI 103209 – Enhance Traffic Advisory Services

SUPPORTED BY NEXTGEN ADS-B, COLLABORATIVE AIR TRAFFIC MANAGEMENT TECHNOLOGY (CATMT)/COLLABORATIVE AIR TRAFFIC MANAGEMENT (CATM) PORTFOLIO & SYSTEM WIDE INFORMATION MANAGEMENT (SWIM)

OI 103305 – On-Demand NAS Information

SUPPORTED BY NEXTGEN CATM/ON-DEMAND NAS PORTFOLIO, CATMT/CATM PORTFOLIO & SWIM

OI 108212 – Improved Management of Special Activity Airspace

ON DEMAND NAS INFORMATION				
	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Aeronautical Information Management Modernization (AIMM) Segment 2	AIMM Segment 2 Investment Analysis [Final Investment Decision (FID) in Q4 FY 2014]			
AIMM Segment 3	Concept work (12 months) in FY 2014 and FY 2015 for Standard Operation Procedures and Letters of Agreement Airspace Constraints Digitization. This is AIMM Segment 3 increment, 108207-21 Planned Airspace Constraints		AIMM Segment 3 Investment Analysis [Concept and Requirements Definition Readiness Decision (CRDRD) FY 2016, Investment Analysis Readiness Decision (IARD) FY 2017, Initial Investment Decision (IID) FY 2018 and FID FY 2019]	

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ON DEMAND NAS INFORMATION

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
AIMM Segment 1	AIMM S1 Operational Development Activities	Operationally available FY 2014 through FY 2015		
Increments implemented: • 103209-01 Traffic Situational Awareness with Alerts (TSAA) • 103305-13 Provide National Airspace System (NAS) Status via Digital Notices to Airmen (NOTAMs) or Flight Operations Centers (FOC)/Airline Operations Centers (AOC) • 103305-23 Airborne Access to Information Portal • 108212-12 Improve Special Use Airspace-Based Flow Predictions				
AIMM Segment 2		AIMM Segment 2 Operational Development Activities	Operationally Available in FY 2018 - FY 2020	
Increments implemented: • 103305-12 Improved Access to NAS Aeronautical, Status, and Constraint Information for Authorized NAS Users and Subscribers • 103306-02 Tailored NAS Status via Digital NOTAMs for Air Navigation Service Providers (ANSP)[1] • 105104-21 Improve Special Activity Airspace (SAA)-Based Flow Predictions[2]				
AIMM Segment 3			AIMM Segment 3 Operational Development Activities in FY 2019+	Operationally Available in FY 2020+
Increments implemented: • 103306-01 Static Airspace Constraints[3] • 108207-21 Planned Airspace Constraints[4] • 108212-11 ANSP Real-Time Status for SAAs				

[1] Renumbered from 103305-24
[2] Renumbered from 108212-21
[3] Renumbered from 103305-21
[4] Renumbered from 103305-22

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ON DEMAND NAS INFORMATION

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Flight Object				
	v3.0			
		V4.0		
				v5.0, v6.0, v7.0
Flight Object Exchange Service (FOXS)			Engineering and Investment Analysis for FOXS Implementation and Flight Information Exchange Model v5.0/v6.0/ v7.0 incorporation into FOXS	
Advanced Methods: Unified Flight Planning & Filing; NAS Common Reference; Service Level Expectations and Learning Automation	Development of constraint prediction, monitoring and alerting; operational response development; post-operational analysis and training			
Collaborative Information Management	Flight Information Authentication and Credentialing Recommendations	Air-to-ground data link modeling and simulation exercise; analysis report and sharing strategy		

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ENVIRONMENT AND ENERGY

Environment and Energy uses a comprehensive five-pillar approach to overcome the environmental constraints that are facing aviation from noise, air quality, climate, energy and water quality concerns. The five-pillar approach is comprised of improved scientific knowledge and integrated modeling, aircraft technology maturation, sustainable alternative jet fuels, air traffic management modernization and operational improvements, and policies, environmental standards and market-based measures. The environmental performance of the National Airspace System (NAS) will be tracked using the NextGen Environmental Management System (EMS) Framework to identify additional system improvements with the goal of achieving sustainable aviation growth.

TARGET USERS

Air traffic controllers, FAA, airports, airline operators and manufacturers

TARGET AREAS

Airport Local to NAS-wide

ANTICIPATED BENEFITS

Capabilities in this portfolio will, where feasible, improve environment, efficiency, mobility, save fuel, and reduce emissions, while reducing noise footprint and enabling the avoidance of environmentally sensitive areas when practicable.

