Federal Aviation Administration

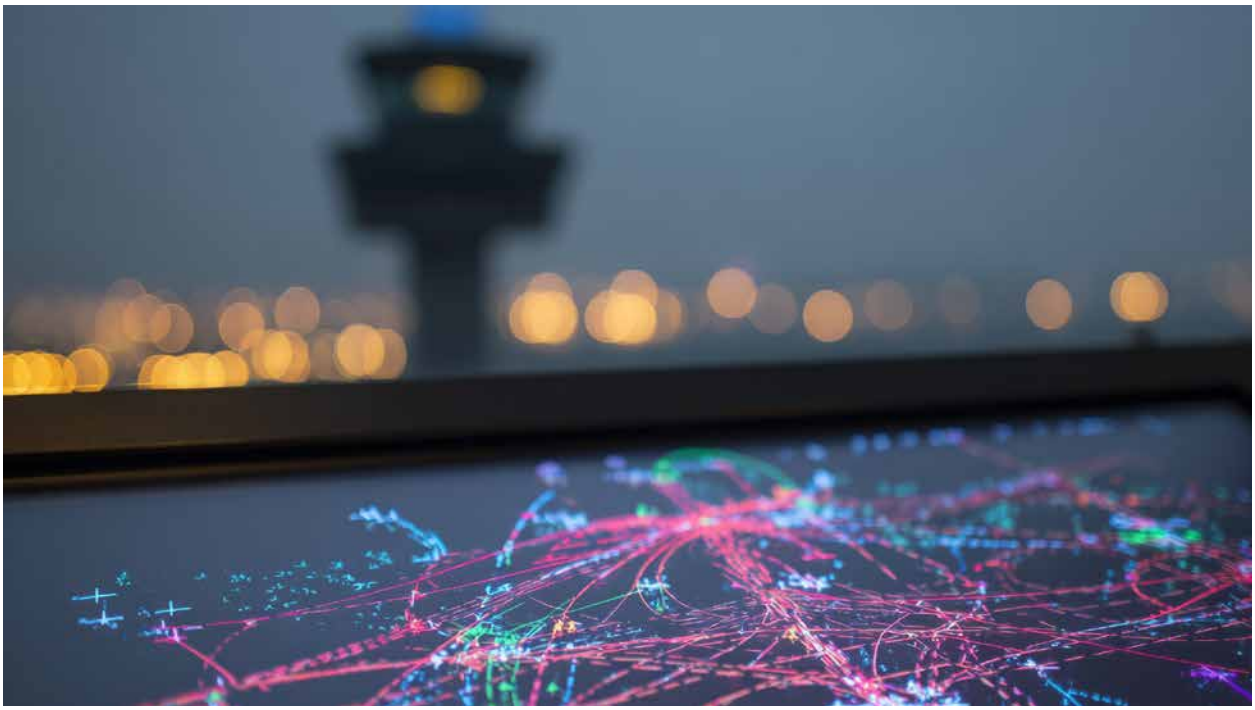
NextGen
Final Report
2025

What is NextGen?

NextGen is a multibillion-dollar infrastructure program to continuously modernize the U.S. National Airspace System (NAS), the busiest and most complex aerospace system in the world. NextGen advanced the FAA's global leadership in aviation with improved standards, safety, and security.

Inside the Final Report

Executive Summary



In November of 2002, the U.S. Government published The Final Report of the Commission on the Future of the United States Aerospace Industry. The following year, Congress responded by including the NextGen effort in the Vision 100—Century of Aviation Reauthorization Act (Public Law 108–176). That multi-agency effort resulted in the Integrated Plan for the Next Generation Air Transportation System, which was published December 15, 2004, by the U.S. Department of Transportation unveiling a visionary framework that called for bold, systemic changes to the National Airspace System (NAS). This was the beginning of a generational shift: one that set the Federal Aviation Administration (FAA) on a two-decade journey to modernize air traffic management, elevate safety, enhance efficiency, and build the infrastructure needed to support the future of aviation.

Twenty-one years later, pursuant to the FAA Reauthorization Act of 2024, the Office of NextGen concluded its mission on December 31, 2025. In its place, a new office was established to continue the work of airspace modernization, inheriting the momentum, infrastructure, and foundational architecture laid by NextGen.

The NAS of 2025 is not the NAS of 2005. Today's system reflects the cumulative progress of more than two decades of sustained innovation. Core transformations in navigation, surveillance, automation, communications, information sharing, and weather services have redefined what is possible—safely guiding tens of thousands of daily operations with greater precision and resilience than ever before.

Performance Based Navigation (PBN), which rose to prominence in the 2012 NextGen Implementation Plan, illustrates how satellite-based guidance loosened the constraints of legacy ground-based navigation. Enabled by Global Navigation

Satellite Systems, PBN made air routes more direct, reliable, and fuel efficient, reshaping both terminal and en route operations.

Advancements in navigation and surveillance created the conditions necessary for overhauling automation. The En Route Automation Modernization (ERAM) system, fully deployed in 2015, replaced 1960s-era air traffic control infrastructure with a modern, nationwide platform that supports strategic traffic flow, data communications, and digital rerouting. In 2025, ERAM Enhancements 2 (EE2) added powerful new capabilities in trajectory management and controller collaboration.

Each of these advances contributed to a new operational environment—one in which improvements in a single domain created cascading benefits in others. This flexible architecture became a hallmark of NextGen: a modernization ecosystem that accelerated progress across domains and laid the groundwork for continued evolution.

Future-facing initiatives, including Trajectory Based Operations (TBO) and Advanced Air Mobility (AAM), are now positioned atop the resilient technical and procedural framework built by NextGen. These efforts will inherit not only infrastructure, but also a system-wide collaboration, iterative development, and enduring safety.

In telling the story of 2025, we do more than list accomplishments. We honor a legacy— one defined not by a single technology, but by a sustained commitment to the future of aviation. What follows in this report captures not only the technical progress of the past year, but the culmination of 21 years of transformation under the NextGen banner.

A Continuous Mission

The modernization of the NAS is not a finite goal; it is a continuous mission. And while the office that carried the name NextGen now hands forward its work, the legacy it leaves behind is clear: a safer, smarter, more connected airspace, built to serve generations to come.

Communications

The transformation of air-to-ground communications under NextGen began in earnest with the introduction of DATA COMMUNICATIONS (DATA COMM), a program that exemplified the modernization strategy at the heart of the NextGen vision. From its first operational deployment in 2016, Data Comm has evolved into a cornerstone of how the NAS exchanges flight information with the flight deck—augmenting voice-only systems with digital, text-based messaging.

Data Comm's initial focus on tower services— providing Controller-Pilot Data Link Communications (CPDLC) for departure clearances—marked a significant leap in operational efficiency. By reducing the potential for miscommunication and allowing for simultaneous transmissions, CPDLC reshaped controller and pilot workflows during some of the busiest phases of flight.

Data Comm Tower has scaled to 65 airports, connecting over 11,000 equipped aircraft, 23 U.S. air carriers, 106 non-U.S. air carriers, and more than 5,000 general and business aviation aircraft.

Each message exchanged represents a reduction in radio frequency congestion, a decrease in controller workload, and a step forward in NAS-wide interoperability.

The subsequent deployment of data communications en route services expanded that capability to high-altitude operations, equipping controllers with a robust set of digital message tools and enabling consistent, reliable communication for CPDLC messaging across the NAS. As of 2025, Data Comm En Route services operate continuously across all 20 Air Route Traffic Control Centers, supporting 68 commercial operators and more than 8,000 equipped aircraft.

The evolution of Data Comm is emblematic of NextGen's broader impact: a program born of a well-defined shortfall matured through collaboration, and sustained through measurable gains in safety, efficiency, and system resilience. Its enduring presence in the NAS stands as proof that communication is not just a technical achievement but a foundational enabler of aviation's future.

The Evolution

The evolution of Data Comm is emblematic of NextGen's broader impact: a program born of a well-defined shortfall matured through collaboration, and sustained through measurable gains in safety, efficiency, and system resilience.

Navigation

At the heart of NextGen's vision was a fundamental shift in how aircraft navigate the skies. That transformation began with the embrace of satellite-based guidance and matured through the widespread adoption of Performance Based Navigation (PBN), a shift that redefined the structure and function of the NAS.

