NAS Enterprise Architecture

Data and Information Management Integrated Views v3.0

Baseline

February 2025



Overview

What are the Integrated Views?

• The NAS EA Integrated Views present an Executive View that depicts the evolution of the National Airspace System (NAS) for a focused area of interest and incorporates applicable inter-related content from the NAS EA such as Roadmaps, Improvements, Increments, Support Activities (pre-implementation research, demonstrations, analyses), as well as relevant external references (e.g. ICAO, DoD, NASA). The views contribute towards our holistic and integrated understanding of the complex inter-relationships necessary for effective planning, analysis, and decision-making, across the enterprise, portfolio, and specific investments.

Guidelines for Understanding the Data & Information Integrated Views

• The Data and Information Management (D&IM) Integrated Views present an Executive View (EV) of the evolution of Air Traffic Management (ATM) information and information products in the National Airspace System (NAS). The views incorporate content from the Business & Technology, Service and NAS Infrastructure Roadmaps, and Support Activities, reflective of the ATM Information Evolution. Additionally, relevant Aviation System Block Upgrades (ASBUs) from the International Civil Aviation Organization (ICAO) Global Air Navigation Plan (GANP) provide global strategic planning context. The views are intended to focus on the sharing and consumption of digital information and the availability of digital information products via investments that enable access, integration, publication, and distribution through applications/services rather than on production capabilities such as data generation and collection. Guided by principles of a service-based architecture and enterprise information management, the integrated views offer a holistic and integrated high-level view of what is needed for an information-centric future NAS that meets the needs of diverse consumers, operators, and service providers.

For more information, please contact: Diana Takata (diana.takata@faa.gov).

Data and Information Management Integrated Views Swimlane Descriptions

| 2016 2017 2018 | 2019 2020 | 2021 | 2022 | 2023 | 2024 2 | 2025 202 | 6 2027 | 2028 | 2029 | 2030 2 | 031 203: | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 203 | 9 |
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| Support Activities | | | | | | arch-oi dmap s | | | ort Act | ivity in | ivestme | nts tha | t info | rm an | nd are | asso | ciated w | ith |
| B&T Roadmaps | Data | a and | l Infe | ormati | on M | Manage | | | iess | & Te | chnolo | gy Ro | adma | | | | cts via t | ne |
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Roadmap Legend

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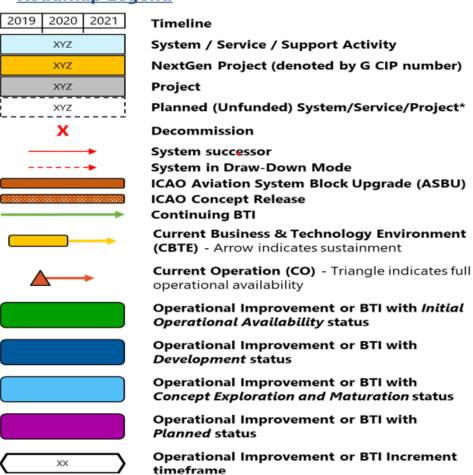
2022