FUNDING

SUPPORTED BY ENVIRONMENT PORTIFOLIO

OI 701102 – NextGen Environmental Modeling – Phase I

OI 701103 – Integrated Environment Modeling – Phase II

OI 702102 – NextGen Environmental Engine and Aircraft Technologies – Phase I

OI 704102 – Environmental Policies, Standards and Measures – Phase I

OI 704103 – Environmental Policies, Standards and Measures – Phase II

SUPPORTED BY NEXTGEN RESEARCH, ENGINEERING AND DEVELOPMENT

- OI 701102 Integrated Environmental Modeling – Phase I
- OI 701103 integrated Environmental Modeling – Phase II
- OI 702102 NextGen environmental Engine and Aircraft Technologies – Phase I
- OI 702103 NextGen Environmental Engine and Aircraft Technologies – Phase II
- OI 703102 Sustainable Alternative Jet Fuels – Phase I
- OI 703103 Sustainable Alternative Jet Fuels – Phase II
- OI 704102 Environmental Polices, Standards and Measures – Phase I
- OI 704103 Environmental Policies, Standards and Measures – Phase II

ENVIRONMENT AND ENERGY				
	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Integrated Environmental Modeling - Phase I±	Development work from FY 2010 through FY 2015			
Integrated Environmental Modeling - Phase II±			Development work FY 2016+	
NextGen Environmental Engine and Aircraft Technologies - Phase I±	Development work occurred from FY 2012 through FY 2014 with additional testing and maturation demonstration of technologies occurring through FY 2017			
NextGen Environmental Engine and Aircraft Technologies - Phase II±			Development work FY 2016+	
Sustainable Alternative Jet Fuels - Phase I±	Development work from FY 2011 through FY 2015			
Sustainable Alternative Jet Fuels - Phase II±			Development work FY 2016+	
Environmental Policies, Standards and Measures - Phase I±	Development work from FY 2009 through FY 2015			
Environmental Policies, Standards and Measures - Phase II±			Development work FY 2016+	

± The work from NGIP 2014 has been redistributed to better align the OIs to the FAA's Aviation Environmental and Energy Policy Statement

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ENVIRONMENT AND ENERGY				
	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Integrated Environmental Modeling - Phase I		Available in FY 2015		
Increments implemented : • 701102-02[1] Aviation Environmental Design Tool Version 2B • 701102-03[2] Improved Scientific Knowledge • 701102-04[3] Aviation Environmental Portfolio Management Tool				
Integrated Environmental Modeling - Phase II				Availability in FY 2022
Increments implemented : • 701103-01[4] Aviation Environmental Tools Suite				

[1]Renumbered from 109309-21
[2]Renumbered from 109309-15
[3]Renumbered from 109309-17
[4]Renumbered from 109309-17

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ENVIRONMENT AND ENERGY				
	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
NextGen Environmental Engine and Aircraft Technologies - Phase I		Available to industry FY 2015+		
Increments implemented: • 702102-05[5] Engine Weight Reduction and High-Temperature Impeller • 702102-06[6] Flight Management System - Air Traffic Management (FMS-ATM) Integration • 702102-07[7] Ultra High-Bypass Ratio Geared Turbo Fan • 702102-08[8] Ceramic Matrix Composite Turbine Blade Tracks[9] • 702102-09[10] Dual-Wall Turbine Vane[11]				
NextGen Environmental Engine and Aircraft Technologies - Phase II				Available to industry in FY 2017+
Increments implemented: • 702103-01[12] Flight-Management System-Air Traffic Management (FMS-ATM) Integration - Phase II • 702103-03[13] Explore and Demonstrate New Technologies Under Continuous Lower Energy, Emissions, and Noise - Phase II				

[5]Renumbered from 109315-16
[6]Renumbered from 109315-18
[7]Renumbered from 109315-19
[8]Renumbered from 109315-14
[9]Timeline extended to reflect testing and demonstration to mature the technologies at the designated Technology Readiness Level (TRL).
[10]Renumbered from 109315-17
[11]Timeline extended to reflect testing and demonstration to mature the technologies at the designated TRL.
[12]Renumbered from 109318-26
[13]Renumbered from 109318-28

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ENVIRONMENT AND ENERGY				
	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Sustainable Alternative Jet Fuels - Phase I		Available to industry in FY 2015		
Increments implemented: • 703102-02[14] Drop-In >50% HRJ/HEFA Fuels (Greater than 50% Blend)[15] • 703102-03[16] Other Advanced Aviation Alternative Fuels - Phase I				
Sustainable Alternative Jet Fuels - Phase II				Available to industry in FY 2017+
Increments implemented: • 703103-01[17] Other Advanced Drop-In Aviation Alternative Fuels - Phase II • 703103-02[18] Generic Methodology for Alternative Fuels Approval				

