

NAS Enterprise Architecture

Infrastructure Roadmaps Version 7.0

Aircraft—Air-Ground—Automation—Airport—Weather—
Communication—Navigation—Surveillance—Airspace &
Procedures—Enterprise Services—Facilities—Human
Systems Integration—Information Systems Security—Safety

APPROVED

December 18, 2012



Federal Aviation
Administration



Table of Contents

Infrastructure Roadmap Legend	3
Aircraft Roadmaps	4
Air-Ground Roadmaps	18
Automation Roadmaps	33
Airport Roadmaps	53
Weather Roadmaps	63
Communication Roadmaps	73
Navigation Roadmaps.....	82
Surveillance Roadmaps	89
Airspace & Procedures Roadmaps.....	96
Enterprise Services Roadmaps.....	102
Facilities Roadmaps	112
Human Systems Integration Roadmaps	118
Information Systems Security Roadmaps.....	128
Safety Roadmaps	134
Appendix A: Acronym List	153

Infrastructure Roadmap Legend

2012	2013	2014	Timeline
XYZ			System / Service / Support Activity
XYZ			Project
XYZ			Planned (Unfunded) System/Service/Project*
XYZ			Project related to SWIM Segment 1
XYZ			Project related to SWIM Segment 2
XYZ			Project related to Data Communications Segment 1
XYZ			Project related to Data Communications Segment 2
XYZ			Operational Node / Procedure / Capability / Other Architecture Object

-  Decommission
-  System successor
-  System in Draw-Down Mode

Decision Point Fill Colors

-  AMS (CRDR, IARD, IID, FID, BCD, ISD)
-  Policy
-  Strategy (JRC)
-  Strategy (Other)
-  Decision Point Owned by Another Roadmap

Decision Point Borders**

-  Future Baseline Decision Point; High Priority
-  Future Baseline Decision Point; Non-High Priority
-  or  Completed Decision Point
-  Planning Decision Point

* Applies to any fill color type

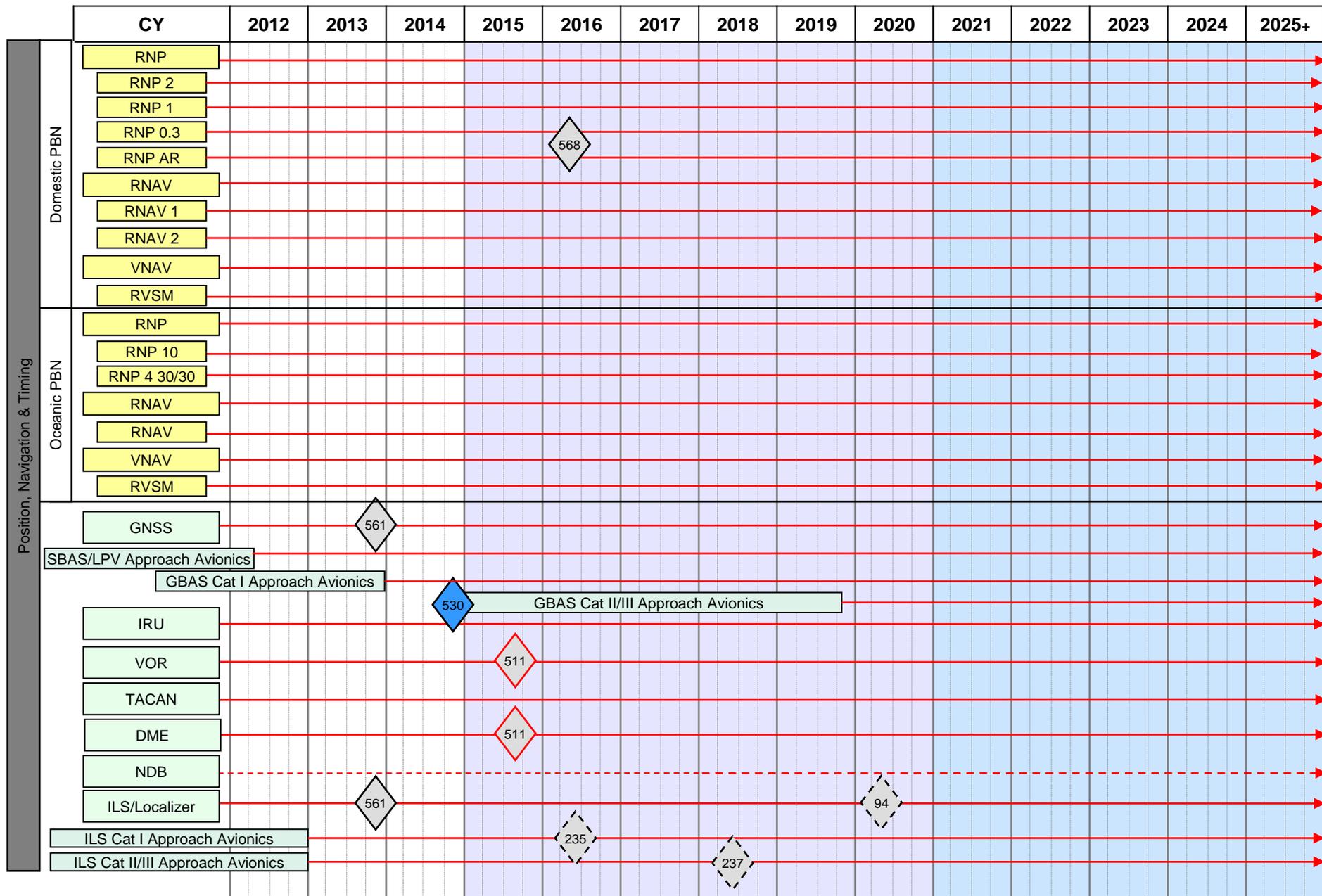
** Applies to any Decision Point fill color type