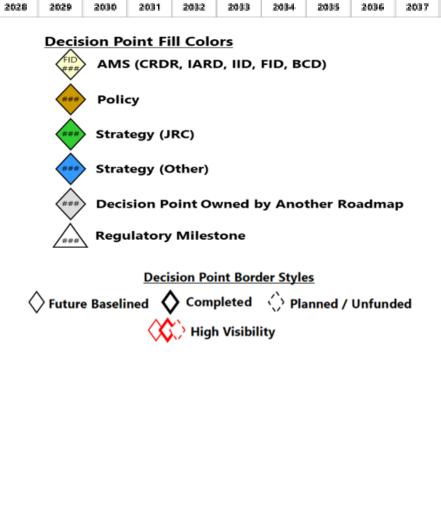
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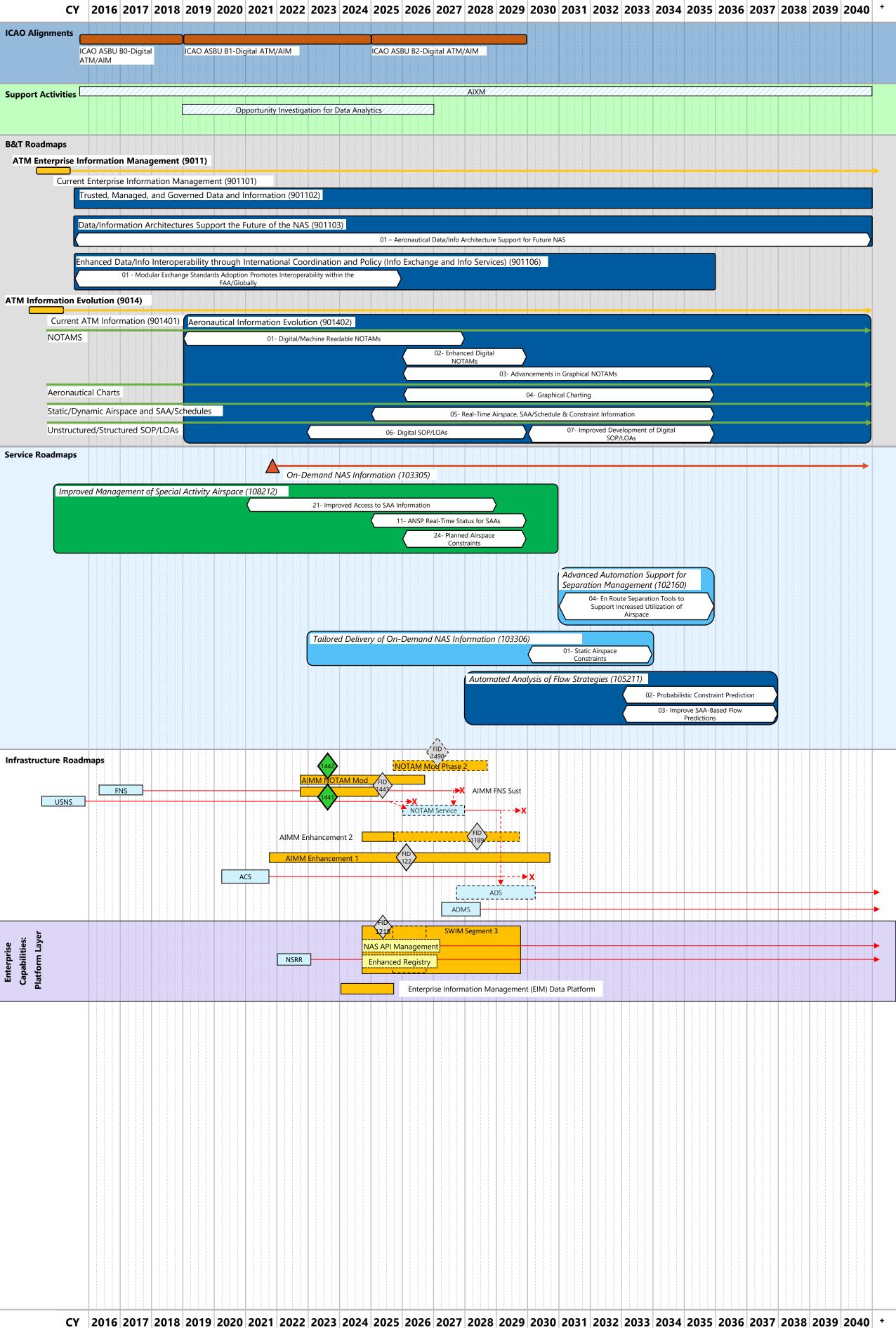
2025

2018 2019





Data & Info Mgmt Integrated View – Aeronautical Information



Data & Info Mgmt Integrated View – Flight Information

2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 **ICAO Alignments** ICAO ASBU B0-FICE (G/G Integration) ICAO ASBU B2-FICE (Multi Center G/G Integration) ICAO ASBU B3-FICE (Full FF-ICE) ICAO ASBU B4-FICE (Flight Data Request) FF-ICE/R1 (Planning phase) FF-ICE R3 (TBD) FF-ICE/R2 (Execution phase) **Support Activities** FIXM Maturing FF-ICE/R2 Concept **B&T Roadmaps** ATM Enterprise Information Management (9011) Current Enterprise Information Management (901101) Trusted, Managed, and Governed Data and Information (901102) Data/Information Architectures Support the Future of the NAS (901103) 02 - Flight Data/Info Architecture Support for Future NAS Enhanced Access and Control to Data/Information through EIM Capabilities and Services (901104) 04- Flight Information Service for Command and Control Enhanced Data/Info Interoperability through International Coordination and Policy (Info Exchange and Info Services) (901106) 01 - Modular Exchange Standards Adoption Promotes Interoperability within the FAA/Globally **ATM Information Evolution (9014)** Current ATM Information (901401) Flight Information Evolution (901403) Flight Plans 01- R1 FIXM Formatted Flight Plan 02- R2 Enhanced Flight Plan **Service Roadmaps** Provide Automated Flight Plan Constraint Evaluation with Feedback (101104) 21- Constraint Evaluation Feedback Provide Flight Plan Evaluation and Feedback in all Phases of Flight (101103) 32- Aircraft Access to Advanced Flight Planning Information Flight Management with Trajectory (101202) 23- Extended Flight Planning Horizon *Improved Airborne Reroutes (105209)* 02- Airborne Trajectory Negotiation Improved Aircraft Trajectories (102146) 22- Air-to-Ground Trajectory Synchronization Automated Support for More Complex Trajectory Negotiation (102162) 23- Initial Air-Ground Synchronization of Aircraft Intent Flight Planning CSS-FD Common Mission Services CSS-FD Future Common Mission Services FMDS Common Mission Services FMDS Future Common Mission Services Traffic Flow FID NAS API Management Enterprise SFDPS **Enhanced SFDPS** NSRR **Enhanced Registry** Enterprise Information Management (EIM) Data Platform 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040