[14]Renumbered from 109316-12
[15]Formerly Drop-In > 50% HEFA Fuels (Greater than 50% Blend)
[16]Renumbered from 109316-13
[17]Renumbered from 109321-21
[18]Renumbered from 109321-22

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

ENVIRONMENT AND ENERGY				
	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Environmental Policies, Standards and Measures - Phase I		Available in FY 2015		
Increments implemented: • 704102-03[19] Environmental Targets • 704102-04[20] Environmental Assessment of NextGen Capabilities • 704102-05[21] Analysis to Support International Environmental Standard-Setting - Phase I • 704102-06[22] Environmental Goals and Targets Performance Tracking System • 704102-07[23] NextGen Environmental Management System (EMS) Frameworks and Stakeholder Collaboration				
Environmental Policies, Standards and Measures - Phase II				Available in FY 2022
Increments implemented: • 704103-01[24] Environmental Performance and Targets • 704103-02[25] NEPA Strategy and Processes - Phase II • 704103-03[26] EMS Data Management and Stakeholder Collaboration • 704103-04[27] Analysis to Support International Environmental Standard-Setting - Phase II				

[19]Renumbered from 109309-12
[20]Renumbered from 109309-14
[21]Renumbered from 109309-16
[22]Renumbered from 109309-19
[23]Renumbered from 109309-20
[24]Renumbered from 109310-22
[25]Renumbered from 109310-23
[26]Renumbered from 109310-24
[27]Renumbered from 109310-26

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

SYSTEM SAFETY MANAGEMENT

System Safety Management is developing data acquisition, storage, analysis and modeling capabilities to meet the safety analysis needs of NextGen designers, implementers and practitioners. These resources will be used throughout theFAA to ensure that new capabilities either improve or maintain current safety levels while simultaneously improving capacity and efficiency in the National Airspace System (NAS). The portfolio currently contains two projects.

The Aviation Safety Information Analysis and Sharing (ASIAS) project collects aviation data from more than 100 commercial and general aviation operations sources, and fuses the data to improve the analysis of complex issues related to NextGen operational improvements. ASIAS also maintains many aviation-related metrics and benchmarks that enable analysts to monitor important aviation system characteristics.

The System Safety Management Transformation (SSMT) project, which uses ASIAS data and data from other sources, is developing data analysis and modeling capabilities that will enable safety analysis to determine how NAS-wide operational improvements will affect safety and evaluate potential safety-risk mitigations. SSMT results are returned to stakeholders for use in planning and evaluation, and to ASIAS for metrics development and tracking. Long-term tracking of ASIAS metrics are embedded in the SSMT risk analysis baseline capability (the Integrated Safety Assessment Model) to provide ongoing support to the NextGen safety assessment process.

TARGET USERS

FAA, operators

TARGET AREAS

NAS-wide

ANTICIPATED BENEFITS

SAFETY

The capabilities in this portfolio enable the sharing of de-identified safety and risk data among the FAA and NAS users, which will identify NAS-wide trends and emerging airspace management risks before they result in accidents or incidents.

FUNDING

SUPPORTED BY SYSTEM SAFETY MANAGEMENT PORTFOLIO

OI 601102 – Enhanced Safety Information Analysis and Sharing

OI 601103 – Safety Information Sharing and Emergent Trend Detection

OI 601202 – Integrated Safety Analysis and Sharing

SYSTEM SAFETY MANAGEMENT				
	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Enhanced Safety Information Analysis and Sharing	Aviation Safety Information Analysis and Sharing (ASIAS) 1.0 Development work from FY 2013 through FY 2015			
Safety Information Sharing and Emergent Trend Detection			ASIAS 2.0 Development work from FY 2016 through FY 2020	
Integrated Safety Analysis and Modeling (ISAM)	ISAM/ASIAC 1.0 Development work from FY 2014 - FY 2017			