Aircraft

Objective : The Aircraft roadmap presents planned advances in Airframe and Avionics in coordination with NAS NextGen improvements.

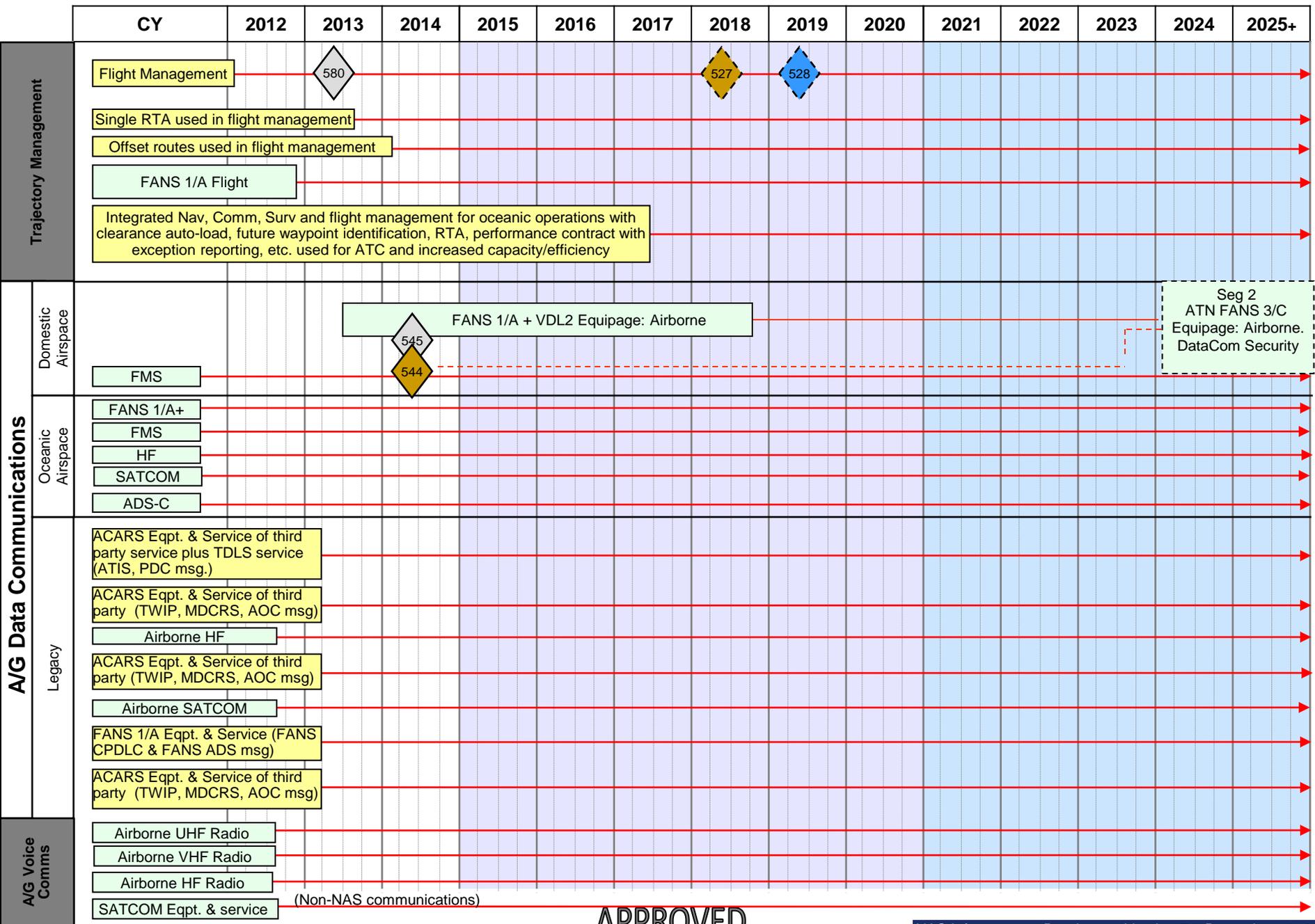
APPROVED

Aircraft Roadmap (1 of 10)



APPROVED

Aircraft Roadmap (2 of 10)