Before NextGen, aircraft navigation was largely tethered to fixed, ground-based navigational aids (VORs, NDBs, DMEs) whose installation location shaped the physical layout of air routes. The introduction of PBN marked a departure from those constraints. Using Global Navigation Satellite Systems (GNSS), including GPS, pilots gained

access to precise, flexible trajectory options that allowed aircraft to achieve area-navigation and fly more directly and predictably across all phases of flight.

By 2012, PBN had become a foundational element of the NextGen Implementation Plan. Since then, the FAA has overseen the shift from thousands of legacy routes and procedures to satellite-enabled Area Navigation (RNAV) and Required Navigation Performance (RNP)—guidance that allowed aircraft to fly not toward a ground signal, but toward a destination defined in space. The benefits were immediate: reductions in fuel burn, emissions, and flight time; improvements in safety, predictability, and airspace capacity.

But even as PBN reshaped the navigational structure of the NAS, NextGen worked to ensure resilience. Recognizing that GPS signals can be vulnerable to interference or degradation, the FAA invested in the NextGen Distance Measuring Equipment (DME) Program, a targeted effort to reinforce navigation infrastructure with strategically placed and upgraded Distance Measuring Equipment supporting the continued use of area navigation.

In 2025, that program reached new milestones. En route and terminal DMEs underwent significant upgrades, including frequency changes and enhancements to Standard Service Volume (SSV). Several new DMEs were installed to address gaps

in signal coverage, and provide redundancy in areas where satellite signals may be unavailable. These upgrades ensure that aircraft with DME capabilities can continue flying PBN routes in the event of satellite disruptions, preserving system performance while easing pilot and controller workload.

The goal was not to return to legacy dependence, but to build a layered, resilient architecture where terrestrial systems provide vital support when needed.

Navigation under NextGen became more than a function—it became a strategic capability. As aviation advances into areas such as Trajectory Based Operations, the flexible, scalable, and resilient navigation foundation laid by NextGen will continue to support the evolving needs of the National Airspace System.

Surveillance

The evolution of surveillance under NextGen marked one of the most significant paradigm shifts in the history of the NAS. For decades, aircraft tracking relied almost exclusively on radar. NextGen introduced a new surveillance architecture, one rooted in satellite technology, and built to support the complex demands of a modernized, interconnected airspace.

At the center of this transformation was Automatic Dependent Surveillance–Broadcast (ADS-B). In 2008, the FAA published a regulation requiring aircraft operating in controlled airspace to be equipped with ADS-B Out capabilities. That decision led to the deployment of ADS-B ground infrastructure across the NAS, with operational benefits increasing as aircraft gradually equipped with broadcast capabilities to deliver precise position, velocity, and intent data in real time.

Unlike radar, which scans and extrapolates, ADS-B relies on GPS positioning transmitted directly from the aircraft, providing both controllers and pilots with a shared, high-fidelity view of the airspace. It is surveillance by broadcast, not by detection or direct interrogation: more accurate, more immediate, and vastly more scalable.

As of 2025, ADS-B infrastructure and equipage are mature and operational throughout the majority of controlled airspace. But NextGen's surveillance modernization did not end with deployment of controller tools. The program also set out to evaluate how this new data environment could enable next-generation flight deck surveillance and spacing capabilities; capabilities that go beyond pilot vision to enable tactical decision-making in the cockpit.

Through the ADS-B In Retrofit Spacing initiative (AIRS), the FAA began operational evaluation of three advanced cockpit applications: Cockpit Display of Traffic Information (CDTI)-Assisted Visual

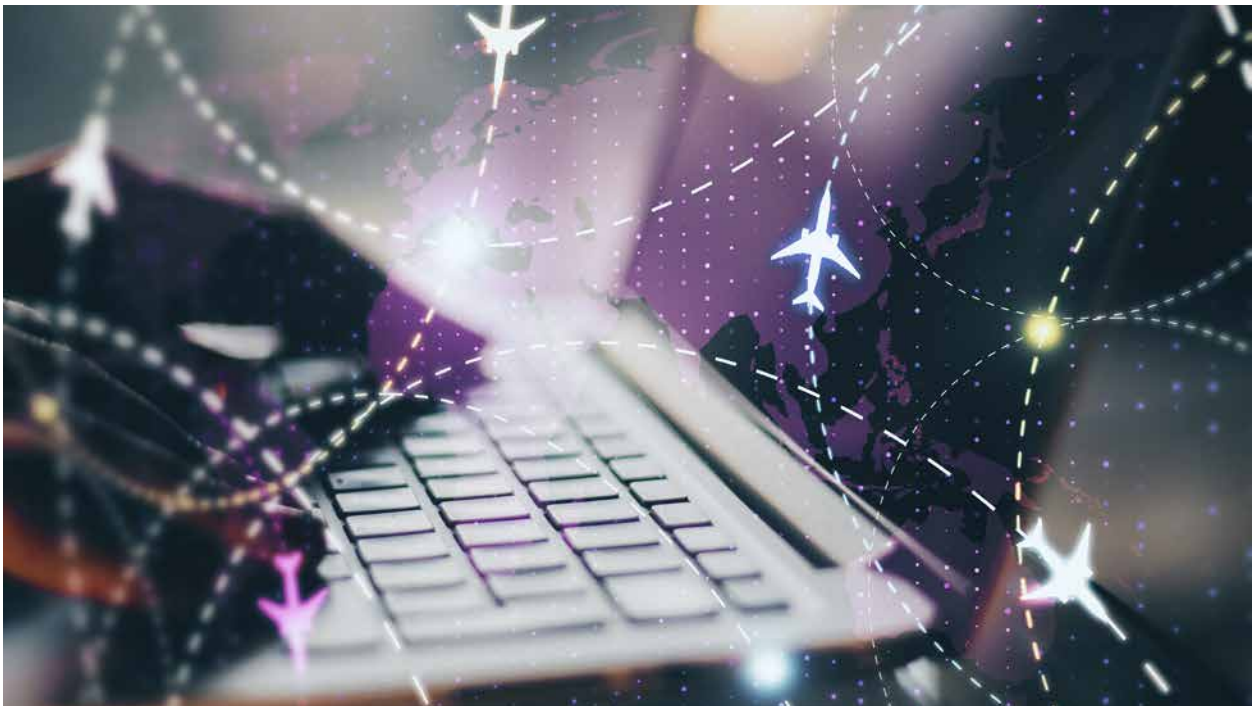
Separation (CAVS), CDTI-Assisted Separation on Approach (CAS-A), and Initial Interval Management (I-IM). These applications are designed to improve spacing precision and increase throughput on arrival and approach, especially in congested airspace.

In partnership with American Airlines and Aviation Communications & Surveillance Systems, the FAA launched operational trials beginning in 2021. The CAVS capability continues to be used operationally. The IM operational evaluation concluded in November 2024 at Albuquerque Center, and the CAS-A operational evaluation concluded in February 2025 at Dallas–Fort Worth International Airport. Final reports for these evaluations are available at https://www.faa.gov/air_traffic/technology/adsb/documents.

These ADS-B In applications are early indicators of what comes next—a system in which aircraft participate not just as tracked targets, but as active, informed participants in a shared separation ecosystem.

Surveillance, once limited by the range and coverage of ground-based radar, now benefits from satellite-enabled positioning combined with ground-based data collection and integration. NextGen's legacy in this domain lies not only in replacing aging systems, but in expanding the reach and accuracy of surveillance through technologies like ADS-B, supporting persistent and collaborative awareness across the NAS.

Automation



As the airspace grew more complex and the volume of traffic increased, the FAA recognized that legacy automation systems—some originating in the mid-20th century—could no longer keep pace with the demands of a modern NAS. Automation became not just a supporting tool, but a strategic pillar of NextGen's mission: enabling human operators to manage more information, make better decisions, and safely guide more aircraft through shared airspace.

This transformation began with En Route Automation Modernization (ERAM). Replacing a foundational system based on the characteristics of the 1960s, ERAM represented the largest single automation overhaul in FAA history. With full operational deployment achieved in 2015 across all 20 Air Route Traffic Control Centers, ERAM enabled controllers to manage higher volumes of high-altitude traffic across broader airspace sectors, while processing data from nearly three times as many sensors as its predecessor.

