



Safety

Oversee and operate the safest aerospace system in the world, all with a culture of continuous improvement

Safety Culture Commitment

Reinforce and promote “Safety Culture” across FAA and industry that integrates all aspects of Safety Culture (i.e., Just Culture, Reporting Culture, Learning Culture, Flexible Culture, and Informed Culture) to improve safety performance throughout the NAS. Safety culture commitment promotes safety policy, manages resources and invests in safety training, safety systems, and safety solutions; documents processes and procedures, and ensures accountability for safety.

Initiative: Promote Positive Safety Culture

Promote a positive safety culture that involves proactively addressing safety issues early in the development phase to alleviate the advent of critical safety hazards during National Airspace System (NAS) implementation.

Activity: Perform NextGen Safety Culture Outreach

Perform outreach to bring awareness to Nextgen (ANG) employees regarding safety culture and strategize phased approach for implementing organizational initiatives for establishing positive culture.

Target: Develop Multi-Year NextGen Safety Culture Strategy

This effort will be coordinated with Nextgen (ANG) safety focals for making sure the multi-year plan will align with each directorate's goals and missions. External stakeholders from other Line of Business (LOBs) will also be consulted for lessons learned. There will be periodic briefing to the executives.

Target: Develop NextGen Safety Culture Promotional Video

We will work with the Nextgen (ANG) leadership and Nextgen (ANG) safety focals for first defining what the safety culture means for the NextGen. Then, we will work with Nextgen Collaboration and Messaging Office, ANG-M, for developing/producing the video. Other Line of Business (LOBs) will be consulted for lessons learned.

Target: Hold a Safety Culture Stakeholder Review

After we have finalized the multi-year plan and promotional video, we will hold a stakeholder review event for officially presenting NextGen (ANG)'s vision on Safety Culture.

Activity: New Entrant Focused Research and Development

Conduct ongoing research and development efforts to support the safe and efficient integration of Unmanned Aircraft System (UAS) into the National Airspace System (NAS).

Target: Report from Live Engine Ingestion Test Event

Collect information on the engine characteristics during a Dry Run Test by the Naval Air Warfare Center (NAWC) at China Lake. Information should detail N1 and N2 parameters to ensure that the engine is running within limitations before the Live Engine Test Event.

Target: Complete xTM Concept Analysis

Analyze the commonalities and unique characteristics associated with individual xTM concepts, operational threads, and their associated services. The traffic management concepts included in this analysis are UTM, ETM, and UAM. The analysis will consider impacts/implications on air traffic-managed operations. It will also start to consider interactions with the PBFM concept and align with the Global Air Traffic Management Operational Concept (GATMOC)

Target: Collect draft of final report on Evaluation of UAM Market Potential

Demand Feasibly, Potential Size and Growth, Characteristics of Population, and Ground Infrastructure produced by MSU, NCSU, ERAU and WSU for agency review. This report estimates the demand and growth potential of Urban Air Mobility (UAM) from 2022-2045

Target: Report with simulation results and analysis

This research will complement other collision severity research and produce a complete risk assessment of sUAS Mid-Air Collision (MAC) with manned aircraft. Because collision severity depends on where the collision occurred on a manned aircraft, this likelihood research will provide insight not only on overall MAC probabilities but also the MAC probabilities with different parts of manned aircraft.

Target: FAA Air to Ground Radio Path Latency Test Development and Formal Test

FAA Air to Ground Radio Path Latency Test Development and Formal Test

Target: Develop the framework for future xTM operations

Develop the framework for future xTM operations in terms of conceptual principles and assumptions, lexicons, operations, cooperative operating practices (COPs), supporting services, information flows and exchanges, FAA, xTM service suppliers, and operator roles and responsibilities. This document will: 1) ensure consistent messaging of a coordinated FAA view of xTM; 2) provide input to the efforts of the individual traffic management initiatives (UTM, ETM, UAM); 3) align with PBFM and GATMOC concepts, and 4) support future research and activities as envisioned in the Info-Centric NAS program objectives.

Target: Flight test at Cape May County Airport (WWD)

ANG-E26 is conducting flight test at Cape May County Airport (WWD) to ensure efficient, safe, and repeatable sUAS flights for FOD detection and real-time, or near real time analysis before large scale simulations and validation testing. Initial testing will determine whether sUAS based FOD sensors meet all, some, or none of the requirements in AC 150/5220-24, "Airport Foreign Object Debris (FOD) Detection Equipment." The results of this testing will be documented and delivered as the Test and Evaluation Report for FOD detection.

Target: Michigan Institute of Technology Lincoln Lab

Will develop models documenting the viability of an omni directional antenna as a Low Cost, Size, Weight and Power (LOW CSWAP) surveillance sensor in conducting active surveillance (instead of a 4 sector TCAS antenna) to validate ADS-B for Detect and Avoid (DAA) on smaller UAS (55lbs and up). Research results to be shared with RTCA community to support MOPS development.

Target: Collect draft report on lessons learned through mock event demonstration exercises

The mock event demonstration exercises include seminars, workshop/tabletop, drills and full-blown exercises. Type of event is determined based on the disaster type as follows:
Seminar: Planned for all the disasters
Workshop/Tabletop Exercise:
Hurricane/Flood/Tornado, Oil Spill, Wildfire: Prescribed Burn, Earthquake/Tsunami, Volcanic Eruption, Train Derailment
Drill: Earthquake/Tsunami, Airport
Terrorism Functional Exercise: Wildfire: Prescribed Burn, Hurricane/Flood/Tornado, Train Derailment, Medical Deliveries (Pandemic: Between Rural communities and Pandemic: Major Hub to Rural Community).

Emerging Entrants

Enable the safe and timely integration of new entrants (unmanned aircraft, commercial space, urban/advanced air mobility, human spaceflight, etc.) into the NAS to keep pace with advancing technologies and developments, while maintaining a safe and secure aerospace system that serves as a world model.

Initiative: Develop a Comprehensive Strategy to Safely Enable Emerging Entrants

Develop a Comprehensive Strategy to Safely Enable Emerging Entrants.

Activity: FAA Advanced Air Mobility (AAM) Implementation Plan

Develop a singular implementation plan that incorporates all of the agency work streams that must be completed in order to enable initial Advanced Air Mobility (AAM) services in the National Airspace System.

Target: Updated Operational Use Case Report

Develop a report illustrating specific examples of operational use cases that highlight Advanced Air Mobility (AAM) Beyond Visual Line of Sight (BVLOS) National Airspace System (NAS) Evaluation (BNE) Phase 2 flight operations and the required capabilities and operations in live and simulated flights. This report will consider existing and emerging capabilities to formulate operational use cases. Further, this report will capture the impacts of a new platform, new test site, and extended live flight evaluation period on the previous Use Case Report and expand upon the operations, capabilities, and interactions to be exhibited during the evaluations.

Target: Advanced Air Mobility (AAM) Leadership and Working Group Development

Finalize membership of leadership and working groups to include: Advanced Air Mobility (AAM) Leadership Team consisting of FAA management/directors and Innovation Teams (iTeams) consisting of FAA subject matter experts as well as interagency and industry members as needed.

Target: Draft Implementation Plan

Develop a draft Advanced Air Mobility (AAM) implementation plan to outline the roles and responsibilities of AAM stakeholders, as well as describe the infrastructure and capabilities needed to enable AAM operations alongside other air traffic within the NAS in the 2028 timeframe. This living document will mature as the FAA works with stakeholders to refine the strategy for implementation.

Safety and Security Risk Management

Ensure a formalized and proactive approach to aviation safety by identifying, monitoring, assessing, and managing safety and security risks through enhanced access to data and analytics, informed risk-based decision making, improved safety metrics and security measures, and increased system safety awareness and performance.

Initiative: Programmatic Opportunities and Activities to Address Emerging Threats (CSTI)

Identify new opportunities and activities to address emerging threats to aviation safety and security.

Activity: Develop a Standardized Test of Cargo Containers to Withstand Fires

The FAA, in collaboration with industry groups, are developing performance-based standards for cargo containers and covers to prove that hazardous material fires will be contained for at least six hours. This activity will characterize a variety of lithium battery fires to develop a standard and repeatable test to evaluate cargo container fire resistance. The output from the research will be used to develop a standardized, repeatable, and reproducible fire test for qualifying cargo containers and covers capable of withstanding lithium battery fires.

Target: Coordinate research with industry groups

In collaboration with industry partners of the Society of Automotive Engineers International Air Cargo and Aircraft Ground Equipment and Systems technical committee, SAE AGE-2, the FAA will determine typical shipments of lithium batteries transported in containers or pallets for characterization testing. The effort of this task group is to determine multiple battery shipment sizes and associated fire load influencing metrics in the performance standard to delineate multiple tiers of battery protection in Fire Resistant Container (FRC) or Fire Containment Cover (FCC).

Target: Characterize fires created by various lithium battery fires

Perform onsite full and medium scale tests to characterize fire severity and evolved flammable gases from lithium batteries by varying load quantities. The objective of the testing is to generate reliable data to determine a correlation between known quantities of batteries and the evolution rate of flammable gases.

Target: Analysis of test data

Analyze data obtained through characterization testing to derive a correlation between the shipment size of lithium batteries and the evolution rate of flammable gases. The outcomes could provide information for researchers to develop a minimum performance test standard that does not involve active fire test of lithium batteries. Rather the implemented test method could be based on properties, such as heat flux, to design a burner capable of replicating the heat release rate of burning lithium batteries.

Initiative: Surface Safety Risk Reduction

AJI will utilize the surface safety metric to: Establish consensus among Runway Safety stakeholders on a policy to assess and quantify the risk in runway safety events. Address precursors, as well as latent risks by proactively providing event trend summaries and best practices to the field.

Activity: ANG Support of Runway Safety Office (AJI) Initiative of Surface Safety Risk Reduction

The Runway Incursion Reduction Program's (RIRP) objective is to continually discover, research, implement, maintain and innovate technologies that will detect the incorrect presence of an object in the Runway Safety Area and deliver a directive cue to the individual who can take corrective action.

Target: Commence installation of site infrastructure

Commence installation of site infrastructure for prototype Runway Incursion Prevention through Situational Awareness (RIPSA) Technology system at San Antonio International Airport (SAT)

Target: Deliver Factory Acceptance Test (FAT)

Deliver Factory Acceptance Test (FAT) Report for RIPSA prototype system that will be installed at San Antonio International Airport (SAT).

Initiative: Aircraft Safety Assurance

Research and Development that assesses and improves aircraft safety systems and the safe introduction of new aircraft technologies. Aircraft centric research areas include composites/materials, propulsion and fuel systems, and fire protection and detection.

Activity: Assess Vision Systems for Helicopters Flying in Low or Reduced Visibility

Assess the safety benefits of using vision systems technologies for rotorcraft flight operations in low or reduced visibility weather conditions. This will be conducted using the helicopter simulator at the Technical Center. The research will support the development of policy, guidance, and standards necessary for the safe use of vision systems technologies to allow for more efficient vertical flight operations in poor visibility.

Target: Experimental Research Plan for Rotorcraft Safety in Degraded Visual Environments (DVE) using Vision Systems Technology

Document an experimental design/research plan to examine various safety aspects of vision systems technologies. The plan will identify scenarios, technologies, and metrics for determining the operational benefits and limitations of vision systems technologies towards current and future vertical flight concepts.

Target: Experimental Trials using FAA's Helicopter Simulator(s) and Industry Partner Flight Test Platforms

Conduct initial trials focused on safety aspects of vision systems technologies. Research will identify topics for inclusion in future policy, guidance, and regulatory changes necessary to accommodate the expected use of vision systems technologies for vertical flight.

Activity: Improve Inspection of Nickel Materials in Turbine Engines

This research is in response to a near-catastrophic uncontained turbine engine failure due to an undetected Nickel alloy anomaly. It seeks to assess and apply a higher-sensitivity ultrasonic inspection method for premium-grade Nickel alloys used to make critical rotating engine components to detect melt-related anomalies too small to be detected with current systems. Results of the testing will be used to develop a revised inspection specification.

Target: Develop Nickel Billet Calibration Standard

This research is focused on improving inspection of Nickel material in the "billet" form which is an early stage of rotor production. This target will design, fabricate, and verify a nickel billet calibration standard which will be used throughout this activity to test and set detection thresholds for melt-related nickel anomalies. The calibration standard will contain programmed flat bottom holes of different sizes and at different depths to simulate typical nickel anomalies.

Target: Test a higher sensitivity inspection method at a Nickel production melt facility.

Testing will occur at a commercial Nickel melter on production material in the billet stage (10-inch diameter) and will compare current single zone ultrasonic testing to one that uses focused transducers to inspect multiple zones simultaneously. Three engine manufacturers who use large diameter Nickel billets are on the team led by Southwest Research Institute and will provide guidance and input throughout this activity.

Activity: Test Lithium Batteries for United Nations Classification

In support of the United Nations Transport of Dangerous Goods Sub-Committee Informal Work Group, the FAA will conduct laboratory tests on the thermal runaway capability of lithium batteries to evaluate fire hazards. This United Nations subcommittee is tasked to develop a new hazard-based, lithium battery classification system to be implemented worldwide for the safe shipment of lithium batteries.

Target: Conduct Tests to evaluate fire hazards of lithium batteries

Conduct laboratory tests on several types of lithium batteries to evaluate the fire hazards. Testing will evaluate the ability of batteries to go into thermal runaway, the flammability of the gases produced, and the ability of the hazards to spread to neighboring batteries.

Target: Analysis of Test Data

Analyze the lithium battery data collected from testing to obtain the important information required from this project, such as temperature rise, volume of gas emitted, and propagation rate.

Target: Present test results to United Nations working group

The FAA will present the test data and analysis results to the United Nations Transport of Dangerous Goods Sub-Committee Informal Work Group on hazard-based classification of lithium batteries and cells during meetings held periodically throughout the year. The FAA will also participate in discussions addressing the best evaluation method of lithium batteries in order to classify the potential hazards.

Activity: Safe Installation and Operation of New High Voltage Electric Aircraft Systems

The aerospace industry has been replacing traditional electrical systems with high voltage systems to improve efficiency, reliability, and maintainability. This concept is called All Electric aircraft. The change in aircraft large electrical loading will have far-reaching implications for the electrical generation and storage system. This research will produce reports to develop FAA regulatory standards, associated guidance and policy material as well as industry standards for aircraft electrical systems.

Target: Conduct Baseline Tests for High Voltage Electric Propulsion Networks

The testing campaign will evaluate a range of system voltages up to 1000 volts with varying system architecture, materials, and ambient temperature. Desired findings are to understand which set of conditions cause incipient partial discharge and sustained partial discharge.

Target: Interim Report on Environmental Effects in High Voltage Electric Propulsion Networks

This work will document the experimental findings of the effects of temperature, pressure and humidity on electrical distribution networks up to 1000V. The environmental effects on individual components and on the combined system will be explored. The interim report will be provided to AIR-623 to support the revision of guidance for high voltage electrical wiring interconnect systems.

Activity: Nickel Superalloy Engine Fragment Impact and Containment

Inconel 718 is a commonly used nickel superalloy in turbine engines. Its distinct material properties make predicting the fragmentation and containment of debris a challenge when engine components break apart. Mechanical tests and simulations will be conducted to better understand Inconel 718 fracture and the resulting engine fragment impact. Simulations will be performed using the material model MAT224 in LS-DYNA commercial finite element software – an analysis tool widely used by the aerospace industry to simulate engine fragment impact and demonstrate containment as part of certification compliance.

Target: Inconel 718 testing

Complete Inconel 718 testing and publish FAA test reports. Dynamic coupon level mechanical tests are required to build the MAT224 inputs which include strain and temperature dependent material property changes as well as state-of-stress dependent ductile fracture. Ballistic impact tests have been conducted working with NASA Glenn Research Center.

Target: Inconel 718 MAT224 material model

Publish Inconel 718 MAT224 material model to LS-DYNA Aerospace Working Group external website. Publish FAA reports detailing model development and simulation results.

Activity: Understand Integrated Flight and Propulsion Control in New Air Vehicles

New Air Vehicles, such as Electric Vertical Takeoff and Landing (eVTOL), have integrated propulsion and flight controls. This is known as Distributed Electrical Propulsion (DEP). Virtual tests will be performed using a DEP prototype to characterize the stability, performance, and control. The research supports certification and methods of compliance for eVTOL vehicles.