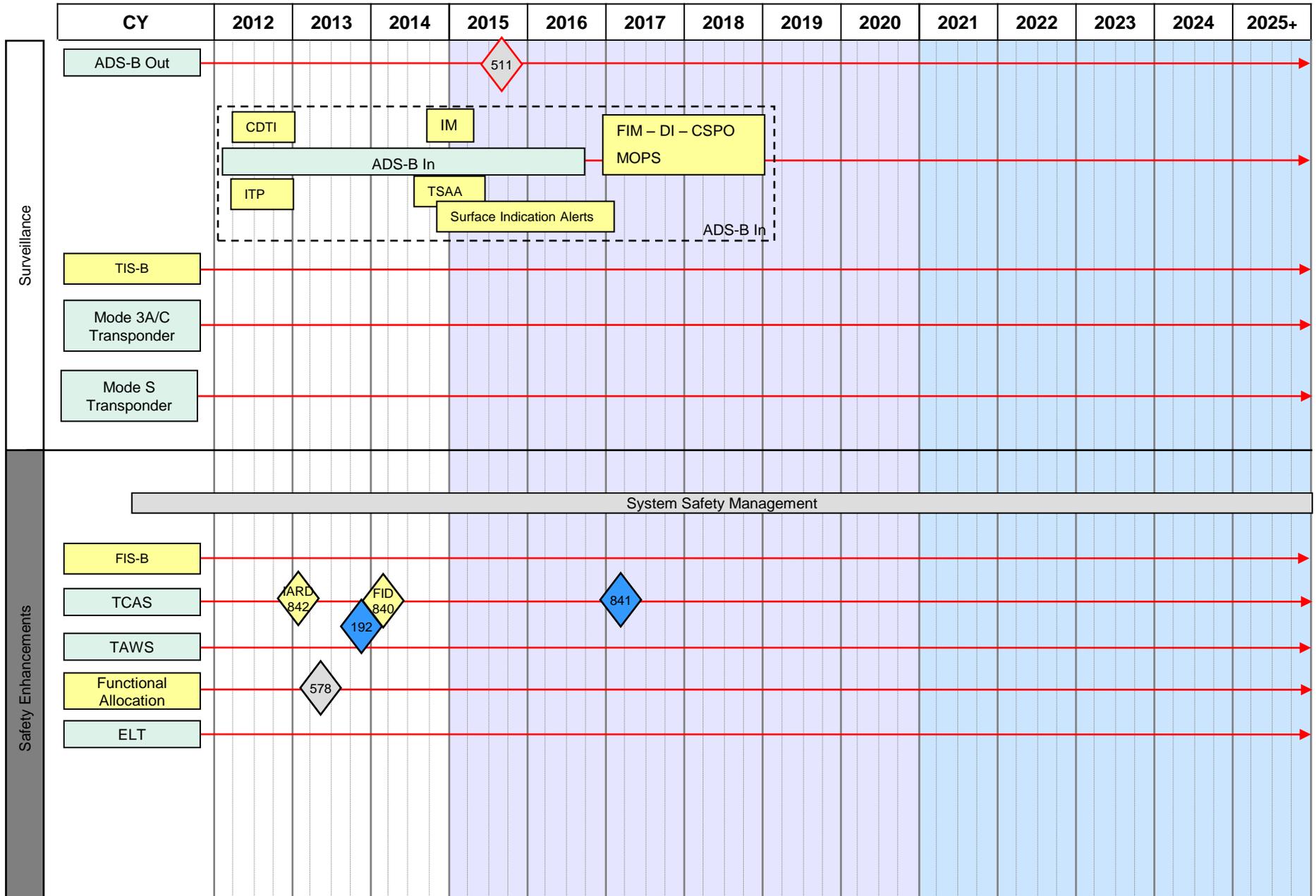


Seg 2
ATN FANS 3/C
Equipage: Airborne.
DataCom Security