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

SYSTEM SAFETY MANAGEMENT

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Enhanced Safety Information Analysis and Sharing			ASIAS 1.0 available in FY 2016	
Increments implemented : • 601102-01[1] Expanded ASIAS Participation • 601102-02[2] ASIAS Data and Data Standards • 601102-03[3] Enhanced ASIAS Architecture • 601102-04[4] Upgraded and Expanded ASIAS Analytical Capabilities • 601102-05[5] Vulnerability Discovery • 601102-06[6] ASIAS Studies and Results • 601102-07[7] ASIAS Collaboration Capabilities				
Safety Information Sharing and Emergent Trend Detection				ASIAS 2.0 available in FY 2021
Increments implemented : • 601103-01[8] Additional ASIAS Participants • 601103-02[9] NextGen Enabled Data • 601103-03[10] Architecture Evolution and NextGen Support • 601103-04[11] Analytical Capabilities in Support of NextGen • 601103-05[12] Automated Vulnerability Discovery • 601103-06[13] Continued Studies and Results • 601103-07[14] Expanded Collaboration Environments				

[1]Renumbered from 109304-17
[2]Renumbered from 109304-18
[3]Renumbered from 109304-19
[4]Renumbered from 109304-20
[5]Renumbered from 109304-21
[6]Renumbered from 109304-22
[7]Renumbered from 109304-23
[8]Renumbered from 109303-21
[9]Renumbered from 109303-22
[10]Renumbered from 109303-13
[11]Renumbered from 109303-24
[12]Renumbered from 109303-25
[13]Renumbered from 109303-26
[14]Renumbered from 109303-27

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

SYSTEM SAFETY MANAGEMENT				
	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
ISAM				ISAM/ASIAC 1.0 available in FY 2017-FY 2020
Increments implemented: • 601202-01[15] Automated Operational Anomaly Detection, Analysis and Forecasting Models • 601202-02[16] System-Wide Integrated Risk Baseline Annual Reports • 601202-03[17] Tailored, Domain-Specific Baseline and Predictive Risk Models (NextGen Portfolio Support) • 601202-04[18] Integrated NAS-wide Hazard Identification, Evaluation and Forecasting • 601202-05[19] Integrated NAS-wide Automation System Modeling and Anomaly Detection • 601202-06[20] Near Real Time Integrated Safety Prediction Models				

[15]Renumbered from 109326-01
[16]Renumbered from 109326-02
[17]Renumbered from 109326-03
[18]Renumbered from 109326-04
[19]Renumbered from 109326-05
[20]New Increment

Concept Development Operation

*** Work Supports Post FY 2016 Capabilities**

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

NAS INFRASTRUCTURE

National Airspace System (NAS) Infrastructure provides research, development and analysis of capabilities that depend on and affect activities in more than one NextGen portfolio. Work in this portfolio includes capabilities that address aviation weather issues, which supports the need to improve air traffic management (ATM) decision making during adverse weather conditions, improves the use of weather forecast information in the transformed NAS and evolves the existing aviation weather infrastructure, i.e., dissemination, processor, and sensor systems, to standardize weather information and interfaces, and reduce operational costs. This portfolio also includes capabilities that address engineering issues, which provide for cross-cutting research, development and analysis in Terminal/ Terminal Radar Approach Control system engineering, NextGen navigation engineering, information management and new ATM requirements to determine if these new systems can achieve the targets for 2025 and beyond. This includes new air traffic control management procedures, separation standards and flexible airspace categories to increase throughput.

TARGET USERS

FAA, other government agencies (e.g., NOAA), operators

TARGET AREAS

NAS-wide

FUNDING

SUPPORTED BY DATA COMMUNICATIONS

OI 102158 – Automated Support for Initial Trajectory Negotiation

SUPPORTED BY NAS INFRASTRUCTURE PORTFOLIO

OI 103119 – Initial Integration of Weather Information into NAS Automation and Decision Making

OI 103305 – On-Demand NAS Information

SUPPORTED BY TERMINAL FLIGHT DATA MANAGEMENT

OI 104209 – Initial Surface Traffic Management

NATIONAL AIRSPACE SYSTEM INFRASTRUCTURE

	FY 2014	FY 2015	FY 2016	FY 2017+
Pre-Implementation Phase:				
Common Support Services – Weather	Work Package (WP) 1 Acuisition Mangement System (AMS) work – Final Investment Decision (FID) scheduled for Q2 FY 2015			
NextGen Weather Processor	WP1 AMS work – FID scheduled for Q2 FY 2015			
Terminal Flight Data Manager (TFDM)	Development and AMS work for TFDM			
Data Communications (Data Comm) Services	Initial En Route Services Data Comm			
Weather Observation	Improved automated winter weather observing capability technology maturation			Terminal Winds concept work