ERAM laid the groundwork for future automation. In 2025, the completion of ERAM Enhancements 2 (EE2) marked a further advancement in capability: delivering enhanced trajectory management, more efficient coordination between tactical and planning controllers, and improvements in flight data management and system support functions. These enhancements were not just upgrades, they were part of a continuous evolution in controller support and operational resilience.

Complementing en route automation was the Traffic Flow Management System (TFMS), which provided national-scale tools to strategically balance demand with capacity across the NAS. By providing traffic management initiatives, TFMS enabled the FAA to anticipate

congestion, reroute traffic, and collaborate with operators to reduce delays.

TFMS served for many years as the primary strategic flow management toolset, but its architecture is reaching the end of its lifecycle. The program's successor, Flow Management Data and Services (FMDS) is already under development. FMDS will leverage cloud-based infrastructure and a modular software architecture to deliver a more reliable, maintainable, and scalable system. This modernization will reduce response times and support growing traffic demand.

Time Based Flow Management (TBFM) is a foundational decision support tool (DST) for time-based management in the en route and terminal environments. TBFM is a vital component of the NAS, enhancing air traffic operations by reducing delays and improving the efficiency of traffic flow and airline operations. TBFM assists air traffic managers by optimizing aircraft flow, minimizing coordination, reducing airborne vectoring and holding, and efficiently utilizing aircraft and airspace capacity. TBFM has been deployed at all 20 Air Route Traffic Control Centers (ARTCCs) and adapted for towers and TRACONs serving major airports, enabling precision arrival sequencing and improved flow management into congested terminal environments.

At the surface level of airport operations, the Terminal Flight Data Manager (TFDM) brought automation to an environment long managed by voice and paper. TFDM introduced electronic flight data exchange, surface metering, and collaborative decision tools—bringing predictability and efficiency to the movement of aircraft from gate to runway.

In FY25, TFDM achieved an In-Service Decision (ISD) for Build 2 at Charlotte Douglas International Airport (CLT). Build 2 augments Electronic Flight Strips (EFS) with a full suite of surface management tools, enhancing coordination between tower and ramp operations. Following the ISD, TFDM continued deployment of the waterfall capability and achieved Initial Operational Capability (IOC) at three additional airports—San Francisco International Airport (SFO), Oakland San Francisco Bay Airport (OAK), and Seattle-Tacoma International Airport (SEA). In FY26, TFDM plans deployment at 11 total sites, with 9 Build 1 sites planned for upgrade to the Build 2 configuration.

Through each of these systems, NextGen created an automation architecture that is interconnected and built for longevity. The legacy is not just in the software or hardware, but in the way the NAS now operates—data-informed, collaboratively managed, and poised to support the emerging complexities of tomorrow's airspace.

System Wide Information Management (SWIM)

System Wide Information Management (SWIM) supports the exchange of aeronautical, flight, weather, and surveillance data across the National Airspace System (NAS). By standardizing and streamlining how operational data is shared, SWIM improves situational awareness and decision-making for FAA systems, air traffic controllers, and industry stakeholders.

Launched in 2007 as part of the FAA's NextGen initiative, SWIM reduces reliance on customized point-to-point connections by enabling data to be published once and accessed as needed throughout the NAS. In 2025, SWIM deployments expanded further, including the full rollout of the Terminal Data Distribution System (STDDS) to 38 Terminal Radar Approach Control (TRACON) facilities, enhancing data-sharing capabilities at the terminal level.

By improving the accessibility and consistency of critical operational data, SWIM enables more efficient traffic management and better-informed decision-making, supporting the continued evolution of airspace operations.

Weather

Weather remains the most persistent and unpredictable variable in aviation. From convective storms to low ceilings, it disrupts operations and drives delays throughout the NAS. NextGen responded to this challenge by transforming how the FAA processes, interprets, and disseminates meteorological data, building systems that not only observe, but forecast.

At the core of this effort is the NextGen Weather Processor (NWP), which replaces legacy systems with an integrated capability for real-time analysis and distribution of aviation weather data. After achieving Key Site Initial Operating Capability in 2024,

the program reached its 2025 Critical Acquisition Milestone and completed full deployment to 5 en route centers and the Potomac TRACON. New aviation weather displays were also installed at the Air Traffic Control System Command Center, 21 en route centers, 3 Center Radar Approach Control (CERAP) facilities, and 45 TRACONs, forming a distributed network of situational awareness.

Complementing NWP is the Common Support Services–Weather (CSS-Wx) Program, which consolidates weather dissemination across the FAA. Using SWIM as the transport layer, CSS-Wx publishes standardized weather products from both FAA systems and NOAA's NextGen IT Web Services. These products are presented in consistent formats, filterable by time and location, and available through modern web services.

The full deployment of CSS-Wx in 2026 represents a turning point. By eliminating custom point-to-point interfaces and consolidating infrastructure, CSS-Wx reduces costs while improving access to a single, authoritative "common weather picture." This capability supports strategic planning, enhances tactical decisions, and aligns with the operational requirements of Trajectory Based Operations (TBO), where precision and predictability are paramount.

With the systems developed under NextGen, it can be better understood, predicted, and incorporated into the decision-making fabric of the NAS. These capabilities will endure well beyond the life of the program, informing flight paths, flow strategies, and air traffic decisions in the years to come.

Safety

Throughout its 21-year mission, NextGen maintained safety as its highest priority. Each system upgrade, procedural refinement, and data initiative was intended to support safe operations within the NAS. Two programs in particular illustrate this ongoing focus: the Aviation Safety Information Analysis and Sharing (ASIAS) platform and the System Safety Management Transformation (SSMT) initiative.

ASIAS provides a collaborative platform that integrates data from across the aviation community, including flight operational quality assurance, maintenance records, surveillance feeds, and pilot reports. With participation now exceeding 250

organizations, ASIAS supports the early identification of systemic safety concerns through large-scale data analysis. In 2025, ASIAS reached key milestones with the deployment of an updated analytical platform designed to process larger volumes of safety data and provide results more quickly and consistently.

SSMT complements this effort by focusing on the safety analysis of operational changes introduced through NextGen. The program develops and applies modeling and analytical tools to evaluate how NAS-wide operational improvements affect safety and to identify potential risk mitigations. Core tools include the Integrated Safety Assessment Model (ISAM), the Safety Investigation Toolkit for Analysis and Reporting (SITAR), and the Airport Surface Anomaly Investigation Capability (ASAIC).

In 2025, the program advanced its system architecture plan to fully integrate ISAM into the FAA Cloud System, delivered ASAIC enhancements to provide investigators with more contextual information, and improved SITAR to better identify complex temporal and spatial indicators of risk.

Together, ASIAS and SSMT strengthen the FAA's ability to anticipate, detect, and mitigate safety concerns, ensuring that NextGen improvements continue to deliver benefits while maintaining the highest standards of safety across the NAS.

System-Wide Benefits

As the NextGen era concluded, the benefits of modernization can be seen not only in individual programs, but in the way an integrated NAS now operates. Earlier analyses of NextGen focused primarily on "measured benefits" derived from directly observable metrics such as delay, fuel burn, and capacity. A recent Scientific Estimate (SE) of previously unquantified benefits from 2008–2025 offers a complementary view, examining how these gains accumulate when key capabilities are treated as parts of a single, interconnected system.

Developed using only publicly available information, the SE groups NextGen capabilities into the following three functional domains: (1) surveillance, navigation, and surface safety; (2) information and decision support; and (3) trajectory-based operations. The SE also includes a separate stream for third-party innovation. It then applies a structured, phase-based methodology that aligns benefit growth with deployment milestones, market conditions, and the impact of the COVID-19 traffic downturn. Under this approach, benefits rise gradually in the early years, accelerate as equipage and system integration increase, plateau during the pandemic, and resume growth as traffic returns and mature capabilities are fully leveraged.

Within these bounds, the SE suggests that, taken together, system-wide efficiency benefits over the 2008–2025 period are likely on the order of tens of billions of dollars, with the largest contributions arising from mature surveillance and navigation services (such as WAAS and ADS-B), robust information-sharing and flow management (SWIM, CDM, TFMS), and the early deployment of TBFM and TFDM. These values are illustrative and rely on clearly documented, independent assumptions; they do not constitute an official FAA cost–benefit determination. Rather, they underscore how interdependent programs combine to deliver outcomes that exceed the sum of their individually measured contributions.