Target: Conduct Simulation and Test for a Proposed Certification Approach for Integrated Flight and Propulsion Control in New Air Vehicles

Conduct Distributed Electrical Propulsion (DEP) unit modeling and simulation, including virtual tests, to characterize the stability, performance, and power margin of the vehicle with respect to the control strategy used.

Target: Integrate Results of Simulation and Test into a Proposed Certification Approach for Integrated Flight and Propulsion Control in New Air Vehicles

Document the quantitative test results for the modeling, simulation, and virtual testing of Distributed Electrical Propulsion (DEP) vehicles. This includes the findings and metrics needed to develop proposed regulations and means of compliance for Urban Air Mobility (UAM) and Electric Vertical Takeoff and Landing (eVTOL) vehicles.

Activity: Improve Go-Around Safety Procedures for Passenger Aircraft

A go-around (missed approach) is conducted when it is unsafe to land due to hazardous runway or aircraft approach conditions. Go-arounds procedures are not always executed by pilots when required due to a lack of pilot training or difficulties in following the existing procedures. This research will design, conduct, and document a human-in-the-loop experiment to evaluate the effectiveness of training and procedure improvement for go-arounds. The results will be used to improve pilot guidance and to mitigate safety risks.

Target: Design Experiment for the Improving Go-Around Safety Human-In-The-Loop Study

Design and plan human-in-the-loop experiment evaluating the effectiveness of a training or procedure improvement for go-arounds.

Target: Data Collection of the Improving Go-Around Safety Human-In-The-Loop Study

Conduct and complete data collection of the go-around human-in-the-loop experiment, including objective data from the simulator and subjective data through questionnaires and/or participant interviews.

Initiative: Enterprise and NextGen (ANG) Safety Management Systems

Conduct integrated safety assessment to determine National Airspace System (NAS) enterprise safety risk and develop safety requirements for mitigating potential hazards and improving safety benefit of the NAS modernization.

Activity: Conduct Safety Risk Management

This is an ongoing effort for improving Nextgen (ANG)'s Safety Risk Management (SRM) practices for better utilizing quantitative data and incorporating system of systems framework.

Target: Conduct Safety Risk Assessments for Supporting at Least Two Safety Risk Management (SRM) Panels Using the Hazard Enterprise Assessment Tool (HEAT)

Validate the operational use case of the Hazard Enterprise Assessment Tool (HEAT) and support Federal Aviation Administration (FAA)'s Safety Risk Management (SRM) practices through data-driven, model-based risk analysis methodologies.

Target: Develop and Refine Requirements for Hazard Enterprise Assessment Tool (HEAT) v3.0 Based on Lessons Learned

Refine the functional requirements for enhancing the user experiences based on lessons learned from conducting Safety Risk Management (SRM) assessments.

Target: Socialize the Hazard Enterprise Assessment (HEAT) Tool 3.0 Lessons Learned with Nextgen (ANG) Safety Stakeholder

Hold a Hazard Enterprise Assessment Tool (HEAT) stakeholder outreach to brief the lessons learned and solicit feedback for HEAT 3.0.

We will hold the stakeholder review meeting after we finish collecting and refining the requirements for the next iteration of the HEAT. This is currently projected to take place sometime in July timeframe. We will use the stakeholder feedback to prioritize the requirements.

Initiative: Enterprise Cyber Support for National Airspace System

Provide cyber testing capability to improve the cybersecurity posture of the FAA systems integrity, confidentiality, and availability.

Activity: Test and Evaluate Federal Aviation Administration (FAA) Critical Systems

This is a recurring activity that is required for Federal Aviation Administration (FAA) systems that are designated High Value Assets (HVA) for the agency. Information Security Branch, ANG-B31 is working to increase the number of Pen-tests for FY23 to improve the security posture of HVA systems.

Target: Enhance Penetration Test Standard Operating Procedures to Support FAA High Value Assets Test

Document lessons-learned, programmatic requirements, and tools into the Penetration Test Standard Operating Procedures (SOP).

Target: Conduct Pen-Test on Federal Aviation Administration (FAA) High Value Asset (HVA) Systems

Conduct penetration test on at least 12 FAA High Value Assets (HVA) systems to support FAA mission critical operation.

Target: Provide Yearly Penetration Test Report to High Value Asset (HVA) Sponsor

Develop report for all the High Value Asset (HVA) tests conducted in FY23 containing metrics, findings, and recommendations.

Activity: Reduce Research and Development Domain Cyber Risks

Collaborate with system owners of the research and development (R&D) domain to reduce information technology assets cyber risks.

Target: Enhance Information Security Monitoring and Detection Capabilities in the Research and Development Domain

Install and configure the Cyber Threat Model tool in the NextGen Prototyping Network (NPN) Network Operations Center to support cyber activities.

Target: Enhance Vulnerability Management Capability in the Research and Development (R&D) Domain

Develop and test use cases to verify operation of the Cyber Threat Model tool in the NextGen Prototyping Network (NPN) Network Operations Center.

Target: Enhance Reporting Capabilities in the Research and Development (R&D) Domain to Comply with Cyber Inquiries from Department of Transportation (DOT) Security Operations Center (SOC), and Office of Management and Budget (OMB)

Use the Cyber Threat Model tool to support data-calls and vulnerability management reporting. Develop templates of the reports to support data-calls and vulnerability management reporting.

Activity: Develop Enterprise Zero Trust Architecture

The Zero Trust Architecture (ZTA) will support agency enterprise adaptation of Zero Trust paradigm from concept to architectural design and technical implementation requirements.

Target: Develop Zero Trust Micro-segmentation Evaluation Plan

Document a microsegmentation deployment approach in an evaluation test plan that meets the zero trust architecture requirements for the Mission Essential operating environment.

Target: Develop Zero Trust Identity Access and Authorization Evaluation Plan

Document a directory deployment approach in an evaluation test plan that meets the zero trust architecture requirements for the Mission Essential operating environment.

Target: Develop Zero Trust Risk Score Evaluation Plan

Document a device risk score capability deployment and integration approach in an evaluation test plan that meets the zero trust architecture requirements for the Mission Essential operating environment.

Initiative: Separation Standards and Analysis

Provide separation standards and analysis for U.S sovereign airspace and international airspace where FAA has delegated authority to provide air traffic services.

Activity: Provide Analytical Studies and Safety Related Monitoring Services in Support of Separation Reductions

Conduct and participate in separation standards and transportation system analytical studies, reviews, and meetings to provide recommendations and solutions to continually improve safety in the National Airspace System (NAS).

Target: Attend and Report at the International Civil Aviation Organization (ICAO) Separation and Airspace Safety Panel (SASP)

Report on key Separation and Airspace Safety Panel initiatives significant to the FAA. Initiatives include refining the concept of operations details for the Target-to-Target radial separation standard, coordination of Connected Aircraft concepts such as Pairwise Trajectory Management (PTM), Space-Based Automatic Dependent Surveillance-Broadcast (SBA), and studies of maximum risk scenario included within existing separation standards.

Target: Attend and report at the International Civil Aviation Organization (ICAO) Regional Airspace Safety Monitoring Advisory Group (RASMAG)

Provide yearly calculated risk data for the vertical and horizontal standards for Oakland and Anchorage oceanic airspace, identifying any significant trends.

Activity: Monitor Reduced Vertical Separation Minimums

Provide the Reduced Vertical Separation Minimum (RVSM) Regional Monitoring Agency (RMA) functions for two RMAs. Provide details of the US monitoring programs, safety reports, and yearly audit results. Share Altimetry System Error (ASE) and Assigned Altitude Deviation (ADD) software to assist other RMAs.

Target: Attend and report at the International Civil Aviation Organization (ICAO) Regional Monitoring Agency Coordination Group (RMACG)

As the Regional Monitoring Agency Coordinating Group (RMACG) Chair, provide technical leadership on monitoring requirements and capability, and details of the US monitoring programs, safety reports, and yearly audit results.

Target: Monitor and Share Reduced Vertical Separation Minimum (RVSM) Performance Results

Calculate Altimetry System Error (ASE) and Assigned Altitude Deviation (ADD) data from domestic and international traffic within US airspace. Respond to flight plan audits from other Regional Monitoring Agencies (RMAs) regarding approved Reduced Vertical Separation Minimum (RVSM) capability. Conduct audits of aircraft filed capabilities for RVSM and Performance Based Communications and Surveillance (PBCS) against the approved capabilities identified in the RMA shared database.

Initiative: Digital Systems and Technologies

Conduct Digital Systems and Technologies research to ensure the continued safety and security of enabling systems and technologies.

Activity: Explore Artificial Intelligence/Machine Learning to Mitigate Cybersecurity Threats

Artificial intelligence/machine learning (AI/ML) is software that learns and changes over time. This research will explore how prototype AI/ML tools may be used to mitigate cybersecurity threats to aircraft. A proof-of-concept demonstration, with industry collaboration feedback, will result in cybersecurity guidance, standards development, and best practices.

Target: Application of Cyber Security Data Science (CSDS) AI/ML prototype tools to specific industry use case

Conduct experiments using relevant algorithms and capability features for the prototype toolset, development of the toolset and then application of the toolset to an industry stakeholder use case.

Target: Proof-of-Concept Demonstration to Industry

Conduct demonstration that conveys lessons learned measuring the ability of the specific concepts to enhance the cybersecurity for the stakeholder-selected use cases. Feedback is also provided by the stakeholder that may possibly guide additional experimentation.

Target: Proposed Guidance for Industry

Document results from experimentation in form of industry guidance such as network architecture design, recommendations for standards development, data collection and formatting considerations, and best practices for application of Cyber Security Data Science (CSDS) and associated artificial intelligence/machine learning (AI/ML).

Initiative: Potential/Emerging Safety Issues

Improve the ability to identify and assess safety risks through advanced analytics.

Activity: Potential/Emerging Safety Issues

Improve the ability to identify and assess safety risks through advanced analytics.

Target: Potential/Emerging Safety Issues (ANG)

Screen potential/emerging safety issues through the FAA Safety Issue Identification and Management Process and submit draft FY2023 Annual FAA Safety Issue Screening Report to the FAA SMS Committee.

Initiative: Human and Aeromedical Factors

Conduct Human and Aeromedical Factors research to address human-system interactions in an evolving NAS as well as the impact of flight on humans.

Activity: Flight Deck Impacts of NextGen Operations Enabled by Instrument Flight Procedures and Manual Flight Operations

Research and data collection will be carried out to inform human-factors (HF) regulations and guidance material. Selected highlights across the aviation HF domain include (1) HF assessments of new PBN implementations, (2) evaluation considerations for connected flight deck technologies, and (3) manual flight operations reference material for the Flight Standards Office (AFX).

Target: Complete connected flight deck technologies research plan

The research plan will outline a human-in-the-loop simulation on the manual flight operation (MFO) skills most likely to degrade from disuse to inform training and checking needs for pilots operating transport category aircraft under Part 121/Part 135 flight operations.

Target: Complete connected flight deck technologies draft report

This report will examine for crew information systems in a transport category aircraft during Part 121/135 flight operations, analyze aviation safety information analysis and sharing (ASIAS) data and document the frequency of MFO in current operations. Furthermore, the report will assess whether operator policies/procedures encourage pilots to develop, practice, and maintain MFO skills in operations and training

Activity: Trajectory-based operations (TBO) impacts

Research will examine trajectory-based operations (TBO) impacts on the traffic management unit (TMU) in the terminal environment to identify potential workload mitigations.

Target: Complete TBO impacts on the TMU recommendations report

The report will evaluate possible workload changes for TMU traffic managers as a result of TBO, challenges and recommendations for TBO deployment consideration

Target: Human in the loop (HITL) report on workload when using Trajectory Options Sets for predeparture and airborne rerouting.

The report will document the experimental results, recommendations for any necessary mitigations, and recommendations for further research or validation. Report will be provided to ATO for use in planning TBO tool implementation and training.

Activity: Develop a Research Roadmap for Human-Automation Teaming

Human-Automation Teaming (HAT) is an application of artificial intelligence and related technologies to support human operators with "digital teammates". HAT concepts have been proposed for air traffic controllers, pilots, and maintainers. This activity will focus on safety-critical tasks. It will identify and describe knowledge gaps and key research questions. The research roadmap will guide future FAA investments in HAT research, including projects, personnel, and laboratories.

Target: HAT Taxonomy Report

Publish findings from a literature review and taxononmy analysis that describes key terms and concepts in HAT as applied to aviation domains, especially flight deck, air traffic control, aviation maintenance, and technical operations.

Target: HAT Research Agenda

Develop, socialize, and publish a research agenda for human-automation teaming that describes goals and objectives, key research questions, and applicable metrics and methods. To ensure the quality of the research agenda, the document will be provided to key stakeholders in the FAA, industry, and academia for their feedback.

Target: HAT Technical Capabilities Report

Develop and socialize an appendix to the research agenda that describes technical capabilities, such as laboratories and associated personnel, that will be needed to accomplish the research agenda. In particular, the document will describe high-level requirements for new simulation and data collection capabilities that will allow researchers to examine HAT research questions at high levels of fidelity.

Activity: Update the Standard for Using Color in Air Traffic Control Displays

Air traffic control displays use color to convey information, but it can be difficult to choose colors that will be effective in all environments (en route, terminal, and tower) and for people with color vision deficiencies. This activity will update the 2017 FAA color standard for air traffic control displays. The revised standard will ensure that critical air traffic control information is perceptible, readable, and interpretable in as many conditions as possible, including by controllers with color vision deficiencies.

Target: Simulation Study of ATC Color Standard for Control Room Environments

Prepare and conduct a human-in-the-loop simulation activity where controllers working in control room environments are able to see the color standard implemented on realistic ATC displays and to work simulated traffic using the standard.

Target: Recommended Revisions to ATC Color Standard for Control Room Environments

Using the findings of the simulation activity, prepare a document containing proposed revisions and improvements to the existing color standard that will facilitate its implementation into control room environments in the field.

Target: Laboratory Study of Color Standard in the ATC Tower Environment

Prepare and conduct a human-in-the-loop laboratory study that examines the color standard in the high brightness conditions of the ATC tower cab.

Target: Recommended Revisions to the Color Standard (Tower)

Using the findings of the laboratory study, prepare a document containing proposed revisions and improvements to the existing color standard specific to the tower cab environment.

People

Strengthen our current and future aviation workforce by holding ourselves accountable, developing our people and planning for the aviation workforce of the future

Diversity, Equity, Inclusion, and Accessibility

Ensure a more conscious and inclusive culture that embraces the diverse talents of employees, ensures fair and equitable treatment, and advances broader gains in diversity, equity, inclusion, and accessibility.

Initiative: EEO/Diversity and Inclusion Action Committee (EAC)

Utilize the EEO Action Committee (EAC) to enhance, collaborate and support a diverse and inclusive workplace with existing employee workgroups and LOBs/SO. Collaborate with AHR's Corporate Recruitment Council to develop an annual outreach plan, targeting underrepresented groups within the agency.

Activity: Ensure a Diverse and Inclusive Workforce - Reasonable Accommodations

Ensure 90% of all reasonable accommodation requests are processed within 25 business days or less.

Target: ANG - Reasonable Accommodations

Ensure that at least 90% of reasonable accommodation requests are processed within 25 business days or less.

Activity: Ensure a Diverse and Inclusive Workforce - Mediation

Managers engage in the mediation/facilitation process when requested.

Target: ANG - Mediation

Ensure that 70% of managers engage in mediation when requested by employees.

Initiative: Train Managers and Employees across the Agency in Diversity, Equity, Inclusion, and Accessibility (DEIA)

ACR will lead collaboration with LOBs/SOs to train managers and employees in DEIA.

Activity: ACR will Lead Collaboration with LOBs/SOs to Train Managers and Employees in DEIA.

Ensure at least 75% of managers and 25% of employees from each LOB/SO attend a minimum of one training course from a menu of DEIA training courses approved by ACR.

Target: ANG - Train Managers and Non-Managerial Employees in a Minimum of One DEIA Training Course

Ensure at least 75% of managers and 25% of employees attend a minimum of one training course from a menu of DEIA training courses.

Human Capital Management

Enhance FAA's human capital management capabilities to support innovation and collaboration that will empower a synergistic, data-driven workplace. Leverage data and technology to continuously identify and address human capital management opportunities and efficiencies. Position the FAA as an employer of choice by promoting career opportunities to attract the workforce of the future, while maintaining a culture that enhances employee engagement and accountability. Ensure that the FAA retains a diverse and high performing workforce by providing varied learning opportunities and workplace flexibilities.

