



Agenda Item 2: Global and Regional context

A NEW AIR TRAFFIC CONTROL SYSTEM IN THE UNITED STATES

(Prepared by the United States of America)

SUMMARY

This paper presents an overview of the FAA’s major, nation-wide modernization effort, known as the **Brand New Air Traffic Control System or BNATCS**.

To keep pace with the evolving aviation landscape and ensure continued excellence in safety, efficiency, and innovation, the U.S. Federal Aviation Administration (FAA) has developed a critical 3-year modernization framework to reinvest in the U.S. National Airspace System (NAS). This initiative will build a more reliable, resilient, and future-ready aviation infrastructure - supporting growth while enhancing safety and operational performance.

References:

- A42 - WP/631
- GREPECAS/23 – WP/8.19
- NACC DCA/14 – WP/17
- E/CAR CATG/10 – WP/16

1. Introduction

1.1 The FAA faces a rapidly growing, complex and demanding aviation sector, with commercial air travel returning to pre-COVID levels and the rapid expansion of new and innovative operations, including drones, advanced air mobility (AAM), and space launch and re-entry operations. This dynamic growth presents a unique opportunity to modernize our air traffic infrastructure and lay the foundation for a more advanced and efficient NAS. While today’s NAS remains safe, reinvestment in key systems and facilities will ensure safety, reliability, and efficiency are maintained—and improved—as demands increase. This paper outlines a strategic 3-year framework to reinvest in the U.S. NAS and accelerate this transformation. The framework for this modernization project can be reviewed online at <https://modernskies.faa.gov/>.

2. Discussion

2.1 The FAA has received supplemental funding from the U.S. Congress that will be used to carry out a significant modernization effort of the U.S. air traffic control (ATC) system. These funds are a “down payment” on the full cost to support development of a new, state-of-the-art ATC system designed to meet today’s challenges and tomorrow’s opportunities. With the supplemental funding and existing funding, the FAA plans to make progress on the following equipment and technology upgrades.

2.2 The FAA is responding to industry calls for increased efficiency by accelerating deployment of new technologies. For example, the FAA plans to deploy the terminal flight data management tool at additional airports which will increase the use of electronic flight strips in our towers. The FAA also plans to upgrade the current traffic flow management system to an enhanced system that will enable integrated capabilities that provide reliable, consistent operational system-wide views, especially in dynamic or non-routine situations.

2.3 In addition, the FAA will replace its legacy voice switches with a more flexible Voice over Internet Protocol (VoIP)-based communication system. This upgrade increases flexibility, improves reliability, and supports next-generation operations such as dynamic re-sectorization and seamless integration with new technologies—ensuring controllers can manage growing traffic with confidence.

2.4 The FAA is streamlining and upgrading its surveillance infrastructure to deliver more consistent, reliable data. The FAA maintains hundreds of surveillance systems to monitor and manage NAS operations. Deployed over many decades, the surveillance systems provide safety-critical information to controllers, including an aircraft’s position, identity and weather information, allowing them to manage air traffic safely and efficiently. Legacy radar systems provide a reinforcement to Automatic Dependent Surveillance–Broadcast (ADS-B) information, providing essential information in the event of Global Positioning System (GPS) degradation. As part of its modernization effort, the FAA plans to decrease the number of radar models from 12 to 2 cutting-edge radars which will simplify operations, reduce maintenance burdens, and enhance airborne safety and efficiency across the NAS.

2.5 Surface safety system upgrades and deployments will also occur over the next 3 years. The FAA will upgrade and replace parts on its Airport Surface Detection Equipment/Model X (ASDE-X) and Airport Surface Surveillance Capability (ASSC) surface movement radars that are deployed to 44 of the most complex airports. New surface awareness safety systems will be deployed to an additional 200 airports that do not currently have any surface monitoring capability. Implementing real-time surface movement awareness technology can assist in the prevention of runway incursions by depicting runways, taxiways, hold ramps, and other active movement areas to increase situational awareness of ATC personnel.

2.6 Strategically placed ADS-B stations in the Caribbean will close coverage gaps and provide precise, real-time aircraft surveillance over remote oceanic areas, enable safer routes, reduced separation, and improve search and rescue capabilities. ADS-B is cost-effective, requiring smaller, cheaper ground stations than radar, and supports general aviation, tourism-driven economies, and emerging aircraft technologies.