The SE also highlights important categories of benefit that remain difficult to monetize but are central to NextGen's legacy. These include safety enhancements from advanced surveillance and surface awareness, the resilience gained through a flexible, data-driven architecture that supported recovery from the COVID-19 disruption, and the downstream economic activity enabled by open data services that support new applications, business models, and entrants such as Unmanned Aircraft Systems (UAS) and Advanced Air Mobility. In each case, the analysis reinforces a consistent theme: NextGen's investments have created enduring, system-wide value that extends beyond traditional metrics.

Viewed alongside the FAA's own benefit reporting, this estimate provides an additional lens on what NextGen has achieved. It affirms that the modernization of the NAS has produced substantial, lasting gains in efficiency and performance, while laying the groundwork for future capabilities. As responsibility for airspace modernization transitions to a new office, the insights from both measured and system-wide benefit assessments will inform how the FAA continues to evaluate, prioritize, and communicate the value of the next generation of aviation improvements.

Closing

For more than two decades, NextGen served as the FAA's blueprint for transformation, guiding the modernization of the NAS through innovation, collaboration, and a steadfast commitment to safety. What began as an ambitious vision matured into a resilient foundation that continues to support modernization across systems and domains, shaping every dimension of flight, from surface to sky, from gate to gate, and from data to decision.

The progress reflected within these pages represents not only the culmination of more than 20 years of investment, but the framework for what comes next. As new technologies, airspace users, and operational paradigms emerge, the systems and principles advanced through NextGen will continue to inform, support, and elevate the future of aviation.

NextGen Modernization Timeline of Key Events

December 2004
U.S. Department of Transportation unveils the *Integrated Plan for the Next Generation Air Transportation System*.

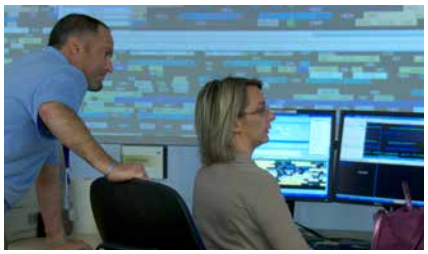
2007
SWIM launched.

2008
ADS-B rule published requiring equipage in most controlled airspace.

2012
PBN becomes a major focus in the NextGen Implementation Plan.

2013–2015
ERAM developed and fully deployed across all 20 en route centers by 2015.

2016
Data Comm tower services launched, introducing CPDLC for departure clearances.



2021
ADS-B In Retrofit Spacing project begins, with FAA partnering with American Airlines and Aviation Communications & Surveillance Systems.

2022
Benefit analysis for CAVS completed.

2024
NWP reaches Key Site Initial Operating Capability.

2025
Office of NextGen concludes operations; airspace modernization responsibilities transition to a new office.

Appendix A

Since its launch, NextGen has delivered measurable improvements that continue to transform the National Airspace System (NAS). NextGen has been the Federal Aviation Administration's (FAA) comprehensive overhaul of the NAS, enabling operational improvements and enhancing services to the aviation community. NextGen has revamped air traffic management and with the aim of increasing the safety, efficiency, capacity, predictability, flexibility, and resiliency of U.S. aviation. Through the efforts described in this summary, NextGen has brought significant advancements in communication, navigation, surveillance, automation, and information management.

As the NextGen program nears its completion date of December 2025, the accomplishments listed here demonstrate how the Agency's modernization efforts have created lasting value for operators, passengers, and the nation's airspace system.

Appendix Organization

The FAA used the NAS Segment Implementation Plan (NSIP) as its blueprint for developing, integrating, and implementing NextGen capabilities. In this appendix, we organized all NextGen Current Operations (COs) and Operational Improvements (OIs) into the 11 portfolios that were part of the NSIP, which were established based off of group-related initiatives for assessing, developing, and implementing new capabilities.

- Improved Surface Operations
- Improved Approaches and Low-Visibility Operations
- Improved Multiple Runway Operations
- Performance Based Navigation
- Time Based Flow Management
- Collaborative Air Traffic Management
- Separation Management
- On-Demand NAS Information
- NAS Infrastructure
- System Safety Management
- Environment and Energy

Each section provides a brief overview of a given portfolio and summarizes key accomplishments across major programs, technologies, and initiatives. The Current Operations (COs) enumerated under the portfolio represent Operational Improvements (OIs) for which the success criteria have been satisfied for all of the defined OI Increments (OIIs). The list of ongoing improvements includes activities initiated under NextGen that are continuing beyond 2025. In some instances, ongoing improvements span multiple portfolios. As a result, the same OI may appear in more than one section, with each section displaying only the subordinate OIIs relevant to its respective portfolio.

The final section of this Appendix provides a summary of the activities completed by the NextGen program that are aligned with the objectives of airspace modernization and provide the foundation for the future of the NAS.

Definitions

Throughout this report, the COs and OIs are associated with benefits to the aviation community in one or more of the following Key Performance Areas (KPAs): Access, Capacity, Efficiency, Flexibility, Safety, and Environment. A primary designation indicates that the capability will directly

contribute to the realization of that benefit, while a secondary designation indicates that the capability will improve the realization of the benefit, but not as significantly as a primary benefit. The definitions of these KPAs are:

Benefit	Description
Access	Provides an operating environment that ensures that all airspace users have right of access to the Air Traffic Management (ATM) resources needed to meet their specific operational requirements and that the shared use of airspace by different users can be achieved safely. Generally, the first aircraft ready to use the ATM resources will receive priority, except where significant overall safety or system operational efficiency would accrue, or national defense considerations or interests dictate that priority be determined on a different basis.
Capacity	The maximum number of aircraft that can be accommodated in a given time period by the system or one of its components (throughput).
Efficiency	Addresses the operational and economic cost-effectiveness of gate-to-gate flight operations from a single-flight perspective. In all phases of flight, airspace users want to depart and arrive at the times they select and fly the trajectories they determine to be optimum.
Environment	Contributes to the protection of the environment by considering noise, emissions, and other environmental issues in the implementation and operation of the aviation system.
Flexibility	Ensures the ability of all airspace users to modify flight trajectories dynamically and adjust departure and arrival times, thereby permitting them to exploit operational opportunities as they occur.
Predictability	The ability of airspace users and ATM service providers to provide consistent and dependable levels of performance. Predictability is essential to users as they develop and operate their schedules.
Safety	Uniform safety standards and risk and safety management practices should be applied systematically to the air transportation system. In implementing elements of the system, safety needs to be assessed against appropriate criteria and according to appropriate and globally standardized safety management processes and practices.

The status of each increment (under ongoing improvements) is defined as:

Status	Description
Concept Exploration & Maturation	Funded activities are underway to define, develop, and strategize the increment's capability and progress from concept and requirement definition through investment analysis and achieve Financial Investment Decision (FID) (or a comparable agreement on the scope/implementation). For non-Acquisition Management System (AMS) increments, activities are in progress to develop the procedure, standard, MOPs, etc., that lead to the final product being implemented or approved.

Status	Description
Development	Work is ongoing to deploy the systems and implement the procedures required to achieve this capability. For AMS increments, FID has been achieved. For non-AMS increments, this status may not be applicable as most of the development of the increment will occur in Concept Exploration & Maturation.
Initial Operational Availability (IOA)	The increment has been achieved or approved for use at an initial site. IOA occurs after demonstration of initial operational capability at the key test site(s).
Complete	All Success Criteria defined for the increment are complete.

How to Read this Section

Portfolio Name

Overview of the portfolio.

Summary of accomplishments

Summary of the accomplishments associated with this portfolio.

CO 123456: CO Name (2011–2017) A C E F P S

Unique identifier for the Current Operation (CO).

123456-01: Increment Name (2011–2014)

Increment associated with a CO.

Associated benefit(s):

A - Access
C - Capacity
E - Efficiency
F - Flexibility
N - Environment
P - Predictability
S - Safety

● Primary Benefit ■ Secondary Benefit

Ongoing Operational Improvements

Summary of ongoing OIs associated with this portfolio.

OI 123456: OI Name (2020-2026) A C E F P S

Unique identifier for the Operational Improvement (OI).

123456-01: Increment Name (2020–2027) – *Increment Status*

Increment associated with an OI.

Improved Surface Operations

Improved Surface Operations are achieved by safely moving aircraft across the airport surface in a more efficient manner, enhancing data exchange with flight operators, and integrating flight data with surveillance data for improved surface visualization.