Initiative: Small Business Opportunities

Support small businesses and job creation by providing opportunities for small businesses to attain FAA contracts and purchase orders, with special emphasis on procurement opportunities for socially and economically disadvantaged small businesses (including 8(a) certified firms), service-disabled veteran-owned small businesses, and women-owned small businesses.

Activity: Contracting with Small Businesses

Utilize market analysis and acquisition strategies to provide opportunities for small businesses to compete for, and attain FAA contracts and purchase orders, with special emphasis on procurement opportunities for socially and economically disadvantaged small businesses (including 8(a) certified firms), service-disabled veteran-owned small businesses, and women-owned small businesses, economically disadvantaged women-owned small businesses, and historically underutilized business zone small businesses.

Target: ANG-A - Support ACQ's Small Business efforts

Support ACQ's efforts to ensure 25% of the Agency's total direct procurement dollars are awarded to small businesses.

Activity: Contracting with Small Disadvantaged Business (SDB)

Utilize market analysis and acquisition strategies to provide opportunities for Small Disadvantaged Businesses (SDB) to compete for and attain FAA contracts and purchase orders.

Target: ANG-A - Support ACQ's Small Disadvantaged Business efforts

Ensure at least 13% of the Agency's total direct procurement dollars are awarded to Small Disadvantaged Businesses (SDB).

Initiative: Strong Acquisition Workforce

Ensure FAA has the staffing and skill mix to successfully enable the NAS by implementing training, developing and certifying personnel in key acquisition professions.

Activity: Train and Certify FAA's Acquisition Workforce

Attain and maintain certification requirements of program managers (PMs) and contracting officers.

Target: Attain and maintain certification requirements (ANG)

Attain and maintain certification requirements: 90% of program managers (PMs) on Office of Management and Budget (OMB) major acquisition programs attain/maintain certification requirements for their positions.

Initiative: Workforce Development and Recruiting

Maintain a highly skilled workforce. Recruit and develop workforce to meet future demands and challenges and fulfill technical and managerial needs.

Activity: Rotational Development Exchange Program

Implement approved RDE Program as the Pilot RDE Program that ensure rotational development or exchange program assignments selected in coordination with AHR, for ANG's Non-Manager workforce that are designed to enhance selected knowledge and/or skill(s) sets of participants.

Target: Design and Develop Rotational Development Exchange Program

Stand-up RDE program during the first quarter FY'23 to increase leadership skills, technical skills and competencies of our non-managerial workforce.

Target: Prepare and distribute quarterly report on Rotational Development Exchange Program implementation status

Prepare presentation for senior management review and awareness, quarterly Rotational Development Exchange (RDE) Program implementation status, program activities and related actions to include Directorates support and participation

Target: Develop Rotational Development Exchange Detail Assignment Calendar as provided in Program Implementation Plan

Design, develop and distribute calendar of rotational development detail assignments within ANG and in collaboration with other FAA LOB/SO's.

Target: Rotational Development Exchange Merger in support of the ANG Succession Plan

Equip workforce with technical and non-technical knowledge and skills to foster innovation, create solutions, and positively influence others in service of mission accomplishment.

Target: Pilot the Rotational Development Program

Pilot the program within the first quarter FY'23, by offering up to five detail opportunities within ANG.

Activity: Technical Curriculum Implementation

Equip workforce with technical and non-technical knowledge and skills to foster innovation, create solutions, and positively influence others in service of mission accomplishment.

Target: Training Events

Each month, distribute a three-month rolling calendar of upcoming training events and associated seat allocations to each ANG Directorate for use in matching and enrolling employees with most valuable opportunities. (Due: By the 15th of the month prior to when calendar is effective).

Target: Publish & Distribute Monthly Report

Publish and distribute a monthly report of: 1) enrollments and seats available by Directorate for each sponsored Tech Curriculum course to be delivered in the upcoming month; and 2) completions by Directorate for courses delivered in the prior month. (Due: By 20th business day of each month.) Publish and distribute a weekly Corporate Training Report of training completions status and distribute to ANG Managers to reflect completions and progress only. Otherwise will be reflected in a monthly report.

Target: Tech Talks Speaker-Series

Bring in and promote at least eight speakers over the year from inside and outside the FAA as part of ANG's Tech Talk Tuesday speaker series.

Target: Tech Curriculum Training Tracking and Reporting

Monthly, upload into eLMS each Directorates Tech Curriculum training from their planned tech curriculum training schedules. Create and deliver the required training format for transmission and delivery of the training data to be uploaded to eLMS and the ANG Action Tracker and share with Directorate training POCs. All Tech Curriculum Training recorded must be uploaded to employee learning profiles within 30 days of receipt from the Directorate POCs.

Activity: Managerial Leadership Development for Non-managers

Build capabilities of non-managers to perform more effectively and produce positive outcomes in informal or formal leadership and managerial roles.

Target: Non-management Leadership Development Curriculum

Continue to offer monthly training and development courses to ANG non-managerial workforce throughout the year with emphasis on enhancing managerial and leadership competencies.

Activity: Continue to Institutionalize the Technical and Research and Development Curricula

Collaborate across the NextGen (ANG) organization to institutionalize the technical and research and development curricula. Incorporate results of the Align Processes and Systems effort, as appropriate. The result of this effort will be an ANG organization that understands and utilizes the Technical and Research and Development Curricula as a tool for employee growth and development.

Target: Engage Workforce to Implement Technical and Research and Development Curricula

Develop and implement at least two targeted communications efforts to engage employees and managers to create accountability for further curricula implementation.

Target: Evaluate Effectiveness

Develop and execute a plan, based on metrics and feedback, to evaluate the effectiveness of the technical and research and development curricula.

Target: Optimize Processes and Systems

Review and continue to implement the institutionalization process by integrating curriculum components into the recruitment, onboarding, and performance management processes.

Target: Engage Workforce to Enhance Understanding of Operational Shortfall Analysis through Machine Learning Implementations

Sponsor at least two information sessions on machine learning and data analysis related to operational shortfalls to engage employees, managers, and external stakeholders.

Activity: Recruitment - NextGen Gateway Program

Recruit and hire student Interns to assist in the agencies succession planning goals.

Target: Recruit Students to Gateways Program

Subject to position availability, recruit new students into the NextGen Gateway student internship program in order to assist in the agency's succession planning.

Target: Convert Gateways Interns to Full-Time Permanent Employees

Subject to position and funding availability, convert program participants to full-time permanent employees without further competition, after successful completion of the program.

Activity: ANG STEM/AVSED

Provide Executive Level and outreach representation for FAA's STEM/AVSED initiative designed to inspire youth from diverse backgrounds to pursue interest in aviation and aerospace to address what has been identified as an aviation shortage. Build relationships to reach STEM and aerospace education goals that create opportunities for ongoing engagement with students and to encourage participation in pathway activities that will lead to aerospace careers.

Target: Outreach Process

Ensure outreach efforts by providing training, identify resources, tools and opportunities that enhance the practice of equity, diversity and inclusion during the outreach process.

Target: Pathway Activities

Encourage participation in pathway activities that will lead to aerospace careers.

Target: Executive Level Board Member

Designate an Executive Level Board Member along with an outreach representatives.

Activity: ANG New Employee Onboarding & Engagement (EE)

Ensure a Diverse and Inclusive Workforce – ANG New Employee Onboarding. Ensure that all new hires to ANG are fully acclimated to the organization within their first 6 months through a revised New Employee Onboarding process and develop a schedule of ongoing events, activities and messaging to integrate the new hire experience along with the ANG workforce through various events, meeting and activities that increase Employee Engagement.

Target: ANG New Employee Onboarding

Develop and implement an ANG New Employee Onboarding Program that informs and educates the new hire about NextGen as well as acclimates them into the organization. Through a series of scheduled quarterly events and activities, new hires will gain a clear understanding of the organization and how the work they'll do supports our mission. In addition, both the new hire and their manager will use the new hire and manager's checklists with descriptive roles and responsibilities as a resource to guide them through their first 6 months. The New Employee Onboarding program is scheduled to begin in April 2023.

Target: ANG Employee Engagement (EE)

Establish and implement the ANG Employee Engagement initiative for employees at HQ in collaboration with the EE Program at the Tech Center. The HQ EE program includes a FY schedule of planned programs and activities focused on in person engagement such as local outings, facility tours, meet and greet with senior leadership. This effort will begin in April 2023 and is designed to increase Employee Engagement.

Global Leadership

Advance global aviation safety, operational excellence and innovation by leading and collaborating with aviation authorities globally

Global Aviation Safety and Security Enhancements

Improve global aviation safety and security through targeted assistance and collaboration, partnerships on aviation system safety oversight, streamlining regulatory environments, and promoting higher levels of global airspace and cyber security.

Initiative: National Airspace System Global Information Security Standards

Collaborate with International Civil Aviation Organization (ICAO), EUROCONTROL, Single European Sky Air Traffic Management (ATM) Research (SESAR), and other international partners to plan and develop a cybersecurity proof of concept to inform ICAO of requirements and policies needed to realize a global trust framework and to integrate the cybersecurity concept of operations into the Global Air Navigation Plan.

Activity: Evolve National Airspace System (NAS) Global Information Security Standards

Collaborate with International Civil Aviation Organization (ICAO), EUROCONTROL, Single European Sky Air Traffic Management (ATM) Research (SESAR), and other international partners to develop a cyber-security proof of concept to inform ICAO of requirements and policies needed to realize a global trust framework and to integrate the cybersecurity concept of operations into the Global Air Navigation Plan.

Target: Define International Civil Aviation Organization (ICAO) Trust Framework Organizational Alternatives

Coordinate with the Federal Aviation Administration (FAA) Lines of Business (LOBs), Interagency Group on International Aviation (IGIA) and select United State Government agencies to document the alternatives for governance implementation of the International Aviation Trust Framework (IATF) and to propose a preferred alternative. Develop Trust Framework International Civil Aviation Organization (ICAO) presentation describing the organizational alternative analysis approaches document.

Target: Create Federal Aviation Administration (FAA) Certification Authority Policy Statement

Document the implementation of the Federal Aviation Administration (FAA) Certificate Authority in a certificate policy statement in alignment with International Aviation Trust Framework (IATF) certificate policy.

Initiative: Cybersecurity in the Aviation Ecosystem

The FAA will develop strong relationships with external and government partners to enable a more informed threat and defense capability, and leverage information and defense actions needed to protect FAA systems and networks.

Activity: International Cybersecurity Resilience

Promote common understanding of cyber threats, vulnerabilities, and resultant risk across the Aviation Ecosystem, and encourage information-sharing among government partners and Aviation stakeholders on aviation cybersecurity best practices and initiatives.

Target: International Aviation Trust Framework

Pending outcomes from 41st ICAO Assembly, develop messaging on the International Aviation Trust Framework (IATF) and determine which international partners would be likely to align with the USG for future collaboration.

Target: International Aviation Trust Framework Scope of Services for Global Information Protection

Develop a working paper on the scope of the services proposed for the International Aviation Trust Framework, with the intent of completing U.S. Government coordination in order to submit the working paper to the new ICAO Trust Framework Panel.

Seamless and Sustainable International Operations

Promote seamless, harmonized, and sustainable international operations by improving operational excellence in delegated airspace and neighboring FIRs, international capacity building, research and innovation, and environmental sustainability.

Initiative: NextGen International Harmonization

In alignment with the FAA and the NextGen International strategy, promote the international acceptance of NextGen policies, procedures and technologies. Work with identified air traffic modernization partners, through established bilateral and multilateral mechanisms, to harmonize identified efforts with NextGen and assess opportunities to establish new opportunities.

Activity: NextGen International Collaboration

In alignment with the NextGen International Strategy and in anticipation of the incorporation of the FAA's Info-Centric National Airspace System (ICN) vision internationally through multi/bilateral cooperation, assess the ability of NextGen Tier 1 partners to participate in the development and propagation of ICN technologies.

Target: Tier 1 Partners

In coordination with our Tier 1 partners, attend established bilateral and multilateral meetings and events. Promote NextGen programs and policies into global plans and standards, promoting harmonization with NextGen.

Target: Tier 2 Partners

In coordination with the FAA international LOB/SOs, identify engagement opportunities for bilateral and/or multilateral meetings and/or events with Tier 2 partners pursuing Air Traffic Management (ATM) modernization that could be harmonized with NextGen and participate as necessary.

Target: Tier 3 Partners

In coordination with the Office of International Affairs (API), assess opportunities to pursue bilateral and/or multilateral meetings and/or events with Tier 3 partners to promote ATM modernization and participate if possible.

Enterprise Global Leadership Approach

Foster an FAA enterprise approach to the prioritization of FAA international engagements.

Initiative: NAS / Global Standards

Collaborate with industry to establish Standards for Aviation Community.

Activity: Multi-Regional Trajectory Based Operations Demonstration

During Phase 2, the project will collaborate with industry and international partners and key internal stakeholders to enhance the baseline Florida NextGen Testbed (FTB) capabilities, operational scenarios and use cases that were established during Phase 1 in order to demonstrate the operational values of key trajectory based operations (TBO) concepts and technologies. This collaborative effort will explore the impacts of TBO within the context of modernization initiatives; supporting the development of data exchange standards, and provisions and implementation guidance materials related to post-departure operations with various levels of equipment and crew capabilities. This solution will be accomplished through the conduct of multiple demonstrations of full, end-to-end operational scenarios culminating in a final demonstration with live flight components.

Target: Simulated Trajectory Based Operations (simTBO) Final Report

This report will encompass the activities undertaken to develop, execute, analyze and evaluate simTBO. This report will reflect the effort of our participating industry and international partners on the simulated demonstration of multiregional TBO operational value, operational capabilities, and tools. This report will include the methodologies, outputs, lessons learned, and recommendations for potential future simulations, or research and development to progress the TBO concepts

Target: Live Flight Operational Scenario and Use Case Briefing

TBriefing-This briefing will consist of the activities and artifacts developed to describe the operational execution of the Live Flight Demonstration. The briefing will identify the cases and summarize the capabilities to be demonstrated, resulting from discussions fostered by TIMs, Tabletops, and international Partner Meetings. Additionally, this briefing will identify the roles of the FAA, industry and international partners in the demonstration as well as all necessary coordination

Target: Architecture and Capabilities-Memorandum

This memorandum will document the architecture approach and systems requirements critical to the execution of the Live Flight Demonstration. This memo will summarize the capabilities developed during Phase 1 and Phase 2A to include operational results, coordination tools, and lessons learned. It will incorporate feedback from Guided Discussions, TIMs, and Tabletops to describe the integration required between the aircraft operators and the Florida NextGen Test Bed (FTB) for successful execution of the demonstrations

Activity: Aeronautical Information Exchange Model (AIXM)

Continue to conduct analysis and establish processes to inform the further development of Aeronautical Information(AI) dependent projects and services within the NAS using the standards established by the Aeronautical Information Exchange Model (AIXM) community.

Target: Air Traffic Information Exchange Conference (ATIEC) Coordination Report

Generate a report that details all aspects of coordination for the Air Traffic Information Exchange Conference (ATIEC). It will include briefing material, action items, lessons learned, and notes captured, among other elements.

Target: XM Agnostic Extension Process Development Documentation

Document the development of a standardized process to request and implement exchange model extensions for new and updated NAS exchange models, including leveraging existing processes and coordination with the exchange model stakeholder communities, including Flight Information Exchange Model (FIXM), Flow Information Exchange Model (FLXM), Aeronautical Information Exchange Model (AIXM), and ICAO Meteorological Information Exchange Model (iWXXM).

Target: Exchange Model US Extension Reference Model Development Documentation

Document the development of a reference model that allows NAS XM extension developers to easily review existing NAS XM extensions, filter, and search elements in existing NAS XM extensions, and provide context for the development for XM extension updates or new XM extensions. The report will include, but will not be limited to, the documentation of approach, conclusions, outcomes of analysis, lessons learned, and recommendations for next steps.

Due Date:

07/31/2023

Operational Excellence

Operate the world's most efficient aerospace system through daily execution, continuous improvement and infrastructure investment.

Mission Efficiency and Support

Optimize efficiency and support mission requirements through daily execution, continuous improvement, planning, infrastructure resiliency, and investment. Effectively plan for and manage finances, procurement, information technology, and other mission support services.