545
544
FANS 1/A + VDL2 Equipage: Airborne

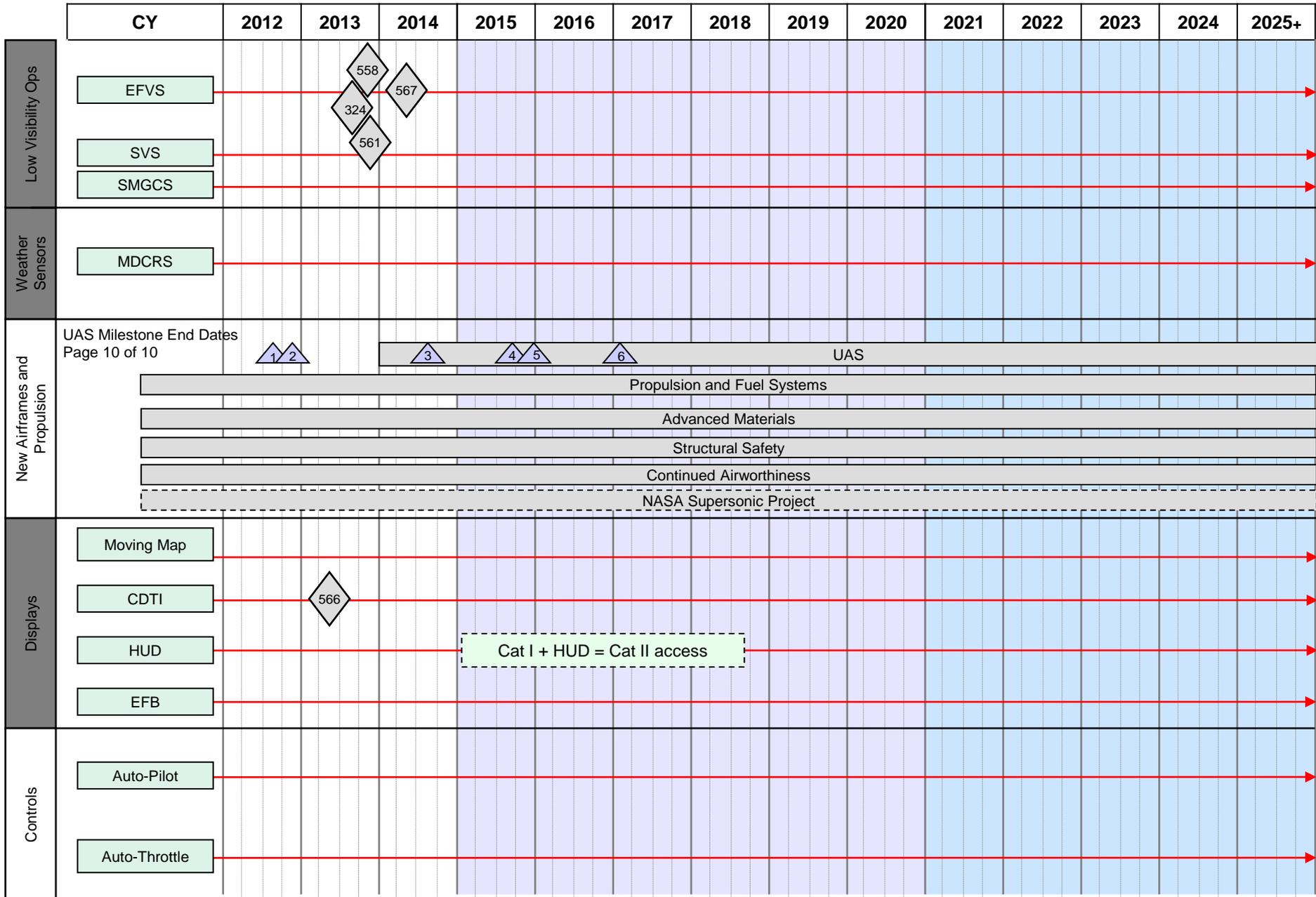
APPROVED