Summary of accomplishments

The proliferation of improved airport surveillance information and advancements to cockpit displays will increase situational awareness. The deployment of enhanced departure management decision-support tools, improved data communications for revised departure clearances, surface movement data exchange, and departure routing improvements will also enhance efficiency. Further, automating manual flight strip processes will improve intra-facility coordination while enhanced vision system technology will enable aircraft to taxi in poor visibility conditions.

CO 102406: Provide Full Surface Situation Information (2011–2017)

A C **E** F P **S**

102406-11: Situational Awareness and Alerting of Ground Vehicles (2011–2014)

102406-12: Expansion of Surface Surveillance (2013–2017)

CO 103206: Expanded Traffic Advisory Services Using Digital Traffic Data (2010)

A C E F P **S**

CO 103207: Improved Safety Situational Awareness for Controllers (2012–2016)

A C E F P **S**

103207-12: ASDE-X to Additional Airports (2010–2011)

CO 103208: Improved Runway Safety Situational Awareness for Pilots (2013–2016)

A C E F P **S**

103208-11: Moving Map with Own-Ship Position (2010–2011)

103208-12: CDTI with TIS-B and ADS-B for Surface (2010–2011)

CO 104208: Enhanced Departure Flow Operations (2016–2019)

A C **E** F **P** **S**

104208-12: Revised Departure Clearance via Data Comm (2016–2019)

CO 104209: Initial Surface Traffic Management (2010–2016)

A C **E** **F** **P** S

104209-16: External Surface Data Release (2010–2011)

104209-17: Surface Situational Awareness for Traffic Management (2014–2016)


Primary Benefit


Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

Ongoing Operational Improvements

Going forward, improvements that will surpass NextGen aim to increase the capacity and safety of airports by expanding Air Traffic Control (ATC) services, delivering advanced automation, and enhancing emergency services. At busier US airports, the FAA is continuing to deliver advanced surface traffic management solutions to improve efficiency to, from, and at the air traffic control tower. The new services provided include electronic flight strips and data management, a schedule for all aircraft arriving to and departing the airport, and surface metering capabilities to manage long-taxi delays associated with high volume periods. These services also enhance collaboration with non-FAA stakeholders (e.g., airline operators) to improve efficiency and throughput at the airports.

OI 104211: Surface Traffic Management (2016–2029)

A C **E** **F** **P** S

104211-21: TFDM Scheduler/Sequencer (2024–2029) – *Initial Operational Availability*

104211-22: Surface Metering Operations (2024–2029) – *Initial Operational Availability*

104211-23: Improved Electronic Flight Data Exchange (2019–2020) – *Complete*

104211-25: Establish Enhanced Data Exchange with Flight Operators and Airport Operators (2016–2026) – *Initial Operational Availability*

Improved Approaches and Low-Visibility Operations

Improved Approaches and Low-Visibility (IA/LowVis) operations are achieved by increasing access and flexibility for aircraft in their final phase of flight and during taxiing. This portfolio focuses on providing additional means for safely conducting approaches and surface operations in low-visibility conditions (i.e., during Category I and lower weather conditions) through a combination of procedural changes, improved aircraft capabilities, and improved precision approach guidance.

Summary of accomplishments

NextGen capabilities within this portfolio have improved approach operations through advanced navigation, imaging sensors, and computational technologies. Procedural changes allowed for more efficient profile descents. Improved aircraft capabilities, including vertical navigation and enhanced satellite navigation capabilities with Ground-Based Augmentation Systems (GBAS) improved approach guidance to flight crews. Advancements in synthetic and enhanced flight vision systems have increased airport capacity by extending the ability of flight crews to perform approach, landing, taxi, and takeoff operations in low visibility conditions.

CO 104124: Use Optimized Profile Descent (2010–2017)

A C **E** F P S

104124-11: ITAs (2010–2011)

104124-12: OPDs Using RNAV STARs (2010–2011)

CO 107107: GBAS Precision Approaches (2012–2013)

A **C** **E** F **P** **S**

107107-11: GBAS Category I Non-Federal System Approval (2012–2013)

CO 107115: Low Visibility/Ceiling Takeoff and Departure Operations (2014–2025)

A **C** **E** F P S

107115-11: EFVS for Takeoff (2014)

CO 107117: Low Visibility/Ceiling Approach and Landing Operations (2015–2021)

A **C** **E** F P S

107117-11: EFVS for Approach (2015)

107117-12: SVGS for Approach (2016–2021)

107117-13: EFVS for Landing (2015–2017)

CO 107119: Expanded Low Visibility Operations using Lower RVR Minima (2011)

A **C** E F **P** S

107119-01: Expanded Low Visibility Operations using Lower RVR Minima (2011)

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

OI 107202: Low Visibility Surface Operations (2016–2022)

A C E F P S

107202-21: Low-Visibility Taxi Operations (2016–2020)

107202-22: EFVS/Accurate Position Information for Taxi (2016–2020)

107202-23: Protected Low Visibility Taxi Route (2016–2020)

Improved Multiple Runway Operations

Improved Multiple Runway Operations (IMRO) are achieved by increasing runway access through the use of enhanced technology, updated standards, safety analyses, air traffic tools, and operating procedures, which enable increased arrival and departure operations.

Summary of accomplishments

NextGen capabilities within this portfolio have improved access to closely spaced parallel runways to enable more arrival and departure operations. Analysis has resulted in updated policies, standards, and procedures that mitigate the effects of wake turbulence and leverage advanced navigation capabilities while increasing options for simultaneous independent and dependent instrument approaches, including decreasing required separations for dependent approaches and increasing the use of simultaneous approaches in less than visual conditions.

CO 102140: WTMD (2013–2015)

A **C** **E** F P S

102140-01: WTMD (2013–2015)

CO 102141: Improved Parallel Runway Operations for Arrivals (2012–2022)

A **C** **E** F P S

102141-11: Additional 7110.308 Airports (2014–2015)

102141-12: Implement SATNAV or ILS for Parallel Runway Operations (2011–2012)

102141-13: Amend Independent Runway Separation Standards in Order 7110.65 (including Blunder Model Analysis) (2013)

102141-14: Amend Dependent Runway Separation Standards in Order 7110.65 (2015–2017)

102141-15: Enable Additional Approach Options for New Independent Runway Separation Standards (2014)

102141-22: Amend Standards for Simultaneous Independent Approaches - Dual with Offset (2016–2020)

102141-24: Amend Standards for Simultaneous Independent Approaches - Triple (2016–2020)

102141-28: Amend Dependent Runway Separation Standards for Runways Spaced Greater Than 4300 Feet (2016–2018)

CO 102144: Wake Turbulence Mitigation for Arrivals: CSPRs (2015–2017)

A **C** **E** F P S

102144-11: Wake Turbulence Mitigation for Arrivals - Procedures for Heavy/B757 Aircraft (2015)

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

CO 108209: Increase Capacity and Efficiency Using RNAV and RNP (2010–2021)

A C E F P S

108209-16: Use CRDA (2010–2013)

Ongoing Operational Improvements

Continuing efforts for improving multiple runway operations will look to increase airport capacity by safely reducing separation standards and expanding the range of operational procedures available for closely spaced parallel runways.

OI 102161: Improved Parallel Runway Operations for Departures (2019–2027)

A C E F P S

102161-01: Dependent Stagger Departures for CSPO (2019–2025) – *Complete*

102161-02: Further Reductions to Departure Divergence Requirements for CSPO (2019–2025) – *Complete*

102161-03: Decreased Separation Requirements for Mixed Operations on Closely Spaced Parallel Runways (2019–2027) – *Concept Exploration & Maturation*

Performance Based Navigation

Performance Based Navigation (PBN) leverages improvements in aircraft performance and emerging technologies, such as RNAV and RNP, to improve access and flexibility for point-to-point operations. Improvements in this portfolio also enable the development and use of more efficient routes, procedures, and approaches that are free from the constraints of ground-based navigational aids (NAVAIDS).

Summary of accomplishments

NextGen capabilities in this portfolio have advanced separation standards, redesigned airspaces, increased access to PBN operations by expanding the number of sites with Standard Terminal Arrival Routes (STARs), RNAV SIDs (Standard Instrument Departures), and RNP Authorization Required (AR) Approaches. PBN procedures for Metroplexes, cruise operations, and PBN airways have further increased the capacity and efficiency of the NAS.