Initiative: Modernization of William J. Hughes Technical Center's Operations and Infrastructure

Modernization of The Technical Center's infrastructure to ensure facilities operate efficiently and effectively by initiating, continuing and completing the design and construction of Capital Investment projects. Such projects include: Remove Mold and Replace Air Conditioning Units 2 & 3 in the Technical Administrative Building 300; Building 300 Floor Replacement; Sustainment of Electrical Distribution Feeder on the West side of the campus; and Replacement of the Roofing System at the Cockpit Simulation Facility Building 201.

Activity: Remove Mold and Replace Air Conditioning in the Technical Administrative Building

Complete the Technical and Administrative Building 300 mold removal and the replacement of air conditioner units 2 and 3. This project will alleviate health and safety concerns. It will remove suspected contaminated ductwork, extend the life cycle of the HVAC system by replacing two 30-year-old air handling units, and improve energy efficiency by replacing fluorescent lights with new LED lights.

Target: Demo of 4th Floor

Complete demolition on the 4th floor of the Technical and Administrative Building 300 Mold Removal and AC-2 & 3 Replacement project.

Target: Complete Construction

Complete new construction on the 4th floor of the Technical and Administrative Building 300 Mold Removal and AC-2 & 3 Replacement project.

Activity: Design Electric Vehicles Charging Stations

Identify sites for centralized and distributed electric vehicle charging stations, and complete design and development of construction documents for electric vehicle charging stations. This activity supports compliance with Executive Order 14057 which targets the acquisition of 100% electric Light Duty Vehicles by 2027, and the acquisition of 100% Zero Emission Vehicles by 2035.

Target: Research and Identify best site(s)

Research and identify the best site or sites for electric vehicle charging stations. Locations are to be selected based upon available power and space.

Target: Complete design

Complete the design of electric vehicle charging stations via a task order on an existing A/E contract. Design submissions will be reviewed by the FAA and comments will be resolved at each iteration. Completed design will be used for a future construction project.

Initiative: Research and Development Management

A vibrant aviation sector relies on a safe, efficient, and cost-effective aerospace system. To that end, the FAA will invest in and manage a research and development portfolio that engages aviation stakeholders across industry, academia, and federal partners to promote aviation technology innovation, enable new entrants, leverage non-federal research investments and prioritize FAA investments to address critical industry needs and drivers.

Activity: Establish Process for Reimbursable Lab Partnerships

Establish a pilot program to develop the processes for external partners to access federal personnel, facilities, and expertise. This effort will extend lab use availability to industry, academia and government to mature innovative technologies and to maximize laboratory use rates. .

Target: Distribute the pilot program plan

Provide the pilot program plan to other federal laboratories that have an existing fee for service program to ensure a successful implementation at the William J Hughes Technical Center.

Target: Develop a Master Outreach and Partnerships Communication Plan

Draft a communication plan to highlight: laboratories and Research, Development, Test and Evaluation (RDT&E) conducted at the William J. Hughes Technical Center. This effort will enhance the Tech Center strategy map and carry the Technical Center into the next decade.

Activity: Conduct FAA/Airforce Field Demonstrations of Smart Airport Technologies

Participate with Department of Defense Air Force Mobility Command to demonstrate smart airport technologies. The field demonstrations will be conducted at the Atlantic City International Airport and the Joint Base McGuire, Dix, Lakehurst. Industry participants will demonstrate innovative technologies in communication, foreign object debris detection and removal, autonomous maintenance, and perimeter patrol/wildlife mitigation.

Target: Host an Airfield Autonomy Initiative (AAI) symposium

Present Airfield Autonomy Initiative Demonstration Use Case overview to attendees. Determine with AAI partners a path to Airfield Autonomous Capability Adoption. Finalize test card requirements for field demonstrations. The requirements will identify the variables that must be satisfactorily completed in order to move their technology from the demonstration area titled ""Phase 1"" to Phase 2, 3, and 4.

Target: Conduct Field Demonstrations for Use Case #1

Engage with Department of Defense (DoD) and industry teams at Atlantic City International Airport (ACY) and Joint Base McGuire-Dix-Lakehurst (JB MDL) to advance Smart Technologies at dual use facilities. The steps are too numerous to identify between the nine (9) companies and two site locations. Nine (9) companies will demonstrate their technology at JB MDL and ACY. It is intended to foster and mature their technology to continue for use at DoD bases and potentially civilian airports.

Activity: Accelerate Technology Transfer and use of Federal Research

Share information and technologies among Federal Laboratories, private industry, and academia. Increase the sharing of resources such as personnel, facilities, expertise, and technical information. This activity will up-level the Technology Transfer Strategic Plan to encompass an Agency-wide perspective to expand government/ industry agreements and to align to Department of Transportation initiatives.

Target: Share information and technologies among Federal laboratories, private industry, and academia

Deliver FAA technology transfer metrics including all FAA Cooperative Research & Development Agreements, patents, licenses, and royalties to the Department of Transportation (DOT). This input is mandated by the Federal Technology Transfer Act of 1986, 15 USC 3710(f), and related legislation. DOT requests the data from all modes in April, DOT then compiles it, and delivers it to the National Institute of Standards for inclusion in their annual Technology Transfer report to the President of the United States and Congress. The report is a critical metric to assess the success of the United States Federal Government technology transfer legislation.

Target: Expand Technology Transfer Partnerships

The Technology Transfer Program will execute new Cooperative Research and Development Agreements (CRADAs) with industry and academic partners to support critical FAA research needs. CRADAs are authorized by statute under 15 USC 3714(a). The Technology Transfer Program will conduct FAA workforce training regarding CRADAs, help FAA researchers identify industry and academic partners, support CRADA development, and steward the agreements through execution. To accomplish this, the Technology Transfer Program will participate in meetings to identify potential partners at the National Aerospace Research & Technology Park and at venues such as FAA Technical Center Tuesday, Cyber Rodeo, and Air Traffic Control Association Global Conference. Our office will help identify new partnership opportunities by participating as a member of the ANG-E4 Outreach & Partnerships Outreach Tiger Team and as a committee member on the FAA Technical Center's Innovation and Technology Advisory Council. The FAA Technology Transfer Program will deliver information on emerging technologies to FAA researchers to aid them in identifying potential partnering opportunities and maintaining awareness of technological advances and innovation.

Activity: Manage FAA's Research and Development Portfolio

Manage key processes and activities for the Agency's Research and Development (R&D) portfolio. In alignment with statutory research planning requirements, develop and submit various research, performance and funding plans and reports by fiscal year end to ensure FAA research enables and safely advances aviation and reduces the overlap of research areas with other DOT modal agencies. The plans and reports including the National Aviation Research Plan and the Annual Modal Research Plan highlight planned research for the upcoming fiscal year and communicates research impacts to facilitate government and private sector partnerships leading to the commercialization of aviation ideas, concepts, and products.

Target: "Draft annual RE&D budget formulation package for distribution to Congress. "

Coordinate development with research stakeholders across the FAA and submit the Research, Engineering and Development (RE&D) budget formulation request to the Office of Budget Programs in June 2023 describing the forty-four RE&D budget line items and proposed investment request for the fiscal year 2025 President's Budget. The FAA Research and Development (R&D) Executive Board - representing major R&D sponsors across the Agency – contributed to ensure proposed research priorities meet FAA strategic goals and objectives while optimizing the overall R&D portfolio.

Target: Fiscal Year 2024 Annual Modal Research Plan

Draft and deliver the statutorily required annual DOT modal plan by May 1 outlining research and development program plans across the Research, Engineering and Development, Facilities and Equipment and Airport Improvement Program funding accounts for fiscal year 2024 and outlook plans for fiscal year 2025. All Department of Transportation (DOT) operating administrations, or modes, must submit this plan annually to the Assistant Secretary of Research and Technology for review and approval, as statutorily mandated. DOT uses the report as input to reduce the overlap of research areas with other modes and facilitates government partnerships by connecting modal agencies together for collaboration efforts when commonalities within research areas are identified.

Target: National Aviation Research Plan 2024-2028

Draft and deliver the congressionally required annual National Aviation Research Plan (NARP) that charts the course for the Agency's five (5) year plan to ensure continued capacity and maintain the safest, most efficient airspace system in the world. The 2024-2028 report, due with the fiscal year 2024 President's Budget, describes how the FAAs investments in research and development address national aerospace priorities and provides a close-up view of a selection of the FAAs research and development priorities that collectively support and drive innovation, represent areas of congressional or public interest, support near-term regulatory actions, and have a global impact.

Initiative: Contract Administration, Agreements, and Grant Management

Perform contract, agreements, and grant administration managed by ANG-A.

Activity: Forecasting; Acquisition and Grants Planning; Acquisition and Grants Support Reporting

Develop, manage and implement acquisition strategy to improve contract award process.

Target: Quarterly Procurement and Grants Forecast Reports

Provide quarterly Procurement and Grants Forecast Reports to each ANG Directorate for situational awareness. Due Date: 10/31/2022, 01/31/2023, 04/30/2023, 07/31/2023

Activity: Center for Advanced Aviation System Development

Proactively administer contracts to provide improved communication and customer service.

Target: Center for Advanced Aviation System Development Work Plan

Develop Center for Advanced Aviation System Development (CAASD) FY24 Work Plan.

Activity: Technical Service Contracts

Proactively administer contracts to provide effective communication and customer service.

Target: Execute Memorandum of Understanding (MOU)

Execute Memorandum of Understanding (MOU) with all Lines of Business (LOBs) supported from the Systems Engineering and Development Support Budget Line item (BLI).

Activity: Grant Management Reporting

Grant reporting is required for FAA to demonstrate accountability for the administration of funding. The Grant Management branch will deliver the FY23 Centers of Excellence (COE) report and FY23 execution plan.

Target: FY 2022 Centers of Excellence Annual Report to Congress

Submit FY 2022 Centers of Excellence (COE) Report to Congress that depicts grant awards and financial data.

Target: FY 2023 Grant Management Execution Plan

Submit FY 2023 Grant Management Execution Plan that provides a consolidated report of planned awards and financial data.

Initiative: Financial Management and Organizational Planning

Implement improvements to enhance NextGen financial management. Ensure all funds are executed in accordance with federal guidelines and FAA procedures; Develop and Maintain ANG Strategic and Core Business Plan.

Activity: ANG Business Planning

Lead ANG leadership and planners in the coordination and development of the upcoming fiscal year's business plan to establish FY23 priorities and linkages to work units.

Target: ANG's Business Plan Framework

Facilitate leadership review and update of ANG's Business Plan Framework to establish upcoming fiscal year objectives and initiatives.

Target: Conduct ANG Business Plan Kickoff

Conduct ANG Business Plan Kickoff to deliver the upcoming fiscal year business plan development guidance, requirements and timelines to ANG planners.

Target: Conduct One-on-One Reviews

Coordinate individual ANG-1 meetings with directorates to review directorate-level activities supporting the priorities.

Target: Upcoming Fiscal Year ANG Business Plan

Gain ANG Leadership approval of upcoming fiscal year ANG Business Plan for submission to APO via SPIRE SBM.

Target: ANG Resource Program Management Reviews

Conduct Resource Program Management Review (RPMR) for all directorates to capture personnel and fiscal resources allocated in executing FY23 Business Plan priorities.

Activity: Budget Formulation, Execution and Financial Planning

Lead development of annual budget submissions (OST, OMB and President's) and execute enacted budget in accordance with agency policy and regulations.

Target: Timely Delivery of Annual Budget Submissions

Collaborate across ANG Directorates to ensure timely delivery of annual budget submissions in accordance with FAA timelines and provide a monthly assessment of F&E, OPS and R,E&D budget obligation rates (Due monthly).

Target: Perform Fund Certification Activities

Perform fund certification activities within 3 business days of receipt of obligating documents that comply with FAA policy and regulations for 85 percent of randomly selected transactions, averaged over the fiscal year. (The statistical analysis is conducted once every quarter. DUE: 10/31/2022, 1/31/2023, 4/30/2023 and 7/31/2023).

Activity: NextGen Portfolio Management

Collaborate with stakeholders to continually improve NextGen planning and benefits delivery. Ensure all funds are executed in accordance with Federal guidelines and FAA procedures.

Target: First Quarter Report Status of Project Level Agreement

Quarterly report status of Project Level Agreement (PLA) deliverable execution for all active PLAs. Ensure 100% tracking of all deliverables.

Target: Systems Engineering Portal

Complete all Systems Engineering Portal changes to 2023 NAS Segment Implementation Plan (NSIP) Information

Target: Second Quarter Report Status of Project Level Agreement

Quarterly report status of Project Level Agreement (PLA) deliverable execution for all active PLAs. Ensure 100% tracking of all deliverables.

Target: Third Quarter Report Status of Project Level Agreement

Quarterly report status of Project Level Agreement (PLA) deliverable execution for all active PLAs. Ensure 100% tracking of all deliverables.

Target: Fourth Quarter Report Status of Project Level Agreement

Quarterly report status of Project Level Agreement (PLA) deliverable execution for all active PLAs. Ensure 100% tracking of all deliverables.

Agile Services across the NAS

Develop a comprehensive and agile set of requirements and processes to integrate traditional and emerging users of the National Aerospace System and to evaluate appropriate infrastructure and operational needs of any given facility or airspace.

Initiative: Airport Technology & Infrastructure Research

Conduct Airport Technology & Infrastructure research to assess and improve the infrastructure at airports and spaceports across the National Airspace System.

Initiative: Enterprise Systems Engineering and Integration

Develop and maintain Systems Engineering Guidance Material and conduct key National Airspace System (NAS) Enterprise Integration studies. Provide enterprise systems engineering expertise to execute NAS enterprise integration studies to realize the future of the NAS vision.

Activity: Enhance the National Airspace System (NAS) Enterprise Architecture (EA)

Sustain, enhance, and evolve the National Airspace System (NAS) Enterprise Architecture (EA) Roadmaps and NAS Segment Implementation Plan (NSIP), including digital transformation where possible.

Target: Update the National Airspace System (NAS) Enterprise Architecture (EA) Roadmaps and National Airspace System (NAS) Segment Implementation Plan (NSIP) in Partnership with Key Stakeholders

In support of National Airspace System (NAS) modernization, update the National Airspace System (NAS) Enterprise Architecture (EA) Roadmaps, National Airspace System (NAS) Segment Implementation Plan (NSIP), and associated datasets and publish on the National Airspace System (NAS) Systems Engineering Portal (SEP).

Target: Expand Hybrid Roadmaps for National Airspace System (NAS) Enterprise Architecture (EA)

Develop a draft hybrid roadmap showing the notional relationships between Surveillance-related business and technology improvements, support activities, and Infrastructure Roadmap planned systems/services in the National Airspace System (NAS) Enterprise Architecture (EA).

Activity: Support Emerging the NAS Systems Engineering and Integration Office, ANG-B, Enterprise Level Products

Support implementation of high value systems engineering design and planning product and information changes.

Target: Publish National Airspace System (NAS) Systems Engineering Portal (SEP) Roadmap

Lead the National Airspace System (NAS) Systems Engineering and Integration Office, ANG-B's Change Control Board annual review and adjudication process; publish NAS Systems Engineering Portal Roadmap update.

Target: Deliver Transformational Change

Deliver software changes that support the evolution of the National Airspace System (NAS) and the Systems Engineering community.

Activity: Advance the Use of Investment Forecasting

Refine visualization methods and concepts of use for investment forecasting in FAA planning and system engineering processes.

Target: Develop Draft Visualizations of Forecasted Investments

Complete draft visualizations of all forecasted investments on the infrastructure roadmaps for internal review.

Target: Develop Draft Concept of Use

Develop a draft concept of use for investment forecasting in FAA planning and system engineering processes.

Activity: Enhance and Deepen the National Airspace System Enterprise Architecture Model and Target NAS Requirements Document

Using the FY21 improved change process for National Airspace System (NAS) Requirements and the Enterprise Architecture Model (EAM), incorporate results of analysis as they become available from stakeholder organizations.

Target: Baseline Converged Current (As-Is) and Target (To-Be) Requirements to Retire Legacy Requirements Documents

Merge additional content from the 2013 NAS Requirements Document (NRD). Coordinate with stakeholders on the process for baselining the As-Is and Target NRD. Baseline Converged Current (As-Is) and Target (To-Be) Requirements to retire legacy requirements documents.