Data & Info Mgmt Integrated View – Flow Information 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 **ICAO Alignments** Extended arrival metering Increased utilization of runway capacity by Point merge Integration of arrival and departure management improved real-time runway scheduling Short Term ATFM measures Improved operator fleet management in runway sequencing Enhanced Network Operations Planning Enhanced ATFM slot swapping Full TBO context Target Times for ATFM purposes **Support Activities** FLXM Futures Flight and Flow Concept Exploration **B&T Roadmap ATM Enterprise Information Management (9011)** Current Enterprise Information Management (901101) Trusted, Managed, and Governed Data and Information (901102) Data/Information Architectures Support the Future of the NAS (901103) 03 – Flow Data/Info Architecture Support for Future NAS Enhanced Access and Control to Data/Information through EIM Capabilities and Services (901104) Enhanced Data/Info Interoperability through International Coordination and Policy (Info Exchange and Info Services) (901106) 01 - Modular Exchange Standards Adoption Promotes Interoperability within the ATM Information Evolution (9014) Current ATM Information (901401) Flow Information Evolution (901405) 01- ATFM Measures/TMIs in FLXM format **Service Roadmap** Enhanced Time Based Metering Operations in All Weather (104120)Time-Based Metering in the Terminal Environment (104128)Improved Arrival/Departure Operations with Integrated Data (104130) Improved Arrival Metering Operations (104131) Full Surface Traffic Management with Conformance Monitoring (104206) Surface Traffic Management (104211) Improved Traffic Management Initiatives with Integrated Data (105210) Automated Analysis of Flow Strategies (105211) Integrated Demand Management (105213) **Infrastructure Roadmaps** TBFM Future Common Mission Services Refactor select TBFM TBFM capabilities Rearchitect TBFM TBFM Enhancement 2 Refactor select TFDM capabilities TFDM Mission Services **Traffic Flow** FMDS Future Common Mission Services FID OS Common Mission Services FMDS Enhancement 1 Flow Management Data & Service **FMDS** TFMS Enterprise Information Management (EIM) Data Platform Capabilities: Platform Layer NAS API Management NSRR **Enhanced Registry**

Data & Info Mgmt Integrated View – Weather Information 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 **ICAO Alignments** Meteorological observations Meteorological observations information expansion Enhanced Integration of Data-Centric Info Initial Integration of Data-Centric Info products Meteorological forecast and Meteorological forecast and warning information Enhanced Ensemble prediction, enhanced VA Integration of Enhanced Probabilities for Data Centric and Ensemble-Derived Predictions WAFS, HWIS warning products Provision of Climatological Enhanced climatological data to better support Initial expansion of climatology data and scope to include Enhanced expansion of Climatological data and scope satellite and in-situ sources and changes that can affect ATM ATM infrastructure products IWXXM replaces TAC; Intro web services Enhanced IWXXM schemas/formats Initial dissemination of Met Info in IWXXM Data-Centric dissemination into SWIM with initial B2B services **IWXMM Support Activities** Hybrid Solution for Visibility Information Offshore Precipitation Capability FAA Weather Strategy Synthetic PIREP Generation PIREP Smart Solicitation PIREP Interface and Hands-Minimized Follow-On **B&T Roadmaps** ATM Enterprise Information Management (9011) Current Enterprise Information Management (901101) Trusted, Managed, and Governed Data and Information (901102) Data/Information Architectures Support the Future of the NAS (901103) 04 - Weather Data/Info Architecture Support for Future NAS Enhanced Data/Info Interoperability through International Coordination and Policy (Info Exchange and Info Services) (901106) 01 - Modular Exchange Standards Adoption Promotes Interoperability within the FAA/Globally **ATM Information Evolution (9014)** Current ATM Information (901401) Weather Information Evolution (901404) 01 – Implement IWXXM and Global Interoperability Standards for Weather Information 02 -Establish Common Weather Information/Knowledge Reference 03 - Multi-Sensor Data and Fusion Technology for Derived/Synthetic Weather **Service Roadmaps** Integration of Weather Information Into NAS *Improved Aviation Weather Information (103120)* 08- Enhanced Automated Winter Automation and Decision Making (103123) Weather Information 03- Enhanced Icing Information 04- Expanded Turbulence Information 21- Enhanced Convective Weather Using Satellite-Based Observation in Offshore Oceanic Airspace Enhanced Time Based Metering Operations in All Weather (104120) 21- Sustain Metering in Variable Operational Conditions 32- Rerouting During Metering Operations Qualified Weather Information (103401) Infrastructure Roadmaps Common Support Services Wx CSS-Wx Weather Common Mission Services Wx Processing NWP ITWS Wx Obs/Sensors Visual Weather Observation System (VWOS) Weather Camera Enhancement 1 Weather Camera (Sys Ops) STARS Terminal Precipitation on Glass (TPoG) FMDS Enhancement 1 Flow Management Data & Service **FMDS** TFMS TBFM E-IDS Phase 1 E-IDS Phase 2 E-IDS Vendor Wx Data Services Vendor Wx Data to TFMS (FMDS) NOAA/NWS Wx Services NOAA Satellite Vendor Satellite Imagery (Visual and IR) & products Data Services Enterprise Information Management (EIM) Data Platform Platform Layer SWIM Segment 3 NAS API Management NSRR **Enhanced Registry**

2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040