CO 107103: RNAV SIDs, STARs, and Approaches (2010–2016)

A C E F P S

107103-12: RNP AR Approaches (2010–2016)

107103-13: RNAV SIDs and STARs at Single Sites (2010–2016)

CO 108209: Increase Capacity and Efficiency Using RNAV and RNP (2010–2021)

A C E F P S

108209-12: Metroplex PBN Procedures (2014–2020)

108209-13: Large-Scale Redesign of Airspace Leveraging PBN (2010–2016)

108209-14: Transition to PBN Routing for Cruise Operations (2014–2021)

108209-18: PBN Route Eligibility Check (2012)

108209-19: RNAV (GPS) Approaches (2010–2016)

108209-20: Advanced and Efficient RNP (2013–2020)

108209-21: ELSO Standard (2015–2018)

108209-22: Expansion of Metroplex PBN Procedures (2017–2021)

108209-23: Established-on-RNP Independent Duals and Triples with RF Procedures (2017–2020)

CO 108215: Increase Capacity and Efficiency Using Streamlined PBN Services (2021–2025)

A C E F P S

108215-01: PBN Airways (2021–2025)

108215-02: Established-on-RNP Independent Duals and Triples with TF Procedures (2021–2025)

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

Ongoing Operational Improvements

Continuing efforts to improve the availability PBN operations will focus on expanding resilient position and navigation service to mitigate Global Navigation Satellite Service (GNSS) outages such that suitably equipped aircraft can continue using PBN routes.

OI 107120: Resilient PBN Operations (2021–2035)

A C E F P S

107120-01: Resilient En Route PBN Operations for DME-Equipped Aircraft (2021–2030)

107120-03: Resilient PBN Operations In the Terminal Environment (2031–2035)

Primary Benefit Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

Time Based Flow Management

Time-Based Flow Management (TBFM) focused on scheduling and interval management tools expanding improvements in TBFM's core time-based-metering capabilities to additional locations based on operational needs. Departure scheduling and metering improvements optimized the flow of traffic and increase efficiency in the airspace.

Summary of accomplishments

This portfolio has deployed capabilities to select facilities that enhance efficiency and optimize demand and capacity management, including the TMA system and extended metering. Integrated departure/arrival capabilities increase NAS efficiency and reduce delays by providing decision support capabilities for departure flows to controllers, enabling them to more accurately deliver aircraft to the next terminal airspace. Introducing support for Interval Management-Spacing (IM-S) operations leveraging the combination of ground-based and flight deck-based capabilities further helped optimize flows.

CO 104115: Current Tactical Management of Flow in En Route for Arrivals and Departures (2014)

A C E F P S

104115-11: Implement TMA's ACM Capability at Additional Locations (2014)

104115-12: Implement TMA at Additional Airports (2014)

104115-13: Extended Metering (2014)

OI 104117: Improved Departure Scheduling into Overhead Streams (2015–2025)

A C S F P S

104117-11: IDAC (2014–2019)

104117-21: Expansion of IDAC (2021–2023)

CO 104123: Time-Based Metering Using RNAV and RNP Route Assignments (2014)

A C E F P S

104123-11: Use RNAV Route Data to Calculate Trajectories Used to Conduct TBM Operations (2014)

104123-12: GIM-S (2014)

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

Collaborative Air Traffic Management

Collaborative Air Traffic Management (CATM) enabled NAS users and FAA traffic managers to coordinate flight and flow decision making to help make best use of the airspace and airport capacity with flexible flight planning. This portfolio enabled the use of advanced automation to safely manage daily airspace and airport capacity issues caused by congestion, special activity airspace, and weather. Airspace management is conducted both strategically and tactically, starting days in advance of a flight and including real-time airborne adjustments. It occurs at the national level as well as areas as small as a single airport and necessitates situational awareness, planning, and actions with timely and accurate information.

Summary of accomplishments

NextGen capabilities within this portfolio help coordinate flight and flow collaboration between flight planners and traffic managers to improve overall airspace and airport efficiency. Decision Support Tools have improved collaborative trajectory planning, airspace constraint resolution, and route availability planning with flight plan evaluation and feedback. Air traffic flow management is improved through flow strategies, pre-departure and airborne delivery of rerouting, and enhanced congestion prediction. Additionally, user input capabilities have helped traffic managers better predict, identify, and resolve imbalances between traffic demands and NAS capacity.

CO 101102: Increased Automation Support for Planning in Constrained Airspace (2012–2014)

A C **E** **F** P S

101102-11: Collaborative Trajectory Operations Program (2012–2013)

101102-12: Route Availability Planning (2014)

CO 101103: Aircraft Access to Flight Planning Information (2018–2020)

A C **E** **F** P S

101103-21: Aircraft Access to Flight Planning Information (2018–2020)

CO 104208: Enhanced Departure Flow Operations (2016–2019)

A C **E** F **P** **S**

104208-11: Delivery of Pre-Departure Reroutes to Controllers (2016–2017)

CO 105208: Improved Execution of Flow Strategies (2012–2017)

A **C** **E** F **P** S

105208-11: Execution of Flow Strategies (2012)

105208-21: Airborne Rerouting (2016–2017)

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

CO 105302: Initial Flight Day Evaluation (2011–2018) A C E F P S

105302-11: Collaborative Airspace Constraint Resolution (2014)

105302-12: Enhanced Congestion Prediction (2011)

105302-27: User Input to Improve Departure Predictions (2016–2018)

Primary Benefit Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

Separation Management

Separation Management provides controllers with tools and procedures to manage aircraft in an environment of mixed navigation equipment and varying wake performance capabilities. Aircraft separation assurance is the cornerstone of Air Traffic Control (ATC) operations. Separation management in the National Airspace System (NAS) can be accomplished procedurally and/or by using automation support.

Summary of accomplishments

NextGen capabilities within this portfolio have enhanced aircraft separation standards, including revisions to wake turbulence separation and generation of ACAS Xa/Xo Minimum Operational Performance Standards (MOPS), and implemented reduced minimum separations through advancements in surveillance. Improvements to terminal and oceanic automation systems, such as Conflict Probe, assist controllers in managing varying conditions ensuring safe and efficient operations.

CO 102108: Oceanic In-Trail Climb and Descent (2010-2016)

A C E F P S

- 102108-11: ADS-C Oceanic CDP (2010–2013)
- 102108-12: Enhanced Oceanic CDP via ADS-C Automation (2016)
- 102108-13: ADS-B Oceanic In-Trail Procedure and Automation (2011–2016)

CO 102109: Reduced Oceanic Separation through Advanced Surveillance (2020-2025)

A C E F P S

- 102109-21: ASEPS ADS-C Reduced Oceanic Separation (2020–2025)

CO 102117: Reduced Horizontal Separation Standards, En Route - 3 Miles (2020-2025)

A C E F P S

- 102117-22: Active Surveillance Collision Avoidance (2020–2025)
- 102117-23: Expanded Use of 3 NM Separation Airspace (2020–2022)
- 102117-31: Operation Specific Collision Avoidance (2020–2026)

CO 102123: ADS-B Separation (2010-2013)

A C E F P S

CO 102136: Reduced Oceanic Separation and Enhanced Procedures (2015)

A C E F P S

CO 102137: Automation Support for Separation Management (2010-2014)

A C E F P S

- 102137-15: ATPA for In Trail Separation (2010–2014)

Primary Benefit Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

CO 102154: Wake Re-Categorization (2014–2022)

A C E F P S

102154-11: Wake Re-Categorization Phase I - Aircraft Re-Categorization (2014)

102154-21: Wake Re-Categorization Phase II - Static, Pair-wise Wake Separation Standards (2016–2022)

CO 103104: Deploy FIS-B Nationally (2010–2013)

A C E F P S

CO 104106: Improved Oceanic Trajectories with Enhanced Surveillance Sources (2020–2025)

A C E F P S

104106-30: Enhanced Conflict Probe for ATOP Surveillance Airspace (2020-2025)

Primary Benefit Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

On-Demand NAS Information

On-Demand NAS Information (ODNI) focused on airspace and aeronautical information to ensure consistency across applications and locations by making information available to authorized subscribers and equipped aircraft. Improving quality and timeliness of information allows users to better adjust routes and adapt to changing conditions.