Target: Baseline Updates to the National Airspace System (NAS) Enterprise Architecture Model (EAM) Presented to the Technology Review Board (TRB) in FY22

Incorporate feedback from stakeholder review of the National Airspace System (NAS) Enterprise Architecture Model (EAM) and publish approved baseline on Systems Engineering Portal (SEP).

Target: Develop and Execute a Repeatable Process for Analyzing Radar Communication Line Redundancy

Execute a repeatable process for determining the possibility for reduction in communication lines to surveillance sites without reducing reliability.

Target: Establish the Services View Layered Diagram (SvcV-4a) in the National Airspace System (NAS) Enterprise Architecture Model (EAM)

Create a draft Services View Layered Diagram (SvcV-4a) with candidate service categories and types, and coordinate with stakeholder organizations to finalize and incorporate into the National Airspace System (NAS) Enterprise Architecture Model (EAM).

Activity: Advance the Use of Sustain, Enhance, Replace Initiative (SERI)

Continue the socialization and operationalization of Sustain, Enhance, Replace Initiative (SERI).

Target: Draft Sustain, Enhance, or Replace Initiative (SERI) Guidance Language

Develop Sustain, Enhance, or Replace Initiative (SERI) draft language for inclusion in Federal Aviation Administration (FAA) guidance documents such as the System Engineering Manual (SEM).

Target: Implement Sustain, Enhance, or Replace Initiative (SERI) for a National Airspace System (NAS)

Improve access to available data while implementing Sustain, Enhance, or Replace Initiative (SERI) for a National Airspace System (NAS) communications or weather system.

Activity: Develop Draft Internet Protocol Suite (IPS) Transition Strategy

Develop an Internet Protocol Suite (IPS) transition strategy, which will serve as a detailed management tool to help identify and budget for the documentation, prototyping, testing, and analysis that must be completed to achieve a successful implementation of the Internet Protocol Suite (IPS) Gateway into the National Airspace System (NAS).

Target: Develop Draft Internet Protocol Suite (IPS) Transition Strategy Roadmap

Develop a draft Internet Protocol Suite (IPS) transition strategy roadmap for implementing Internet Protocol Suite (IPS) in the National Airspace System (NAS) and coordinate with government and industry stakeholders.

Initiative: Remote Towers

The FAA will work with commercial vendors to support approval of Remote Tower Systems. These systems will potentially provide more cost effective solutions to traditional brick and mortar towers, especially for smaller rural communities.

Activity: Remote Towers

Remote Tower Pilot Program will continue to provide ATCT operations at Leesburg (JYO) airport with the Remote Tower system, while continue to work with the vendor on System Design Approval (SDA) process; continue to evaluate another Remote Tower system at the Fort Collins (FNL) airport and determine path forward based on system deficiencies identified during the Phase 1 evaluation; and continue to coordinate with stakeholders in developing plan for establishing the Remote Tower testbed at WJHTC.

Target: Remote Tower (RT) Test Bed Facility at WJHTC

Identify space for a Remote Tower test bed facility at the Tech Center.

Initiative: Automation Evolution Strategy (AES)

FAA is exploring a service-based approach to modernize its NAS automation, with emphasis on a more timely, cost-effective, and agile development approach to the delivery of NAS capabilities. The Automation Evolution Strategy's key vision is the transition to a layered, service-based architecture that take advantage of modern development methodologies and technologies.

Activity: Automation Evolution Strategy

Identify key operational and infrastructure needs for the NAS computing, platform, and mission software layers to enable the proposed Automation Evolution Architecture. The activity will integrate Operating Environments, Information Security and Mission and Common Service perspectives.

Target: Deliver Report on Shared Services

This deliverable will encompass activities related to analysis of platform and compute technologies that can be used in the future NAS cloud environment to support design, development and deployment of NAS services and applications and also a determination on which of these could be deployed as enterprise services. In addition, analysis to determine what can be leveraged as enterprise shared services across all OEs vs services specific to each OE will also be performed. Policies regarding use of shared services and recommendations on platform and compute/infrastructure technologies/tools that can be deployed as shared services will be captured in the report.

Target: Deliver Final Architecture

This deliverable will expand on the initial technical architecture description to show the dependencies and interactions between the layers of a service based architecture and the connectivity between the Automation Evolution Strategy (AES) operating environments. The report will define the characteristics of the environments (to support services and functions with various security and Reliability, Maintainability, and Availability (RMA) needs). The final set of assumptions and intermediate steps needed to achieve the AES service based architecture will be outlined. This report will inform requirements to the FAA programs such as SWIM, FMDS, CSS-FD etc. to support their future acquisition strategy.

Initiative: Charting Aviation's Future

The National Airspace System (NAS) 2035 initiative includes activities for the research, development, concept maturation, and technology transfer of air traffic capabilities to build towards our goals for the NAS, including opportunities afforded by technology advances enabling changes to the future environment and the anticipated changes in the areas of operations, safety assurance, and infrastructure that modernize the NAS and facilitate the integration of new entrants. These activities are anticipated to deliver benefits in terms of efficiency, flexibility, throughput, safety, and predictability for all of air traffic management, including access for new entrants.

Activity: Advanced Air Mobility Beyond Visual Line of Sight National Airspace System Evaluation – Phase 2

The Advanced Air Mobility (AAM) Beyond Visual Line of Sight (BVLOS) National Airspace System (NAS) Evaluation (BNE) Phase 2 will continue to evaluate the integration of BVLOS operations in the NAS using large (>55 lbs) unmanned aircraft systems (UAS) as a platform above 400ft Above Ground Level. This project will analyze, test, and evaluate (using live flights) multiple use cases and scenarios to identify gaps and associated impacts of BVLOS operations on Communication, Navigation, Surveillance (CNS) services and interactions among actors (Air Traffic Control, Unmanned Service Supplier, Remote Pilot In Command, manned aircraft pilots, etc.). Compared to Phase 1, Phase 2 research will evaluate scenarios with increased operational and environmental complexity, increased operational tempo, and variability of vehicles. This project will further advance the integration of BVLOS into the NAS.

Target: Advanced Air Mobility (AAM) Beyond Visual Line of Sight (BVLOS) National Airspace System (NAS) Evaluation (BNE) Final Report

This report encompasses the activities undertaken to conduct the live flight demonstrations conducted with industry partners do demonstrate the full capabilities of the Advanced Air Mobility (AAM) Beyond Visual Line of Sight (BVLOS) National Airspace System (NAS) Evaluation (BNE) concept. The AAM BNE Final Report will document the challenges and lessons learned from the evaluations and propose future areas of exploration to move towards BVLOS operations within the NAS

Target: Updated Operational Use Case Report

This report illustrates specific examples of operational use cases that highlight AAM BNE Phase 2 flight operations and the required capabilities and operations in live and simulated flights. This report will consider existing and emerging capabilities to formulate operational use cases. Further, this report will capture the impacts of a new platform, new test site, and extended live flight evaluation period on the previous Use Case Report and expand upon the operations, capabilities, and interactions to be exhibited during the evaluations.

Activity: Cloud ERAM in a Box (Cloud-EIB)

The Cloud En Route Automation Modernization in a Box (Cloud-EIB) prototype effort will continue prototyping and testing efforts. In addition, a Transition Strategy document will be developed which delineates the path toward enabling the EIB as a cloud service in the R&D domain

Target: Develop a transition strategy document

Develop a strategy for transitioning a Cloud-ERAM-in-a-Box (Cloud-EIB) prototype into a service available for future research and development projects. This report will detail solutions for connections and data flows between the Cloud-EIB and FAA resources and include use cases for the Cloud-EIB

Activity: Performance Based Flow Management (PBFM) eXtensible Traffic Management (xTM) Interactions

Building on previous work which developed the Concept of Operations and Use Case documents, Performance Based Flow Management (PBFM) eXtensible Traffic Management (xTM) Interactions will continue investigating the interactions between traffic flow management (TFM) and xTM services within the PBFM environment. This will include development of operational scenarios and a series of tabletop exercises.

Target: Update operational use cases/scenarios

Update the initial set of PBFM xTM Interactions operational use cases/scenarios. The update will incorporate feedback and results from the first Tabletop Exercise, which was conducted with ANG stakeholders

Target: Perform tabletop exercise

Perform a tabletop exercise with PBFM and xTM stakeholders external to ANG. The tabletop exercise will assess the validity of a set of operational use cases/scenarios regarding the interactions necessary to incorporate xTM operations into the PBFM environment

Target: Develop a recommendations/lessons learned document

Develop a report which summarizes the results and lessons learned of the various PBFM xTM Interactions Tabletop Exercises. The report will also provide recommendations on next steps for further maturing the PBFM concept the integration of xTM in that environment

Activity: Flight Data Input/output Data/Message Analysis

Following on from the previous Flight Data Input/output cloud capability analysis, this activity will perform a deep-dive analysis of the messages and data on interfaces between the Personal Computer Remote Control Unit (PC-RCU) and En Route Automation Modernization (ERAM) and Terminal Flight Data Manager (TFDM) systems.

Target: Develop an initial draft of the FDIO Data Analysis Report

Develop the initial report on the FDIO Data Analysis activity. The initial draft will summarize the FDIO data received, and the tools and environment used to securely store and analyze it

Target: Develop the final draft of the FDIO Data Analysis Report

Develop the final report on the FDIO Data Analysis activity. The final draft will analyze the FDIO data format and contents, and provide insights into the data and messages that flow between FDIO, ERAM, and TFDM to inform future cloud/service transition plans.

Activity: Innovative Airports

The Innovative Airports project will continue investigating the use of low-cost technologies (such as mobile data networks) to provide situational awareness to pilots at non-surveillance airports. The project will develop a concept of operations and conclude with a demonstration of the prototyped surveillance capability

Target: Develop a demonstration execution plan

Develop a demonstration execution plan which details Innovative Airports demonstration objectives, entry and exit criteria, roles and responsibilities, and dependencies.

Target: Develop a demonstration readiness review report

Develop a report which details the results of the Innovative Airports demonstration readiness review. The report will review the demonstration architecture, connectivity to SWIM, demonstration execution plan, and requirements

Target: Develop a final demonstration report

Develop a report which summarizes the Innovative Airports prototyping and demonstration activities. The report will detail issues experienced and benefits realized during the Innovative Airports project

Activity: Unmanned Aircraft System (UAS) Traffic Management (UTM) Field Test

The Office of NextGen will execute Unmanned Aircraft System (UAS) Traffic Management (UTM) Field Test in collaboration with industry partners. UTM Field Test will conduct live flight test activities to test updates to UTM technology and validate UTM data exchanges and operations based on proposed standards to support routine Beyond Visual Line of Sight (BVLOS) operations. Upon completion of the Field Test, UTM Field Test Report and Lessons Learned Package will be produced. The package will include detailed record of Field Test results including those from testing of technical functionalities, validation of the proposed standards, and lessons learned from the perspective of industry partners.

Target: UTM Field Test Report and Lessons Learned Package

Complete testing all technical functionalities between service providers and the UTM ecosystem and develop detailed record of Field Test results from the perspective of industry partners

Target: UTM Field Test Cyber Security Report

Develop cybersecurity framework for field testing in alignment with FAA's Enterprise Identity and Access Management (IAM) principles, complete analysis and provide recommendations to update cybersecurity for UTM

Activity: Implement the InfoCentric NAS Workforce Development Roadmap

Implement the InfoCentric NAS Workforce Development Roadmap, which includes learning and development activities to prepare ANG employees for the future.

Target: Evaluate and Continue Implementing the Micro-Credentialing Program

Obtain feedback from participants to evaluate the Exploration level of the micro-credentialing program and develop a plan to implement the Experienced level.

Target: Develop Info-Centric (I-CN) Training

Review and update the Info-Centric (I-CN) Workforce Development Roadmap and develop training opportunities as defined on the Roadmap.

Target: Implement the Micro-Credentialing Program (Based on Organizational Needs)

Using relevant data analytics, implement the next level of the micro-credentialing program that best meets the needs of the ANG workforce.

Activity: Flight Information Exchange Model (FIXM) Development

Flight Information Exchange Model (FIXM) is the standard format of Flight Object data sent between systems, allowing more users to share flight information and coordinate on the various activities concerning a flight. The development will include U.S. specific extensions and core standard which is used internationally. FY23 work is aligned to maturing FIXM Core.

Target: Update paper to the International Civil Aviation Organization (ICAO)

Complete the FIXM status update paper to the International Civil Aviation Organization (ICAO) for communication with the Air Traffic Management Requirements and Performance Panel -Status paper will include a schedule of FIXM activities, recent developments for the model, and communication with the community

Target: Release FIXM v4.3 Core Release Candidate-

The Release Candidate will be used for final coordination and testing for the FIXM 4.3 release. The release will include an updated model, updated FF-ICE templates, and UML diagrams

Performance of the National Aerospace System

Develop and implement a comprehensive roadmap to guide the evolution of the National Aerospace System as the foremost data-driven Air Navigation Service Provider (ANSP) in the world.

Initiative: National Airspace System Laboratory Facilities and Services

Provide a set of world class laboratory facilities and services to support research, engineering and development; test and evaluation and maintenance of air navigation; air traffic management, and future air transportation system capabilities.

Activity: Provide High Quality Laboratory Services

Provide high quality laboratory services to Program Office sponsors and customers for acquisition programs and projects. Evaluate the performance and effectiveness of the services and products provided by the division using the quality management systems and objective measures of customer satisfaction. This activity will ensure that the Laboratory Division maintains its International Organization for Standardization (ISO) 9001 Certification.

Target: Customer Satisfaction

Monitor the level to which customer needs and expectations are being met; improve documented processes to ensure that customer needs and expectations are understood.

Target: Analysis and Evaluation

Evaluate the performance and effectiveness of the services and products provided for the division's quality management system to ensure it meets the division's quality objective metrics for customer satisfaction.

Target: Increase Auditor Resources

Laboratory Services Division, ANG-E1, will increase the number of skilled auditor resources to successfully complete the organizations two required audit cycles and to attain feedback on the auditing services provided.

Target: Internal Auditor Training

Laboratory Technical Services Branch, ANG-E13, will acquire two (2) International Organization of Standardization (ISO) 9001:2015 Internal Auditor Training courses to secure auditors that are competent and trained on the requirements of the ISO 9001:2015 ISO standard.

Activity: Execute Laboratory Master Plan & Projects

This activity sustains, maintains, and improves the William J. Hughes Technical Center (WJHTC) National Airspace System (NAS) laboratory facilities. Multiple projects for FY23 are described in the Space and Infrastructure Master Plan and 75% will be initiated. The shell for the Priority One Electronic Equipment Room will be completed.

Target: Space and Infrastructure

Initiate 75% of planned Space and Infrastructure Master Plan (S&I MP) projects scheduled for FY23. This helps ensure the overall Laboratory S&I MP projects are kept on schedule, and that laboratory building infrastructure is maintained and improved.

Target: Priority One Electronic Equipment Room

Substantially complete the walls, doors, floors and ceiling (surrounding shell) for the Priority One Electronic Equipment Room, 2nd floor, Bldg. 300.

Activity: Expand Air Traffic Control Simulation Infrastructure

Expand Air Traffic Control (ATC) simulation capabilities in the Technical Center Research Development and Human Factors lab to support enhanced trial planning and conflict probe detection. This activity will integrate the laboratory with MITRE's Simulation Data Distribution Framework (SDDF). This enhancement supports future human factor studies related to more advanced ATC environments, and will increase the fidelity and realism of future human-in-the-loop simulations.

Target: Planning and Requirement Gathering

Collect all requirements for enhanced trial planning capabilities as well as conflict probe detection.

Target: System Design

Design the new Simulation Data Distribution Framework (SDDF) interface and functionality as well as changes needed to existing conflict probe and trial planning functionality.

Target: Development and Testing

Develop the Simulation Data Distribution Framework (SDDF) interface. Test legacy trial planning and conflict probe functionality. Test enhanced trial planning and conflict probe capabilities.

Activity: Upgrade the Visual System for the Helicopter Simulator

A high-fidelity visual system will be installed to enhance realism and the upgraded simulator will be used to conduct research at a lower cost and with greater safety than using a real helicopter.

Target: B301 Room 104 ready for occupancy

Planning for the simulator relocation while waiting for room 104 to be made ready. This includes any hazards/asbestos removal, painting, electric and network infrastructure changes.

Target: Disassembly of S-76 simulator

Systematically disassemble the simulator at its present location in B201. Document all components and cables for reassembly.

Target: Reassemble S-76 simulator.