Aircraft Roadmap (3 of 10)



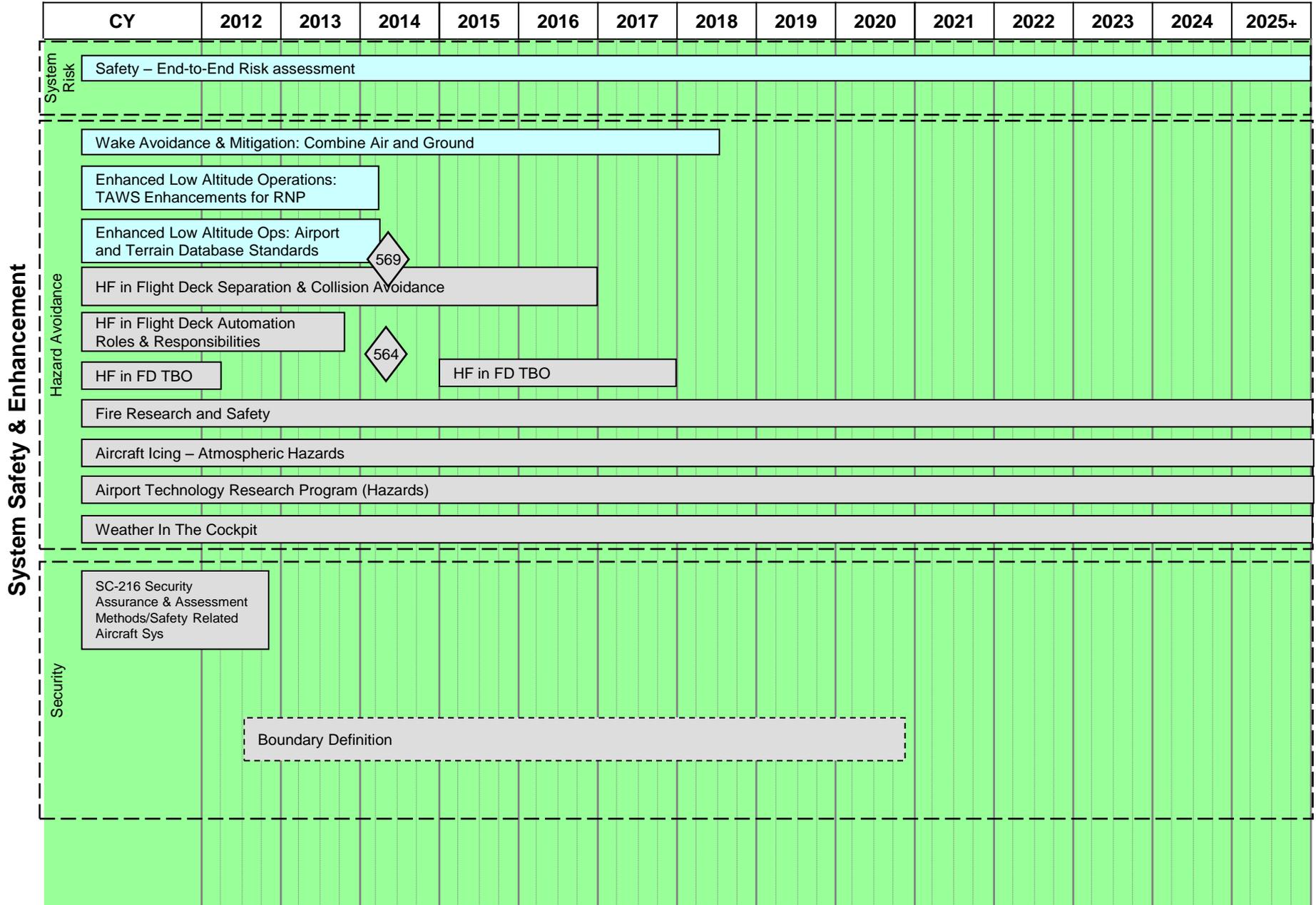
APPROVED

Aircraft Roadmap (4 of 10)