Summary of accomplishments

NextGen capabilities within this portfolio have enhanced traffic advisory services and increased timely access to NAS and aeronautical information through dissemination of FAA information to operations centers and pilots. NAS users and authorized subscribers benefit from improved access to aeronautical, status, and constraint information via SWIM, including digital NOTAMs and static airport data for enhanced situational awareness. Additionally, this portfolio has established regulation and certification for use of FAA information via SWIM on the Flight Decks, provided delivery of on-demand NAS information, and improved access to SUA-based flow predictions and Special Activity Airspace (SAA) information.

CO 103209: Enhance Traffic Advisory Services (2012–2015)

A C E F P **S**

103209-01: TSAA (2012–2015)

CO 103305: On-Demand NAS Information (2011–2021)

A C **E** **F** **P** S

103305-11: Broadcast Flight and Status Data to Pilots (2010–2014)

103305-12: Improved Access to NAS Aeronautical, Status, and Constraint Information for Authorized NAS Users and Subscribers (2018–2021)

103305-13: Provide NAS Status via Digital NOTAMs for FOCs/AOCs (2010–2015)

103305-23: Airborne Access to Information Portal (2015)

CO 108214: Improve SUA-Based Flow Predictions (2015–2018)

A C **E** F **P** S

108214-12: Improve SUA-Based Flow Predictions (2015–2018)

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

NAS Infrastructure

The NAS Infrastructure portfolio involves the transformation or improvement of infrastructure that supports the success of NextGen. It includes a technical refresh of infrastructure that supports communications, information management, weather, facilities, and aircraft collision avoidance.

Summary of accomplishments

NextGen capabilities within this portfolio enhance infrastructure that supports multiple portfolios. Aviation weather forecasting has benefited from increased dissemination of weather information and updated turbulence forecast and guidance capabilities. En Route Data Communications Services was made available at all ARTCCs for trajectory negotiation.

CO 103120: Improved Aviation Weather Information (2012–2018)

A C **E** F P **S**

103120-18: Enhanced Turbulence Forecast and Graphical Guidance (2015–2018)

103120-19: Enhanced Ceiling and Visibility Information (2012–2017)

Ongoing Operational Improvements

Continuing NAS Infrastructure efforts will focus on improving the aggregation and dissemination of information that supports operational decisions and helps to optimize NAS performance.

Expanded Data Communication services will continue to improve collaboration through digital exchanges with the flight crew. Initial En Route Data Communication was made available at all ARTCCs and is being extended to provide capabilities such as clearance delivery to aircraft with automation support for En Route trajectory negotiations and the ability to send route changes and instructions to the cockpit.

Decision making is being enhanced with improved aviation weather information. The proliferation of Space Weather information, convective weather predictions, and customized weather reports will assist in pre-flight planning, fuel loading, and route selection. Improved situational awareness and collaboration tools will enable controllers to provide better information to help pilots avoid in-flight icing conditions and extreme weather. This will result in better responses to adverse weather conditions, improved flight planning, and increased safety.

OI 102158: Automated Support for Initial Trajectory Negotiation (2019–2027)

A **C** **E** **F** P **S**

102158-01: Initial En Route Data Communication Services (2019–2025) – *Initial Operational Availability*

102158-02: Full En Route Data Communication Services (2022–2027) – *Initial Operational Availability*

● Primary Benefit ■ Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

OI 103119: Initial Integration of Weather Information into the NAS (2014–2026)

A C **E** F **P** **S**

103119-09: Initial Space Weather Information (2023–2026) – *Complete*

103119-10: Improved Terminal Precipitation on the Glass (2021–2027) – *Development*

103119-11: Enhanced NAS-Wide Access of 0-2 Hours Convective Weather on Traffic Forecast for NextGen Decision-Making (2020–2026) – *Development*

103119-13: Enhanced In-Flight Icing Diagnosis and Forecast (2014–2026) – *Development*

103119-14: Enhanced Weather Radar Information for ATC Decision-Making (2020–2026) – *Development*

103119-15: Extended Convective Weather on Traffic Forecast for NextGen Decision-Making (2020–2026) – *Development*

103119-17: Initial Tailored Volumetric Retrievals of Aviation Weather Information (2018–2025) – *Development*

System Safety Management

The FAA and industry use policies, processes, and analytical tools developed and implemented as part of System Safety Management to ensure that changes introduced with NextGen maintain or enhance safety while delivering shared safety benefits to stakeholders.

Summary of accomplishments

NextGen capabilities within this portfolio have expanded Aviation Safety Information Analysis And Sharing (ASIAS) in terms of community participation, data sources, and capabilities to improve information sharing among FAA, industry, and global partners in support of safety and risk management. Data sources and analytic capabilities were expanded beyond commercial aviation to accommodate rotorcraft, general aviation, new entrants, and UAS operations. Data from additional disparate sources (such as ADS-B and voice data) was included in fused data sets and advanced analytical capabilities such as natural language processing and machine learning technologies were explored; data storage and processing capacity was increased through a secure cloud-based architecture; additional forecasting capabilities, risk models, safety metrics, and reporting formats were developed to improve and automate anomaly detection.

CO 601102: Enhanced Safety Information Analysis and Sharing (2013–2015)

A C E F P **S**

- 601102-01: Expanded ASIAS Participation (2015)
- 601102-02: ASIAS Data and Data Standards (2015)
- 601102-03: Enhanced ASIAS Architecture (2015)
- 601102-04: Upgraded and Expanded ASIAS Analytical Capabilities (2015)
- 601102-05: Vulnerability Discovery (2015)
- 601102-06: ASIAS Studies and Results (2015)
- 601102-07: ASIAS Collaboration Capabilities (2015)

CO 601103: Safety Information Sharing and Emergent Trend Detection (2016–2021)

A C E F P **S**

- 601103-01: Additional ASIAS Participants (2016-2021)
- 601103-02: NextGen Enabled Data (2016-2021)
- 601103-03: Architecture Evolution and NextGen Support (2016-2021)
- 601103-04: Analytical Capabilities in Support of NextGen (2016-2021)
- 601103-05: Automated Vulnerability Discovery (2016-2021)
- 601103-06: Continued Studies and Results (2016-2021)
- 601103-07: Expanded Collaboration Environments (2016-2021)

Primary Benefit Secondary Benefit

A: Access C: Capacity E: Efficiency F: Flexibility P: Predictability S: Safety

CO 601104: Automated Safety Information Sharing and Analysis (2022–2025)

A C E F P **S**

601104-01: Expanded Participation (2022–2025)

601104-02: Data Fusion (2022–2025)

601104-03: Expanded Analytical Capabilities to Include New Entrants (2022–2025)

601104-04: Vulnerability Discovery through Automated Outlier Detection (2022–2025)

CO 601202: Integrated Safety Analysis and Modeling (2014–2025)

A C E F P **S**

601202-01: Automated Operational Anomaly Detection, Analysis and Forecasting Models (2014–2018)

601202-02: System-Wide Integrated Risk Baseline Annual Reports (2014–2017)

601202-03: Tailored, Domain-Specific Baseline and Predictive Risk Models (NextGen Portfolio Support) (2015–2018)

601202-04: Integrated NAS-wide Hazard Identification, Evaluation and Forecasting (2014–2018)

601202-05: Integrated NAS-wide Automation System Modeling and Anomaly Detection (2016–2020)

601202-06: Integrated Tools for Safety Risk Assessment Modeling (2021–2025)

CO 601302: Increase International Cooperation for Aviation Safety (2019–2025)

A C E F P **S**

601302-01: EUROCONTROL-FAA Joint Analytical Platform Development and Deployment (2019–2025)

Environment and Energy

Through collaboration with industry and academia, this portfolio focused on solutions that reduce aviation noise and exhaust emissions, increase energy efficiency, and support the adoption and availability of new aviation fuels.

Summary of accomplishments

NextGen capabilities within this portfolio have conducted and transitioned scientific research on aircraft noise and emissions, enabling cost-benefit analysis of policy options under various fleet growth and evolution scenarios. Programs to upgrade fleets have advanced technologies for aircraft that have lower noise, use less fuel, and produced fewer emissions. Additionally, this portfolio has provided 15 years of guidance on Environmental Policies, Standards and Measures, and performed analysis and testing of new aviation fuels to increase the options of jet fuel available to the industry.