Reassemble the simulator in B301 room 104 with the current low-fidelity visual system. Allow sufficient room for the new visual system dome. Test and verify full operability.

Initiative: Aerospace Planning and Performance

Research and development investments are balanced between strategic research initiatives to enable transformative change, and tactical research initiatives aimed at incremental improvements to current systems, while maintaining or improving operational safety. The FAA's Research, Development, Test & Evaluation (RDT&E) function at the William J. Hughes Technical Center, and supporting laboratories, provide a comprehensive approach to discovering, validating, and advancing technologies for a safer, more efficient, and more economically accessible NAS.

Activity: Flight Deck Collaborative Decision Making (FD CDM)–Enhanced Digital Taxi Instruction(e -DTI)

Speech recognition (speech-to-text) technology presents an opportunity not only to transform traditional voice radio communication but could be an enabling technology to bridge the gap between voice and digital environment. As part of the digital transformation, several initiatives have been established within the FAA to develop concepts and capabilities to leverage flight deck connectivity to enhance collaboration and air traffic management services. This effort will enable the development and integration of speech recognition technology to enable verbal entry of taxi instructions for digital delivery. It will develop a lexicon to define a collection of phraseology including standard procedures and other operational variants that ATC uses to communicate taxi instructions to flight crews, used for support development of speech recognition software logic and training. This milestone also includes technology demonstration, to be conducted upon completion of the software development and integration.

Target: Digital Communication Recordings Memorandum

The team will collect representative audio samples from various data sources including edge devices application. This effort will require that a data pipeline be built to ingest data into a cloud platform. The team will transform audio samples as needed to be able to leverage the Speech-to-Text (STT) Application Program Interface (API). This effort will also require the storage of data collected from Ground Based Units (GBUs) in a data warehouse, where applicable. The final deliverable will be a memorandum summarizing the efforts performed.

Target: Application Development Design Review report

This report captures the outcomes of progress reviews conducted throughout the period of performance. Measured progress review will showcase the prototype development through live demonstrations of the technology. This review will cover design detail, prototype development progress, proposed changes to original design, risks, and the base criteria for evaluating prototype readiness for integration into the FD CDM DTI prototype application(s)

Activity: Advanced Methods

The FY23 Advanced Methods work focuses on expanding prototyping activities to further develop new technologies, record lessons learned, and describe use cases surrounding the use of the new technologies.

Target: Complete Advanced Methods Traffic Flow Management (TFM) Machine Learning Concept of Use v1.0.

The Concept of Use document will focus on describing the use of Machine Learning in TFM, specifically to recommend a Traffic Management Initiative (TMI) based on historical trends and situations.

Target: Complete Advanced Methods Machine Learning Initial Capability Prototype development report

This prototype will be used to start proving out the "TMI Recommender" concept, which recommends a TMI based on historical data. The initial capability prototype will likely focus on the data collection, storage, and analysis required to set up the capability

Target: Complete Advanced Methods Prototyping and Testing Lessons Learned

The team will collect lessons learned throughout the process of developing and testing the initial prototyping and compile at the end of the prototyping period. The document will include technical, operational, and programmatic lessons learned

Activity: Dynamic Airspace

Dynamic Airspace will continue to perform research and analysis that allows dynamic reconfiguration of the existing NAS automation infrastructure. The project will focus on conducting engineering analysis for enabling the availability of flight and surveillance data necessary in the Automation Evolution Strategy (AES) Research and Development Operating Environment (RD-OE) to support ATC and ATM operation

Target: Provide update to the Dynamic Airspace Concept of Operations

This task will update the 2017 Dynamic Airspace Concept of Operations by analyzing the lessons learned from the Dynamic Airspace Proof of Concept completed June 2022. All necessary elements from the Proof of Concept including revisions to the current concepts, assumptions and outcomes for Dynamic Airspace will be combined to align with the new direction towards Data Posting.

Target: Develop Data Posting White Paper

This white paper will summarize the data elements needed to provide Air Traffic Control (ATC) and Air Traffic Management (ATM) services including but not limited to surveillance, flight data, and voice communications. This task will evaluate how these data elements are provided to ATC and ATM services today and how these data flows may be modernized to support a ubiquitous data and Info-Centric NAS environment

Activity: Flight Deck Data Exchange Requirements

Conduct hardware-in-the-loop exercises to validate and test effectiveness of the security mitigations identified in the cybersecurity risks assessment of EFB, AID, and IP datalinks, and the security analysis of safety critical data, and identify gaps that may exist. The exercise will be conducted with a partner proof-of-concept NextGen program(s) and leverage its prototype system to implement the identified mitigations and perform security testing.

Target: Updated Connected Aircraft Security Controls (CASC) tool

The team will perform an overall assessment and update of the Connected Aircraft Security Controls (CASC) tool. Information gathered from continued research and validation as well as lessons learned from the initial validation of the tool on the candidate prototype system will guide the team in performing these updates.

Target: Develop Hyperconnectivity Security Considerations Report

The team will research the increase of digitized and wireless communication and the security implications of hyperconnectivity in the connected aircraft environment. The research will identify areas of concern with the increase hyperconnectivity of the aircraft environment and outline areas that would be candidates for more focused research. The report will include the findings of the research and provide the foundation for future efforts

Activity: Surface Tactical Flow Program

The Surface Tactical Flow (STF) program will provide the tools necessary to achieve a fully collaborative surface environment where the input of airspace users, airports, and air traffic controllers are all used to provide a shared surface situational awareness and improved predictability.

Target: Mobile Capability Information Dependencies and Technical Interchange Report

This deliverable will document the status of data needs for the integration of mobile-based information exchange capabilities, define the detailed data characteristics needed and document coordination efforts with other NextGen programs related to information exchange and address any additional progress on the tech transfer efforts to industry, lessons learned, and recommendations related to tech transfer and socialization efforts.

Target: Demonstration Planning Report for the planned Field Demonstration of CFR Time Coordination and Mobile Clearance Delivery

The demonstration plan will include site selection and coordination, defining the demonstration software architecture; identifying required hardware and interfaces, identifying demonstration stakeholders, a proposed schedule, and a draft data collection plan

Activity: Class E Upper Airspace Traffic Management

The Class E Upper Airspace Traffic Management (ETM) project will demonstrate the feasibility of integrating new entrants into Class-E Airspace by developing ETM concepts, scenarios, and engineering analyses in conjunction with NASA and Industry to validate the overall approach to managing this airspace.

Target: Communication, Navigation and Surveillance (CNS) Whitepaper Update Package

This deliverable will update circa 2019 Communication, Navigation, and Surveillance (CNS) white papers to reflect emerging technologies, as well as summary paper and associated graphics, which will affect downstream ETM Engineering deliverables. Specifically, it will amend existing papers to incorporate the following re-versioned as release 2.0.

Target: ETM Modeling and Simulation Report

Report Related to the CNS White Paper Update Package, and more so on the ETM Adjacent Airspace Analysis, this work will evolve the Preliminary Modeling and Simulation paper delivered July 2021 to incorporate more and different simulations, leveraging outputs from the airspace analysis, mentioned above. This effort may entail several iterations or outputs, perhaps smaller in scope, as the project progresses

Activity: Air/Ground SWIM Connected Aircraft

This work pertains to the development of the Connected Aircraft (CA) concept, which describes a richer set of information to be exchanged with the aircraft and automation to improve operational awareness and decision-making; an integrated CA framework to further advance concepts that leverage the connected aircraft, including the exchange of information, based on applicable performance standards; the establishment of an Application Registry and Distribution Platform "App Store" that allows for the organization and distribution of relevant software applications; and a decomposition/categorization analysis of flight information tasks and decisions based on their use.

Target: New Entrants Gap Analysis

This deliverable will document exploration of the concept gaps around new entrants in the air to ground arena. It will also provide an understanding of how many emerging aircraft are equipped for integration into the NAS, and which capabilities will require further development to align new entrants with NAS infrastructure. This deliverable will require coordination with appropriate stakeholders in the potential formation of working sessions, panel meetings, and other relevant means of information exchange and collaboration

Target: Technical Feasibility Assessment Report Update

This deliverable will provide updates to the continued efforts of this program. This update will summarize the results of the analysis and evaluations conducted to review the proposed solution and investigate project alternatives, to identify if the project is feasible and cost-effective. It will outline the most feasible solution for a data distribution platform information sharing in current or near-term capabilities and services available across the NAS systems

Activity: Urban Air Mobility (UAM) Concept and Engineering Development

This project will perform the engineering analyses and concept development required to continue the evolution of the UAM Concept of Operations. The UAM Engineering and Concept Development project will evaluate the key issues currently facing industry's progression to the future state of UAM. This project will conduct industry engagements to understand the current viewpoints of Cooperative Operating Practices (COPs) and use that input to further the concept maturation. UAM will also coordinate with companion projects (e.g., xTM) and other government agencies (e.g., NASA) to ensure that these efforts remain in lock-step in their progression. The major result of this project over the coming period will be the next iteration of the FAA UAM Concept of Operations.

Target: Compose Technical Paper on Cooperative Volumes

This report will analyze and capture data from internal and external research as well as industry sources related to future Cooperative Volume development. The analysis will focus, at a macro level, on gathering the base information that will establish Cooperative Volume characteristics such as size, location, and timing. The results of the analysis will be used to guide Airspace Users as they propose parameters within the bounds that are set by the FAA. This paper is not intended to dictate the detailed Cooperative Volume characteristics, but to establish threshold limits that the Airspace Users can determine if they are feasible given their individual operating requirements. The final deliverable will be a report that will aid in the continued maturation of the UAM Concept of Operations.

Target: Develop Initial UAM Roadmap for Interrelated Activities

This roadmap establishes guiding direction for the current and future works. The document will be structured to show each of the deliverables along timelines and define the interrelated activities. Key interdependencies with other projects will also be captured. This deliverable will be a living document that will undergo updates throughout the body of work.

Target: Research and Compose a Capability Analysis and Gap Identification from USS to PSU Report

This deliverable will explore UTM Service Supplier (USS) capabilities and examine how these capabilities can be used to inform similar capabilities within Provider of Service for UAM (PSU). The established USS capabilities will be compared to the conceptual ideas for PSU to not only identify similarities, but also gaps. The effort conducted within this deliverable will provide information to Industry partners who may plan to transition a USS to a PSU. In addition to identifying these similarities and gaps, this report will also document areas of consideration which could include UAM Airspace volumes vs. UAM Corridors, Four-Dimensional Trajectory (4DT), operational elements (e.g., battery, navigational performance, lost-link procedures). The final deliverable will consist of a report capturing the results of the analysis and be used to inform other deliverables in this body of work.

Activity: Urban Air Mobility Airspace Management Demonstration

Under the umbrella of the advanced air mobility (AAM), the Office of NextGen will focus on the Urban Air Mobility (UAM) airspace management. This research will showcase and validate the concepts described in the UAM Concept of Operation document leveraging the efforts of previous and concurrent research. This project, in collaboration with the industry partners, will exhibit the creation and management of UAM corridors and architecture components that support information exchanges in the ecosystem. Upon completion of the project and demonstration, a UAM Demonstration Architecture document will be developed. This document will define how the systems are integrated. It will also identify technologies that will be used to develop a detailed technical architecture design document. The architecture design document will guide the setup of an integrated prototype with all the required components, software, and Service Suppliers.

Target: Demonstration Operational Requirements Document

This report will leverage the detailed operational scenarios, use cases and information exchange to define the functional and non-functional requirements demonstrated. Further, this report will define goals, objectives, and the achievement metrics for the project. The non-functional requirements will document the safety, security, and usability of the systems to be used during demonstration preparation and execution

Target: UAMD Safety Risk Management Plan

This document is an analysis complying with the Safety Risk Management (SRM) process to analyze and determine high level safety considerations of this project. The analysis will examine these safety considerations and requirements against the operational use cases and operational scenarios that are planned. The report will document the analysis and any safety considerations for the UAM Airspace MADemonstration and associated system(s) to ensure that they are acceptably safe.

Initiative: Stakeholder Engagement & Outreach

Enhance domestic and international stakeholder confidence in NextGen and engage stakeholders in NextGen through collaboration and messaging.

Activity: Stakeholder Collaboration

Enable and facilitate collaboration throughout the FAA, aviation community and interagency partners by sharing resulting actions, outcomes, and information.

Target: NextGen Advisory Committee

Execute two NextGen Advisory Committee (NAC) meetings and provide meeting summary reports.

Activity: Outreach Division

Effectively communicate to stakeholders the NextGen initiatives in support of modernization for an information centric National Airspace System (NAS).

Target: Develop NextGen Annual Report for Fiscal Year 2023

Deliver the draft NextGen Annual Report for Fiscal Year 2023 to the Assistant Administrator for NextGen.

Target: Leveraging the power of the Cloud to support messaging and stakeholder communication

Create a repository of unstructured data to include speech, video logs, blogs, and leverage it for at least five (5) text analytics studies or data visualization products for requesting lines of business (LOBs) or staff offices to support strategic messaging and stakeholder engagement.

Target: NextGen in the News Newsletter

Provide at least fifteen (15) issues per month of the 'NextGen in the News' newsletter. 'NextGen in the News' is a compilation of the latest media articles about the FAA's efforts to modernize the National Aerospace System (NAS). It provides awareness to ANG and FAA leadership about the topics that are worthy of media coverage, and which media sources are publishing it.

Target: Extending and Leveraging NextGen Messaging Capabilities

Leverage external and internal web content and Assistant Administrator for NextGen (ANG) messaging to highlight ANG activities. Promote use of the ANG employee website through ANG-1 messaging. Complete monthly web content reviews by directorate as required per the ANG web policy. Contribute (50) ANG Forward articles, ANG-1 broadcast messages, or presentations delivered by ANG executives during the fiscal year.

Initiative: Operations and Cost Benefits Analysis and Reporting

Inform FAA/NextGen Stakeholders on the Enterprise level shortfalls and potential benefits of new capabilities as well as assessing post-implementation benefits of key implementations to further inform NextGen Advisory Committee (NAC) and other Stakeholders on value. Improve data analysis, modeling and visualization capabilities to better inform stakeholders on implementations with more complex benefit cases.

Activity: Post and Future Implementation Analyses to Support FAA Executive Leadership and NextGen Advisory Committee

In support of the FAA, NextGen Advisory Committee (NAC), and other stakeholders key NAS implementations will be evaluated. Key implementations are those that are expected drive operational benefits to airspace users. Evaluations include support to the Joint Analysis Team (JAT) as well as other implementations with expected user benefits. Additionally, assessment of potential benefits from MCL equipage scenarios will also be completed as necessary.

Target: Joint Analysis Team North East Corridor Analyses

Finalize collection of complex baseline data for normalization and begin post-implementation evaluation (as appropriate), to address key North East Corridor (NEC) implementations including Atlantic Coast Routes, Pre-Departure reroutes & Airborne Reroute (PDRR/ABRR), and work with Air Traffic Organization (ATO) on Time Based Flow Management (TBFM) at Philadelphia International Airport (PHL).

Target: Additional Post Operational Analyses

Complete post operational analysis beyond what has been assigned to the Joint Analysis Team (JAT) and include normalizations necessary to adjust for COVID related demand changes. Also update NextGen's estimate of Implemented benefits as directed by the Assistant Administrator for NextGen, ANG-1.

Target: Equipage Benefit Analysis

Develop updated analysis of key equipage benefits combined with Trajectory Based Operations (TBO) tool implementations.

Activity: Trajectory Based Operation Shortfall and Benefit Analyses

Conduct Trajectory Based Operation (TBO) shortfall and benefit analyses using historical data and modeling tools to inform dynamic TBO enterprise planning.

Target: Trajectory Based Operation Enterprise Level Shortfalls and Benefits for Arrivals

Continue to identify shortfall gaps between the integration of strategic and tactical systems, including contributions from departure conformance and flight time predictions including analyses of Time Based Flow Management (TBFM), Terminal Flight Data Manager (TFDM), and Traffic Flow Management System (TFMS), to inform future implementation prioritizations and research.

Target: Develop Trajectory Based Operation Initial Traffic Flow Management System, Trajectory Based Flow Management, Terminal Flow Data Management (3T) Shortfall/Benefits in Off-Nominal Conditions

Develop refined benefit modeling to reflect the impact on multiple performance objectives from reduced uncertainty during GDPs and under TBO.