2.7 Air Traffic Flow Management (ATFM) is critical for ensuring safe, efficient movements by minimizing delays and congestion through strategic coordination and planning. To address current system limitations, the FAA will deliver modern, scalable, and integrated platforms with improved reliability, usability, and operational continuity. The Flow Management Data and Services (FMDS) will be the new technological backbone of the FAA’s Air Traffic Control System Command Center. It balances air traffic demand with capacity and provides the data that underpins traffic management. Strategic Management of Airspace, Routes, and Trajectories (SMART), an enhancement within FMDS, will use that data to prevent congestion and delays by strategically coordinating schedules and trajectories before aircraft

depart. With these two new technologies, the FAA will be able to store and maintain all critical data in one platform and proactively identify delays and available airspace to mitigate them - days, weeks, and even months in advance.

2.8 Alaska's aviation system is vital to its communities, and modernization efforts will also ensure continued service and safety in this unique environment. In Alaska, 82% of communities lack road access and rely heavily on aviation. Planned improvements will replace and modernize automation systems, integrate advanced automation for weather graphics, flight plan processing, and emergency services. Modernization efforts will support critical services like pilot briefings, Notice to Airmen (NOTAM), and search-and-rescue coordination in areas with minimal cellphone or internet coverage. Automated and Visual Weather Observing Systems (AWOS and VWOS, respectively) and weather cameras will also be updated and installed to provide near real-time accurate weather data in remote areas with harsh, rapidly changing conditions. Together, they enhance situational awareness, reduce weather-related accidents, and support Alaska's vast general aviation and commercial operations in areas with limited radar and infrastructure.

2.9 The FAA will also transition to Enterprise Information Display Systems (E-IDS) that will provide multiple safety benefits, including increased productivity for controllers, user efficiency, and NAS safety by displaying, entering, and distributing NOTAMs, pilot reports and access to special activity airspace schedule and status. Improving NAS resiliency by supporting faster recovery during adverse events and providing required operational position information to any other properly configured position in the NAS will support Air Traffic Management (ATM) service providers in maintaining continuity of operations.

2.10 The FAA is laying the groundwork for a single common automation platform to replace its separate terminal ATM and enroute ATM systems. A single platform will streamline ATC by standardizing interfaces, consolidating data processing for terminal and enroute operations, and enhancing interoperability with newer technologies. Modernizing to a standardized, scalable platform will reduce the total cost of ownership, simplify integration of new technologies, accelerate deployment of new capabilities, improve cybersecurity, improve resiliency, and reduce vendor lock-in. It will also streamline training for new Air Traffic Controllers and enable easier transfers of/for Controllers between facilities without requiring significant retraining beyond learning the new airspace. Collectively, these benefits will enable the FAA to respond more efficiently to operational changes and support future aviation growth.

2.11 Finally, the FAA will also invest in improvements for its ATC facilities, including Airport Traffic Control Towers, Terminal Radar Approach Control Facilities (TRACONs), Area Control Centers (ACCs), and Remote/Digital Tower capabilities to increase efficiency and maintain safety. The FAA will also initiate planning and land acquisition for the replacement and consolidation of its ACCs. Ultimately these efforts will help to prevent future service interruptions and uphold the operational integrity of the entire NAS.

2.12 The actual numbers associated with the BNATCS project are:

- **5,170** new high speed network connections on fiber, satellite, and wireless
- **1,581** new radio sites
- **462** new digital voice switches
- **612** state-of-the-art radar systems
- **44** airports will have new replacement surface radars
- **200** airports will have Surface Awareness Initiative surveillance technology
- **89** airports will have new Terminal Flight Data Manager electronic flight strip tools
- **435** air traffic control towers will have new Enterprise Information Display Systems

- **113** air traffic control towers will have new Tower Simulation Systems
- **1** new consolidated Air Route Traffic Control Center (first new one since the 1960s)
- **110** additional weather stations in Alaska
- **64** more weather camera sites in Alaska
- **1** new consolidated Terminal Radar Approach Control

3. **Conclusion**

3.1 The FAA is undertaking strategic investments to enhance the U.S. aviation system and ensure its readiness for the future. With unprecedented levels of traffic, innovation, and complexity on the horizon, this 3-year framework provides a proactive, innovative approach to transforming the NAS.

3.2 The 3-year modernization framework addresses critical safety needs to deliver a state-of-the-art air traffic control system. By replacing the current system and investing in our aviation infrastructure, the FAA will enhance safety in the sky, reduce delays, modernize our NAS, and unlock the future of air travel. The FAA is committed to embracing these changes and advancing the modernization of our systems to establish a safer, more efficient, and resilient NAS while also improving international harmonization and operational benefits through the deployment of the FAA's Brand-New Air Traffic Control System (BNATCS).

4. **Suggested actions**

4.1 Note the information in the paper.

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