CO 701102: Integrated Environmental Modeling - Phase I (2010–2015)

A C E F **N** P S

701102-01: AEDT Version 2A (2012)

701102-02: AEDT Version 2B (2015)

701102-03: Improved Scientific Knowledge (2015)

701102-04: Aviation Environmental Portfolio Management Tool (2015)

CO 701103: Integrated Environmental Modeling - Phase II (2016–2020)

A C E F **N** P S

701103-01: Aviation Environmental Tools Suite (2016–2020)

CO 701104: Integrated Environmental Modeling - Phase III (2021-2025)

A C E F **N** P S

701104-01: Aviation Environmental Tools Suite - Phase III (2011–2025)

CO 702102: NextGen Environmental Engine and Aircraft Technologies - Phase I (2012–2017)

A C E F **N** P S

702102-01: Open Rotor(2012)

702102-02: TAPS II Lean Combustor (2012)

702102-03: Adaptive Trailing Edges (2013)

702102-04: Ceramic Matrix Composite Acoustic Nozzle (2014)

702102-05: Engine Weight Reduction and High-Temperature Impeller (2015)

702102-06: FMS-ATM (2015)

702102-07: Ultra High-Bypass Ratio Geared Turbo Fan (2015–2017)

702102-08: Ceramic Matrix Composite Turbine Blade Tracks (2017)

702102-09: Dual-Wall Turbine Blade (2017)

CO 702103: NextGen Environmental Engine and Aircraft Technologies - Phase II (2016–2022)

A C E F **N** P S

702103-03: Explore and Demonstrate New Technologies Under CLEEN - Phase II (2016–2022)

CO 702104: NextGen Environmental Engine and Aircraft Technologies - Phase III (2021–2026)

A C E F **N** P S

702104-01: Explore and Demonstrate New Technologies Under CLEEN - Phase III (2021–2024)

CO 703102: Sustainable Alternative Jet Fuels - Phase I (2011–2015)

A C E F **N** P S

703102-01: Drop-In 50-50% HRJ/HEFA Blend Fuels (2011)

703102-02: Drop-In >50% HRJ/HEFA Fuels (Greater than 50% Blend) (2015)

703102-03: Other Advanced Aviation Alternative Fuels - Phase I (2015)

CO 703103: Sustainable Alternative Jet Fuels - Phase II (2016–2020)

A C E F **N** P S

703103-01: Other Advanced Drop-In Aviation Alternative Jet Fuels - Phase II (2016–2020)

703103-02: Generic Methodology for Alternative Jet Fuel Approval (2016–2020)

CO 703104: Sustainable Alternative Jet Fuels - Phase III (2021-2026)

A C E F **N** P S

703104-01: Support Qualification and Deployment of Drop-In Alternative Jet Fuels (2021–2026)

CO 704102: Environmental Policies, Standards and Measures - Phase I (2010–2015)

A C E F **N** P S

704102-01: Environmental Policy (2012)

704102-02: NEPA Strategy and Processes - Phase I (2013)

704102-03: Environmental Targets (2014–2015)

704102-04: Environmental Assessment of NextGen Capabilities (2015)

704102-05: Analysis to Support International Environmental Standard-Setting - Phase I (2015)

704102-06: Environmental Goals and Targets Performance Tracking System (2015)

704102-07: NextGen EMS Frameworks and Stakeholder Collaboration (2015)

CO 704103: Environmental Policies, Standards and Measures - Phase II (2016–2020)

A C E F **N** P S

704103-01: Environmental Performance and Targets - Phase II (2016–2020)

704103-03: EMS Data Management (2016–2020)

704103-04: Analysis to Support International Environmental Standard-Setting - Phase II (2016–2020)

CO 704104: Environmental Policies, Standards and Measures - Phase III (2021–2025)

A C E F **N** P S

704104-01: Environmental Performance and Targets - Phase III (2021–2025)

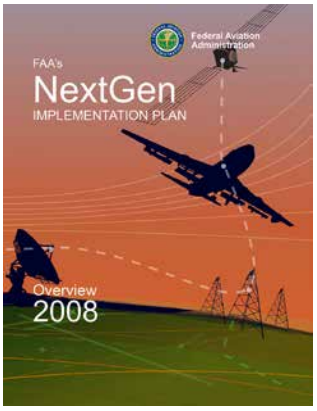
704104-02: Analysis to Support International Environmental Standard-Setting - Phase III (2021–2025)

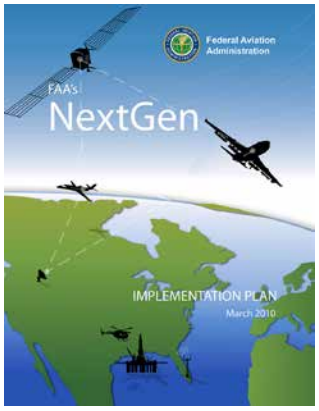
Airspace Modernization Activities

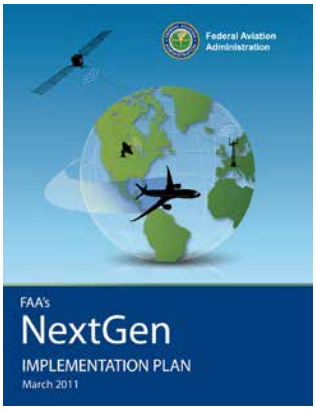
NextGen successfully transformed aviation communication, navigation, and surveillance, achieving its goal of modernizing the NAS. It provided an integrated information environment, laying the foundation for the next era of airspace modernization. With the successful completion of Data Communications, Terminal Flight Data Manager, and Weather programs in 2025, the groundwork laid by NextGen will now support the integration of diverse operations such as UAS, UAM/AAM and Upper Class E, facilitating enhanced information sharing and decision-making.

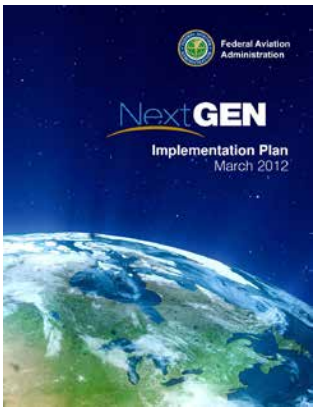
As part of its efforts to safely integrate UAS into the NAS, the NextGen program has initiated—and in some cases completed—several activities that also advance the objectives of airspace modernization. These accomplishments include expanded access for UAS operations through collision avoidance standards as well as digital access to UAS facility maps and FAA recognized identification areas (FRIAs). Additionally, UAS operators are now able to obtain authorizations in controlled airspace through Low Altitude Authorization and Notification Capability (LAANC). The ongoing modernization efforts will continue advancements towards the NAS2040 vision as the FAA begins to build a Brand New Air Traffic Control System and transitions to the next phase of airspace modernization.

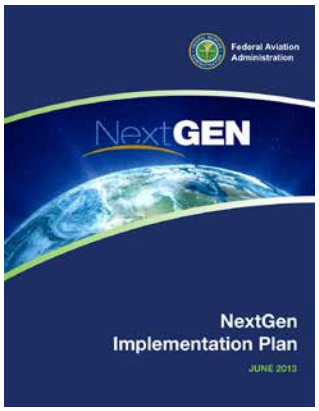
The continued evolution of the NAS will leverage advancements in data-driven decision-making, telecommunication, computational power, and secure information management, ensuring greater efficiency, safety, and resiliency, in the NAS. With NextGen's objectives fully realized, the FAA is positioned to build upon these achievements, ensuring the U.S. airspace remains at the forefront of global innovation.

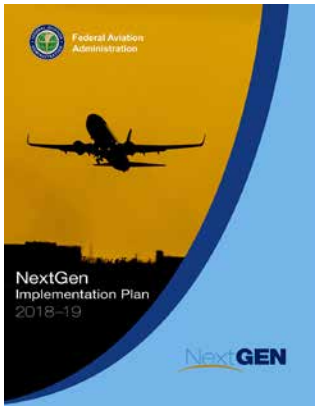


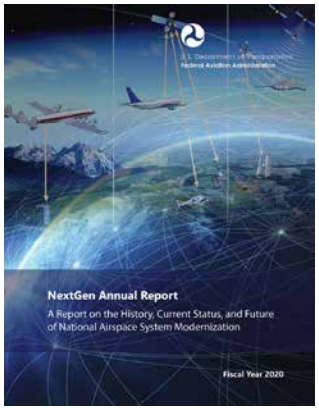












U.S. Department of Transportation
Federal Aviation Administration