Target: Departure Shortfall for Key Airports during Convective Weather

Continue to expand departure shortfall analysis during convective weather beyond the Northeast Corridor (NEC). Potential study airports include Fort Lauderdale (FLL), Jacksonville (JAX), Miami (MIA), Tampa (TPA), Orlando (MCO), & Charlotte (CLT).

Target: Future Benefit Analyses

Conduct future benefit analyses in support of Portfolio Management and Technology Development Office, ANG-C, Air Traffic Management initiatives to inform implementation priorities and future research.

Activity: Analyses of Operational Shortfalls for National Airspace System Future Vision

Conduct analysis of FAA research activities mapping to operational shortfalls including integration of Uncrewed Airspace Users (UAS) to understand baseline impacts on traditional airspace users.

Target: Unmanned Air Systems (UAS) Enterprise Architecture (EA) Automation Tripwire

Establish initial enterprise Architecture (EA) Automation tripwire framework using new Un-crewed Aircraft Systems (UAS) forecasts for flights in controlled airspace where Air Traffic Control (ATC) services are provided.

Target: Impact Analyses of Space Vehicle Operations

Collect historical Space Vehicle Operations (SVO) data and conduct impact analysis on traditional traffic.

Target: The Assistant Administrator for NextGen, ANG-1, Support for NextGen Benefits and Related Information supporting Stakeholder Requests

Provide the Assistant Administrator for NextGen, ANG-1/Federal Aviation Administration (FAA) Leadership continued support for responding to stakeholder requests regarding NextGen benefits and related information.

Initiative: National Airspace System Test and Evaluation

Test, analyze, and evaluate systems and services to verify and validate that products meet specifications, satisfy requirements, and are operationally suitable and effective.

Activity: Conduct Test and Evaluation to Support Acquisition Programs

Execute Test and Evaluation to support key acquisition investment and operational readiness decisions for designated programs/projects. Specific systems include the NextGen Weather Processor (NWP), Aeronautical Information Management Modernization (AIMM), Future Flight Service Program (FFSP), and Terminal Sequencing and Spacing (TSAS). Lead the Terminal Flight Data Manager (TFDM) operational testing with Ops Team participation at WJHTC TFDM test lab and the Cleveland Air Traffic Control Center.

Target: Conduct Operational Testing for TFDM

Lead and conduct TFDM Build 1 Operational Testing (OT) with the Ops Team participants at the WJHTC TFDM test lab and Cleveland (CLE) Air Traffic Control Tower (ATCT) 11/30/2022; Complete TFDM Build 1 OT to support the operational suitability demonstration (OSD) and the In-Service Decision (ISD) by 9/30/2023. The TFDM system is an ATCT system focused on improving the flow of flight data and other tower data between ATCT and other ATC domain users. It provides data exchanges between users (controllers), stakeholders (airlines, airport authorities, and ramp operators), and facilitates user management of airport surface resources by providing a set of decision support capabilities to improve surface traffic flow. TFDM is an Acquisition Category 1 New Investment (ACAT 1NI) program. TFDM is in the Solution Implementation (SI) phase of the Acquisition Management System (AMS) Lifecycle.

OT is executed in a test environment (hardware, software, interfaces, etc.) representative of the expected in-service operational conditions. OT is conducted with a representative team of end users (Ops Team) who interface with or operate the system, service, or capability under test. The primary objective of OT is to examine performance and determine operational readiness (effectiveness and suitability) of a new or modified system for use in the NAS and to ensure that the NAS infrastructure is ready to accept the system. OT results are documented in an OT Final Report and used to determine operational suitability in support of the operational readiness decision for the Initial Operating Capability (IOC) and In Service Decision (ISD).

Target: Conduct Operational Testing for Surveillance Systems

Commence Mode Select Beacon Replacement System (MSBRS) OT at the Tech Center on 7/23/2023. The MSBRS Sustainment Phase 3 program is currently in the Solution Implementation (SI) phase of the Acquisition Management System (AMS) Lifecycle. MSBRS is an Acquisition Category Technology Refreshment 4 (ACAT 4TR) program. The MSBRS will replace Mode S Beacon systems that remain in the National Airspace System (NAS) at En Route and Terminal facilities following the current radar divestiture activities. The MSBRS is a ground-based radar system capable of both selective and general interrogation of transponder-equipped aircraft. This will replace current Mode S Beacon system hardware located below the rotary joint; existing antennas and rotary joints will be retained.; Commence Automatic Dependent Surveillance -Broadcast (ADS-B) Security Enhancement OT 9/23/23. ADS-B Security Enhancements is in the Solution Implementation phase of the Acquisition Management System (AMS) Lifecycle and an Acquisition Category New Investment 3 (ACAT 3NI) program. System Security Enhancements will be implemented in the ADS-B system upgrades to comply with Federal Information Processing Standards (FIPS) publication 1992 high controls. The OT phase begins after Government Acceptance of the developed system, service or capability and the Development Test exit criteria have been satisfied. the OT Test Director ensures that OT entrance criteria are fully met before formal OT begins. A Test Readiness Review is conducted prior to the start of OT. OT is executed in a test environment (hardware, software, interfaces, etc.) representative of the expected in-service operational conditions. OT is conducted with a representative team of end users (Ops Team) who interface with or operate the system, service, or capability under test. The primary objective of OT is to examine/evaluate the system performance and determine its operational readiness (effectiveness and suitability) of a new or modified system f

Activity: Apply Innovative Approaches to Testing

Expand use of hybrid test approaches, leveraging the secure remote test laboratory capabilities and tools, as appropriate for designated test programs. Innovative test approaches will be used for Operational and Supportability Implementation System (OASIS), NextGen Weather Processor (NWP), and Terminal Flight Data Management (TFDM).

Target: Employ test innovations to ensure continuity of test services using a hybrid on site and remote testing configuration

Expand use of hybrid test approaches, leveraging the secure remote test laboratory capabilities and tools, as appropriate for designated test programs.

Operational and Supportability Implementation System

(OASIS) II Alaska – Build Release 30

OASIS BR30 WJHTC Dry-Run testing (11/14/2022-11/25/2022) [conducted remotely via RMAG connectivity

OASIS BR30 System Testing (11/28/22-1/13/23) [conducted remotely via RMAG connectivity

OASIS BR30 Automation Testing

(11/28/22-12/15/22) [conducted at Technical Center

NextGen Weather Processor, Development Test, Candidate Release Test 3 (CRT3)

NWP CRT3 Test Readiness Review (TRR) (10/26/22) [witnessed remotely

NWP CRT3 Test Conduct (10/26/22-11/18/22) [witnessed remotely

NWP CRT3 Test Conduct (FY23 1st Quarter

TFDM: Conduct a minimum of six (6) risk reduction tests by the Ops Team utilizing the onsite-remote hybrid test approach to provide data and end-user feedback to support development of Build 2 surface management capability 04/30/2023

Target: Develop, accredit, and utilize automated test tools

Enhanced SWIM Cloud Service (ESCS) Test tools: Accredit the FAA Continuous Testing Service (FAACTS) for automated operational testing (9/1/2023); Use automated transmitter and receiver testbeds to evaluate NEXCOM radios during Operational Capability Test and OT (9/30/2023). Automated test tools and new capabilities are developed and accredited prior to their use in support of operational testing. These assets are used in conjunction with the system/service under test or a representation of the system/service under test to generate data to address test measures. [Test capabilities include testbeds, simulated environments (including files and interfaces), instrumentation and test tools (including data collection and analysis), and modeling capabilities].

Activity: Deliver High Quality Test and Evaluation Services

Deliver high quality test documentation as specified in FY23 Project Agreements with Program Office sponsors and customers for acquisition programs and projects requiring test services (Aeronautical Information, Mission Support, Air Traffic Management, Communications, Decision Support Systems, Flight Service, Navigation, Surveillance, and Weather). Evaluate the performance and effectiveness of the services and products provided by the division using the quality management systems and objective measures of customer satisfaction. This activity will ensure that the Test Services Divisions maintain their International Organization for Standardization (ISO) 9001 Certification.

Target: Develop the annual T&E Performance Report

Conduct Test Standards Board (TSB) independent review and assessment of the William J. Hughes Technical Center's (WJHTC's) test work products for projects following the Test and Evaluation (T&E) Handbook in order to deliver the annual T&E Performance Report (i.e. quality assessment of T&E services/products and process improvement recommendations).

Target: Execute Test and Evaluation fiscal year project agreements to deliver test services and products in support of key acquisition investment and operational readiness decisions for designated programs/projects.

Deliver Test Work Products: NextGen Weather Processor (NWP) Development Test - Candidate Release Test 3 (CRT3) Interim Assessment Report (IAR). (3/31/2023)
Aeronautical Information Management Modernization (AIMM) Enhancement 1 (E1) - Enterprise Airspace Support Tool (EAST) Initial Test and Evaluation Master Plan (iTEMP). (4/15/2023)
Flight Service of 21st Century (FS21: Final FS21 Quality Monitoring Report - November 2022. (1/17/2023)
Future Flight Service Program (FFSP) Final Operational Suitability Demonstration (OSD) Final Assessment Report (FAR). (6/1/2023)
VOR MON Signal-in-Space Performance Report (FY23 1st Quarter)
TFDM Build 1 OT final report (11/30/2022)

WAAS

Performance Monitoring Report (FY23 2nd Quarter)
TSAS Interim Assessment Report (IAR) Complete (11/30/22)
ASR-9 SLEP P3 OT Final Test Report Complete (8/31/23)
; FENS iTEMP (11/30/2023)

Target: Develop, Socialize, and Implement Verification and Validation Strategies and Practices by engaging with the Verification & Validation/Test & Evaluation community (e.g. government, industry and academia).

Host the Annual Verification and Validation Summit to promote best practices, explore innovative, new and practical ways that support acquisitions of aviation systems and capabilities, and advance FAA missions and outcomes.

Initiative: Environment and Weather Impact Mitigation

Conduct Environment and Weather Impact Mitigation research to develop mitigations to the environmental impacts of aviation operations as well as the impact of weather on air transportation safety and efficiency.

Activity: Reduced Weather Impact-Weather Observations Improvement (RWI-WOI)

WOI explores mitigating automated winter weather sensing shortfalls in the ground-based weather observation network via the vetting of technology solutions. WOI is completing a multi-year work package which aims to deliver a technical approach for improving the Automated Surface Observing System (ASOS) and Automated Weather Observation System's (AWOS) capability to report multiple simultaneous precipitation types and intensities as defined by an integrated product team including the solution implementer, the Weather Sensors Program Management Office, and key users, such as Flight Standards de/anti-icing research teams and aircraft certification stakeholders. Enabling the reporting of multiple simultaneous precipitation types will enhance winter weather information to support ground de-icing decisions. The final phases of this work package includes developing system design documents, engineering risk mitigation strategies, and mixed precipitation modeling and demonstration capabilities.

Target: Complete Present Weather Sensor as a Proxy for Visibility Measurement Report

Modern present weather sensors employ volume sampling techniques that identify precipitation type. This report will assess the feasibility of using Present Weather Sensor precipitation type and extrapolating the sampled volume to compute visibility. Early indications suggest this capability may allow for Automated Surface Weather Observation Network (ASWON) sensor consolidation as current ASWON visibility sensor technologies are growing obsolete. The report will be used as input to the ASWON sustainment business case

Target: Complete Present Weather Sensor Techniques to Identify Freezing Precipitation Report.

Some Automated Surface Weather Observation Network (ASWON) systems employ an ice accretion sensor to determine freezing precipitation. Modern present weather sensors have the capability of detecting both freezing rain and freezing drizzle without the use of the ice accretion sensor. This report documents a preliminary assessment to explore the use of the present weather sensor as a potential replacement to the ice accretion sensor with an emphasis on how the value of ice accretion alone has become a metric for deicing and anti-icing rules and procedures.

Activity: Reduced Weather Impact (RWI) - Weather Forecast Improvements

The Weather Forecast Improvements (WFI) program addresses the need to improve weather prediction and the use of weather information in the future NAS. National Weather Service (NWS) forecast models will be integrated into models that forecast weather impacts for aviation purposes. In today's NAS, traffic managers and users must mentally interpret weather conditions and the potential impact of weather on ATC decisions. WFI will improve the accuracy of aviation weather information, to include the automated objective indication of the constraints placed on the NAS and incorporate this data into collaborative and dynamic decision-making.

Target: FY25 RWI Enhancement 1 Resource Planning Document (RPD)

Complete and submit draft FY25 RWI Enhancement 1 Resource Planning Document (RPD) and associated Capital Investment Team (CIT) updates. Combined, these documents depict future aviation weather integration and/or aviation weather translation requirements, shortfalls and/or opportunities. The documents also prioritize work by correlating projected out year funding against the specified requirements, shortfalls and/or opportunities.

Target: Complete the Terminal Precipitation on the Glass Test and Evaluation Master Plan

Complete the initial Test and Evaluation Master Plan (TEMP) consistent with the final requirements document. The TEMP describes the test program for the initiative, establishes the basis for test requirements in the request for offer to industry, and establishes the basis for test costs and schedules in the acquisition program baseline or execution plan

Activity: New ATM - Weather Transition

Identifies research concepts and capabilities that have appropriately matured and transitions them from RE&D to F&E funding. This PLA manages AMS Concept Maturity and Technical Development (CMTD) activities. It funds the development of Pre-CRDR AMS artifacts. It supports the transition of weather capabilities to FAA operational platforms. This program also supports the transition of aviation weather research to the National Weather Service (NWS) for operational production of weather capabilities to FAA platforms.

Target: Weather Requirements Service (WRS) Near-Term Roadmap

The Weather Requirements Service (WRS) Near-Term Roadmap will include the FY22-27 “as-is” and “to be” states to identify and analyze products in the R2O phases of development, weather needs identified via the Weather Needs Portal, and other established forums.

Target: The Operations Service Environment Description (OSED) assessment

The Operations Service Environment Description (OSED) assessment will analyze convective weather products produced by FAA systems or by the National Weather Service. The OSED will then develop a strategic plan to remove duplicative or inconsistent convective weather information from products used throughout the NAS

Activity: Aviation Weather Research Program

The Aviation Weather Research Program performs applied weather research addressing the need to advance the state of weather forecast and diagnosis information such that it can be exploited for integration into Air Traffic Management decision-support processes. Hazardous weather phenomena such as turbulence, inflight icing, thunderstorms, and low ceilings and visibility undergo research in order to forecast the timing and intensity of these conditions better, or to mitigate the impacts of these conditions on the NAS. The new Rapid Refresh Forecast System being developed by NOAA and partially funded by the FAA will undergo validation testing for aviation purposes. A fast-time, ultra-high resolution model on the order of a few meters will be tested to evaluate the effects of a range of weather conditions and hazards on UAS/UAM operations using the Raleigh, NC area as a model. In addition, a Safety Risk Management panel will be convened to assess the benefits of adding a capability to estimate visibility using automated methods to the FAA Weather Camera operational website.

Target: Ensemble Prediction of Oceanic Convective Hazards (EPOCH)

Transfer Ensemble Prediction of Oceanic Convective Hazards (EPOCH) to National Weather Service to meet finer spatial and temporal requirements. EPOCH uses multiple international numerical weather prediction models to create a 6-48 forecast of worldwide convection that may impact aviation operations

Target: Development and verification of 15-minute Gridded Localized Aviation Model Output Statistics Product (GLMP)

Report detailing the development and verification of 15-minute Gridded Localized Aviation Model Output Statistics Product (GLMP) forecasts of Ceiling and Visibility valid at 15-minute time steps out to 3 hours

Activity: Weather Technology in the Cockpit

Address the need for enhanced cockpit weather technology, information, and human factors principals to achieve objectives of improved aviation operational efficiency and safety, reduced flight delays, and reduced gaseous emissions in or due to adverse weather.

Target: Evaluate the impacts of phrase cadence on the performance of the voice-to-text pilot report (PIREP) experimental-prototype.

Submit report evaluating the impacts of phase-cadence on voice-to-text PIREP experimental-prototype

Target: ADS-B Turbulence algorithms

Complete a draft plan detailing options for transition of the ADS-B Turbulence algorithms for operational use

Target: Pilot Industry Survey report.