Concept | Development | Operation

* Work Supports Post FY 2016 Capabilities

† NextGen Advisory Committee/NextGen Integration Working Group Commitment

NATIONAL AIRSPACE SYSTEM INFRASTRUCTURE

	FY 2014	FY 2015	FY 2016	FY 2017+
Implementation Phase:				
Common Support Services - Weather			Implementation to begin post-FID in FY 2015	
Increments Implemented • 103305-25 Common Support Services - Weather • 103119-13 Enhanced In-Flight Icing Diagnosis and Forecast • 103119-17 4-D Tailored Volumetric Retrievals for Aviation Weather Information • 103119-18 Enhanced Turbulence Forecast and Graphical Guidance • 103119-19 Enhanced Ceiling and Visibility Analysis • 103119-23 Space Weather Information				
NextGen Weather Processor – WP1		Implementation to begin post-FID in FY 2015		
Increments Implemented • 103119-11 Enhanced NAS-wide Access of 0-2 Hours Convective Weather on Traffic Forecast for NextGen Decision-Making • 103119-14 Enhanced Weather Radar Information for Air Traffic Control Decision-Making • 103119-15 Extended Convective Weather on Traffic Forecast for NextGen Decision-Making • 103119-16 Convective Weather Avoidance Model for Arrival/Departure Operations				
Weather Observation				Develop Tech Transfer Package
Increments Implemented • 103119-22 Enhanced Automated Winter Weather Information				
Data Comm Services		Initial En Route Services Data Comm Development		
Increments Implemented • 102158-01 Initial En Route Data Comm Services				
TFDM (Segment 1 and 2)				Development to begin following FID in FY 2015/FY 2016 timeframe
Increments Implemented • 104209-32 Integrate Surveillance Data with Flight Data (Surface)				

Concept | Development | Operation

*** Work Supports Post FY 2016 Capabilities**

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APPENDIX A: NEXTGEN FUNDING

BLI NUMBER	CAPITAL BUDGET LINE ITEM (BLI) PROGRAM	FY 2016 BUDGET	FY 2017 ESTIMATE	FY 2018 ESTIMATE	FY 2019 ESTIMATE	FY 2020 ESTIMATE
1A05	NextGen – Separation Management Portfolio	$26.5	$26.8	$27.0	$40.0	$42.5
1A06	NextGen – Improved Surface/ Terminal Flight Data Manager (TFDM) Portfolio	$17.0	$53.0	$90.6	$116.3	$100.8
1A07	NextGen – On Demand NAS Portfolio	$11.0	$14.5	$17.0	$18.0	$32.0
1A08	NextGen – Environment Portfolio	$1.0	$1.0	$0.0	$0.0	$0.0
1A09	NextGen – Improved Multiple Runway Operations Portfolio	$8.0	$9.5	$5.0	$4.0	$5.0
1A10	NextGen – NAS Infrastructure Portfolio	$11.0	$14.0	$15.2	$13.0	$15.0
1A11	NextGen – Support Portfolio at WJHTC	$10.0	$12.0	$13.0	$13.0	$13.0
1A12	NextGen – Performance Based Navigation & Metroplex Portfolio	$13.0	$18.0	$18.0	$21.5	$21.0
2A01	NextGen – En Route Automation Modernization (ERAM) – System Enhancements and Technology Refresh	$79.4	$59.0	$87.6	$106.1	$126.4
2A11	NextGen – System-Wide Information Management (SWIM)	$37.4	$40.9	$50.7	$47.1	$40.4
2A12	NextGen – Automatic Dependent Surveillance - Broadcast (ADS-B) NAS Wide Implementation	$45.2	$37.7	$27.9	$39.7	$43.5
2A14	NextGen – Collaborative Air Traffic Management Portfolio	$9.8	$14.7	$15.3	$25.3	$25.0
2A15	NextGen – Time Based Flow Management (TBFM) Portfolio	$42.6	$45.3	$39.2	$50.2	$30.0
2A17	NextGen – Next Generation Weather Processor (NWP)	$7.0	$20.3	$18.3	$20.0	$16.8
2A19	NextGen – Data Communication in support of NextGen	$234.9	$241.7	$242.9	$238.9	$212.6
2B13	NextGen – National Airspace System Voice System (NVS)	$53.6	$47.7	$68.4	$32.2	$116.6
3A10	NextGen – System Safety Management Portfolio	$17.0	$18.0	$18.0	$18.0	$18.0
4A09	NextGen – Aeronautical Information Management Program	$5.0	$10.4	$6.9	$11.0	$15.0
4A10	NextGen – Cross Agency NextGen Management	$3.0	$2.0	$3.0	$3.0	$3.0

Note: FY 2017-2020 outyear funding amounts are estimates.

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