Validate the weather technology and information gaps, and the areas of improvement identified in the Pilot Industry Survey report. Airline organizations, airline weather information providers, and other organizations which represent and advocate for weather information in the cockpit will be surveyed and interviewed to verify and validate the report

Activity: Conduct Ground Icing Research

Conduct research key to the development of policy and guidance for ground icing conditions. This research will be done in partnership with Transport Canada and will be conducted at the Canadian National Research Council climatic chamber. The output from this testing will be used to set new ground icing policy. A portion of this data will be included in the 2023/2024 winter operation guidance which will be published in August 2023. This guidance sets global deicing aircraft holdover times to ensure safe takeoff operations during aircraft ground icing conditions.

Target: Climatic chamber tests to determine endurance times for simultaneously occurring conditions.

Conduct research at the NRC climatic chamber to determine endurance times for specific simultaneously occurring conditions. Testing will be conducted using frosticator plates that are exposed to simulated mixed phase conditions. The output from this testing will be included in the 2023/2024 winter operation guidance which will be published in August 2023. This research is needed to ensure safe takeoff operations during simultaneously occurring ground icing conditions.

Target: Aerodynamic testing of a vertical tail model to determine effectiveness with frozen contaminants.

Conduct research at the NRC 3m x 9m wind tunnel to determine the aerodynamic effects of frozen contamination on a vertical tail including the vertical stabilizer and rudder. This research utilizes a vertical tail model that is representative of a commercial airliner and will be used to simulate takeoff in both clean and contaminated conditions. The data from this research will be used to determine the effectiveness of the vertical stabilizer and rudder during normal, crosswind, and critical engine failure takeoffs, and will be used to develop policy and guidance by Flight Standards.

Initiative: NextGen

Support National Airspace System (NAS) modernization and evolution through infrastructure improvements, technology, information sharing, and community engagement.

Activity: Temporary Flight Rules (TFR) Design Check

Conduct initial effort to develop a proof of concept (PoC) for a service that validates custom TFRs, including drones programmed to fight wildfires.

Activity: Established on Required Navigation Performance

Established on Required Navigation Performance (EoR) utilizes the accuracy of Required Navigation Performance (RNP) instrument approach procedures (IAPs) to call aircraft established earlier in the final approach. In FY23, the project will continue to collect data on facilities recently implementing EoR, developing a strategy for upcoming safety analyses, and gather information on Simultaneous Dependent Operations candidate facilities that could potentially utilize EoR.

Target: Complete Pure Duals Concept Validation Data Analysis

To complete concept validation related data collection activities at LAX, the pure EoR Duals Launch Site and will include metrics such as EoR / RNP utilization and track miles savings compared to conventional procedures

Target: Develop EoR Quads Concept White Paper

Preparing a report for a potential future EoR quadruple (quads) runways operations concept

Activity: Post-departure Coordination and Airborne Negotiation (PCAN)

PCAN continues to mature the International Civil Aviation Organization (ICAO) Flight and Flow Information for Collaborative Environment Release 2 (FF-ICE/R2) concept. PCAN will build upon the outcomes and lessons learned of previous projects including Release 1 (FF-ICE/R1) Demonstration (i.e., International Interoperability Harmonization and Validation - IIH&V), FF-ICE/R2 Demonstration (i.e., FF-ICE/X Demo 1 and 2), and 4DT Live Flight Demonstrations (4DT LFDs) and develop outcome that will inform ICAO FF-ICE Implementation Guidance. To support and help verify the engineering analysis, the project will include guided discussion and tabletop exercises with operational SMEs, technical SME, and potentially international partners.

Target: PCAN FF-ICE/R2 Concept

Develop an engineering report to capture gaps between FF-ICE/R2 concepts, which have been matured through PCAN project in FY22, and the ICAO FF-ICE Implementation Guidance and summarize the methodology and activity to bridge the gap. This activity will set us up for having the right input to provide to the ICAO ATM Requirement and Performance Panel (ATMRPP) towards the discussion with other member states and towards maturing FF-ICE Implementation Guidance

Target: FF-ICE/R2 concepts

Develop an engineering report to capture gaps between FF-ICE/R2 concepts, which have been matured through PCAN project in FY22, and the ICAO FF-ICE Implementation Guidance and summarize the methodology and activity to bridge the gap. This activity will set us up for having the right input to provide to the ICAO ATM Requirement and Performance Panel (ATMRPP) towards the discussion with other member states and towards maturing FF-ICE Implementation Guidance

Activity: Multiple Airport Route Separation

Multiple Airport Route Separation (MARS) leverages is the Established on Required Navigation Performance (EoR) concept of considering aircraft established on a Performance Based Navigation (PBN) procedure and extends it to flows of traffic to and from multiple airports in close proximity. During this Fiscal Year, the project will work on a preliminary Benefits Analysis, the MARS Phase I safety analysis, and begin to develop a MARS Concept Video.

Target: Complete MARS Phase 1 HITL DCE

As part of the MARS safety analysis effort, a Human in the Loop Data Collection Effort (HITL DCE) will be needed. HITL Subject Matter Experts (SMEs) will participate in the HITL DCE

Target: Complete Phase 1 Preliminary Launch Site Assessment Report

After Phase 1 draft safety analysis criteria is known, the next steps are to begin the process to select launch site(s). Launch site criteria and candidate sites will be identified. A “MARS Phase 1 Launch Site Assessment Report” will be compiled with findings and recommendation(s).

Activity: Separation Automation System Engineering

Separation Automation System Engineering (SASE) is a pre-implementation program that matures emerging NextGen Separation Management capabilities and develops automation enhancements for En Route, Terminal, and Oceanic domains to support NextGen. Separation Services Engineering (SSE) is a sub project within SASE and focuses on the emerging 2035 Vision.

Target: Conflict Probe Service Analysis Report.

This report will document results, analysis, and recommendations from the Conflict Probe (CP) prototyping task. The assessment includes capabilities, technical opportunities, alternatives, and functional requirements to support future CP functions that may eventually lead towards an agile, performance-based, common CP Service that supports both Oceanic and En Route domains. The report emphasis will also include a consideration of key changes to allow both legacy and future systems to use these services.

Target: Surveillance Data Processing Service Prototype Report

This report will document results, analysis, and recommendations from the Surveillance Data Processing (SDP) service prototyping task. The assessment includes capabilities, technical opportunities, alternatives, and functional requirements to support future SDP functions. The report emphasis will include consideration of common mission services to support all NAS surveillance data processing needs, and key changes to allow legacy and future systems to use these services.

Activity: Flow Object

Today’s NAS has many exchanges of flow information, but there is no common reference for how that information is shared. Without a common picture of the flow domain, it will be difficult to modernize components of the National Airspace System (NAS) or to enable future technologies and information exchanges. A “Flow Object” concept developed in this project will represent a common reference for Flow information

Target: Complete Initial Flow Object Concept of Use Document detailing the Flow Object Concept

The Flow Object concept is in its early stages of development. The concept document will detail information about the concept including actors, use cases, functions, and services contained within the concept.

Target: Complete Flow Object Proof of Concept Demo Plan to document plans and considerations for proof of concept activities

The Flow Object concept will be proven out as part of proof of concept activities. The demo plan will lay out the framework for the development of the proof of concepts, including which stages will be conducted in the upcoming schedule of activities

Target: Complete Flow Object Proof of Concept Infrastructure Readiness Document detailing proof of concept cloud environment

The first proof of concept will be focused on proving out the architecture and information flows

Activity: Flight Object

This program further mature the Flight Object concept, which provide a common reference to flight information in the National Airspace System (NAS). This program also develop a collection of services and verify their capabilities through proof of concept activity. These services can be implemented in the future flight information management system to enable future flight plan filing, flight planning, and collaborative sharing of flight information.

Target: Flight Object and ETM Flight Plan Filing

Provide input into the Upper Class E Traffic Management (ETM) User Community Engagement and the development of ETM Flight Plan Filing Concept of Use. This includes providing functional requirements for flight plan filing (from system implementation perspective), type of information exchange that might need to be added for ETM, interaction between ETM-user and NAS flight plan filing system, and expected area(s) to change in order to accommodate ETM vehicles and operation.

Target: Flight Object Data Reconciliation

Develop engineering report that summarizes the research, results, and lessons learned of the Flight Object Data Store reconciliation function. The analysis will include understanding the required data primarily for FMDS system, associated data sources, performance requirement (for each data), and the required business rules for managing the exchange of data

Target: Proof of Concept 4

Complete the development of Flight Object Proof of Concept #4 capabilities. The planned capabilities to be prototyped include capability to extract, store, manage, and route flight information that support Traffic Flow Management planning (e.g. Early Intent and Trajectory Option Set information) and capability to support high altitude long endurance flight (HALE) in filing flight plan under the constraint of ERAM system

Activity: Closely Space Parallel Operations

CSPO explores concepts to increase airport capacity through reduced separation standards, expand applications of dependent and independent operations, and enable operations in lower visibility conditions. FY23 will focus on conducting safety and engineering analysis as well as concept validation activities for various CSPO separation reduction concepts

Target: White Paper Detailing Readiness Analysis for Reductions in Minimum Radar Separation Document Change Proposal process.

The Closely Spaced Parallel Operations (CSPO) program will review and provide analysis with stakeholders associated with the Reductions in Minimum Radar Separation concept. This analysis will provide the CSPO team an opportunity to review the preliminary results of the safety analysis conducted on this concept and gather feedback on next steps and concerns for the project.

Target: Develop Traffic Collision Avoidance System (TCAS) Models for Closely Spaced Parallel Runway Operations (CSPO) Concepts

The CSPO team will perform a TCAS analysis for various CSPO concepts. This analysis will be conducted at a generic site generated by the CSPO team and identify any alerts that might occur during CSPO operations. Results from the analysis will be used to support future Safety Risk Management Panels for CSPO concepts.

Activity: Common Support Services Flight Data (CSS-FD) Engineering Analysis

The CSS-FD Engineering Analysis will identify and define candidate capabilities for CSS-FD Phase 2; additionally, artifacts and documentation submitted during CSS-FD IARD and Phase 1 IID will be reviewed to identify changes required as a result of Phase 2 scope, engineering analysis, and/or system design.

Target: CSS-FD Phase 2 Scope Definition

Definition-CSS-FD Phase 2 Scope Definition would identify and define high-level functional capabilities for the implementation of future enhancements of CSS-FD, such as Phase 2. The capabilities will consider NextGen priorities, the exit criteria at various AMS checkpoints (such as at IARD, and IID), and implementation feasibility and opportunities. The capabilities and high-level functionality identified will have traceability to the shortfalls previously identified at IARD. The outcome of this activity will be captured in a scoping document that will identify the focus of the CSS-FD Phase 2 research.

Target: Analysis document on the evolution of Trajectory Option Sets (TOS) and Trial Request

This target will evaluate and understand the concept of Trajectory Option Sets (TOS) to identify the operational limitations of TOS. Additionally, this deliverable will address the alignment of the TOS concept in the Collaborative Decision Making (CDM) environment to the concepts in Flight and Flow Information for Collaborative Exchange (FF-ICE), define future interactions between Trial Request, TOS, Early Intent, PFPL and identify any potential challenges envisioned.

Activity: Weather Data Conversion Microservice

Weather Data Conversion Microservice (WDCM) is performing developing a prototype plan and following prototype of a microservice that converts IWXXM weather data products to TAC format to address the impending shortfall of this capability when ICAO updates the mandate to no longer require TAC data.

Target: Draft Prototype Plan

The WDCM project will complete a draft prototype plan based on the previous microservice analysis for the IWXXM-to-TAC problem space. The prototype plan will detail the requirements of the prototype to trial the feasibility of a microservice for this data conversion and will be used by the ANG-C3 WISER lab as guidance for developing the microservices in the lab environment.

Target: Complete Final prototype plan

The WDCM project will complete a final prototype plan based on the previous microservice analysis for the IWXXM-to-TAC problem space. The prototype plan will detail the requirements of the prototype to trial the feasibility of a microservice for this data conversion and will be used by the ANG-C3 WISER lab as guidance for developing the microservices in the lab environment.

Target: Complete Final summary report

The Target will document the development and trial of a series of microservices converting weather data products in the IWXXM format to the TAC format. The detailed report will assess the effectiveness of the prototype and be used for further evaluation of microservices as a solution to this problem. The report will also be informative to future efforts looking to leverage microservice architectures for NAS modernization.

Activity: Notice to Airmen Aircraft Category Information

Conduct additional analysis and develop strategies for additional updates to the NOTAM operating environment and apply modern techniques to support future capabilities

Target: TFR Assistant Proof of Concept 3 Report

Document all technology transfer related activities to include, but not limited to, identifying the artifacts to be transferred, the recipient organization(s), the environment for the technology integration, which can impact how the technology is packaged for transfer, and packaging for technical transfer.

Activity: Crosscutting Operations Strategy and Technical Assessment (COSTA)

NextGen recognizes the need for a cross-cutting construct that will collect, analyze, identify gaps, and allocate the necessary research and engineering activities in an effort to address the holistic NAS needs, as the various operational environments are envisioned, defined and implemented. COSTA will collaborate with the different operational concept stakeholders to define the organizational foundation that harmonizes the envisioned traffic management concepts. This effort will develop an integrated master plan, evaluate common sub-concepts, conduct cross-cutting services analyses, assess performance requirements, and allocate the necessary systems engineering efforts across the various xTM, ATC, and PBFM activities as necessary.

Target: Perform xTM Services Decomposition Analysis

This decomposition document will provide an overview and decomposition of xTM services and interdependencies as appropriate, based on xTM components and attributes previously analyzed. As part of this deliverable, recommendations will be provided for enterprise services to support design of an xTM reference architecture.

Target: Develop xTM Performance Assessment Use Cases

A series of use cases will be developed and documented to validate xTM services in a realistic operational context, including UAS collaborating with larger aircraft

Activity: Flow Information Exchange Model (FLXM)

The Flow Information Exchange Model (FLXM) is a new standard proposed by the FAA for Air Traffic Flow Management (ATFM) information exchange in support of the broader effort to implement enterprise-wide information exchange standards. The goal is to provide a standard for information in the Flow Domain, which has not previously had a standard of its own. The Flow Domain consists of information that describes a Traffic Management Initiative (TMI), or information that exists directly because of it.

Target: Complete Flow XM Data Use Engineering Analysis

FLXM will change the way flow information is exchanged. This data use engineering will help to plan out necessary requirements of the model and future enhancements.

Target: Complete beta version of FLXM release 4.0

The FLXM release will contain enhancements such as ATFM Daily Plan (ADP), as well as additional TMI elements. The FLXM releases are composed of UML models, XML schema, and best use documents

Activity: Digital Constraints

Explore advance technology for example Machine Learning and data analytics techniques to support extraction and digitization of flight constraints embedded in NAS heritage documents such as Letters of Agreement (LOAs). In addition, conduct additional analysis and develop a standardized digital schema of these flight constraints information for use on systems/platform to better capture the information as they are input and can be directly exchanged with minimum processing.

Target: Develop the Digital Constraint Concept of Use (CONUSE) document

The CONUSE will describe the operational needs for digital constraints, who and how this digital constraints is intended to be uses, and under what conditions it is intended or expected that they will use the capability. The CONUSE also identifies stakeholders, their interests in the capability, and future technical requirements necessary to maintain and improve this capability.

Target: Perform a gap analysis to identify the appropriate existing Exchange Model

XM (i.e. AIXM, FIXM, FLXM, WXXM) for describing the LOA flight constraint data. The analysis will examine data elements present in both the XM core and applicable extensions. Once an appropriate XM is identified, the analysis will also identify any gaps in the current schema to ensure the LOA constraint data can be expressed. The XM Gaps Analysis report will document the gaps identified and steps forward to address those gaps. This activity will inform the future development of LOA flight constraint schema

Activity: Wake Turbulence Enhancement Of Arrivals And Departures Collaboration

International working groups are looking at enhanced methods of providing wake turbulence mitigation utilizing currently available technology. ANG-C will lead the development of wake turbulence mitigation separation standards, procedures, processes, and enabling technology research for near, mid, and far term NextGen era operations. ANG-C will assess the performance of the wake turbulence separation processes and utilize those assessments in the design of new NextGen era operations. Team will perform analysis, modeling, concept development, and data collection activities necessary to accomplish the NextGen Wake Turbulence research agenda.

Target: Complete white paper on the Dynamic Wake Proof of Concept validation

Leveraging proof of concept activities done in the previous year, the team will develop white paper that summarizes the Dynamic Wake Proof of Concept validation using operational scenarios

Target: Complete the final report for new aircraft type wake separation recommendations

Complete the final report for new aircraft type wake separation recommendations delivered to the ATO