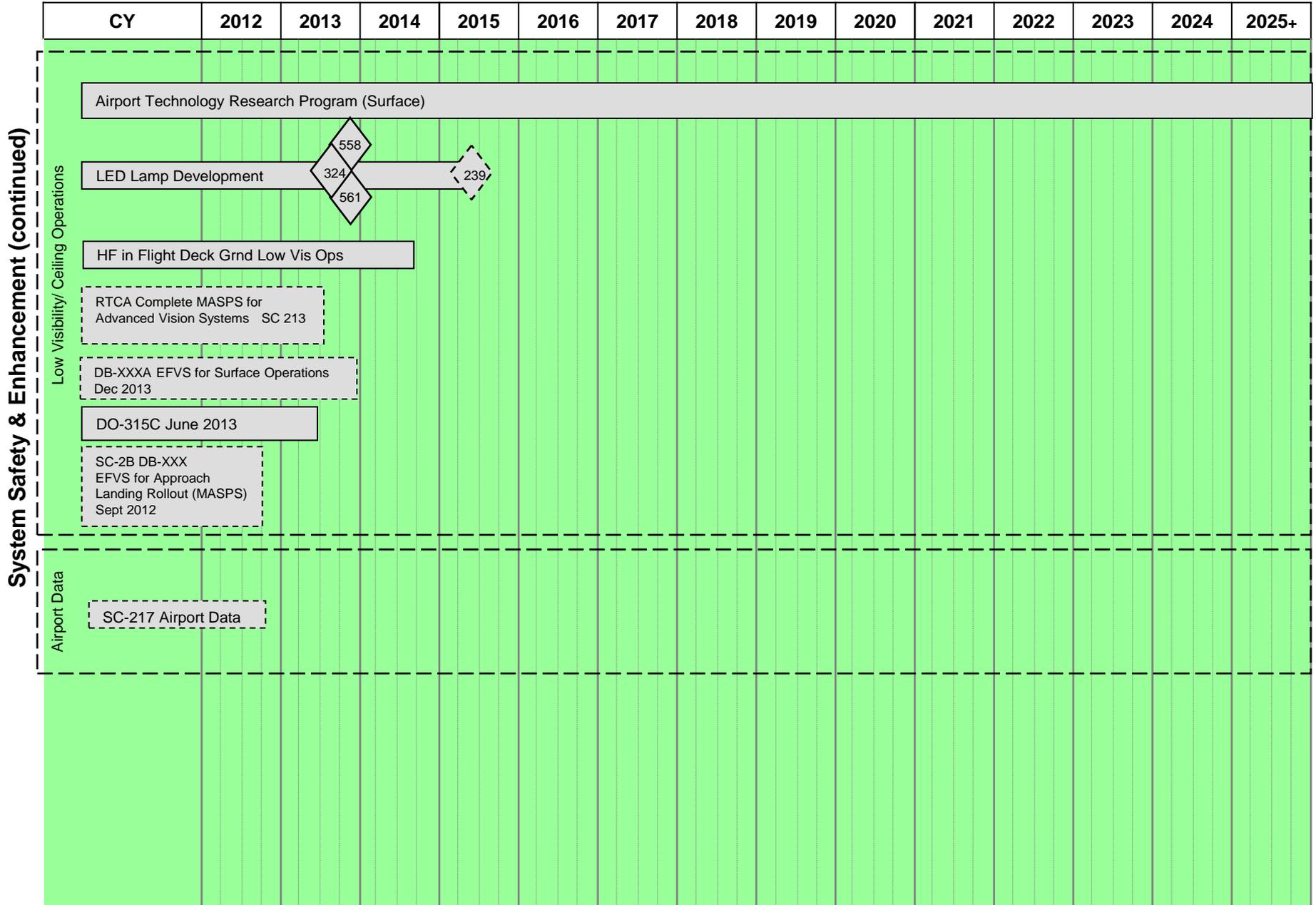
APPROVED

Aircraft Roadmap (5 of 10)



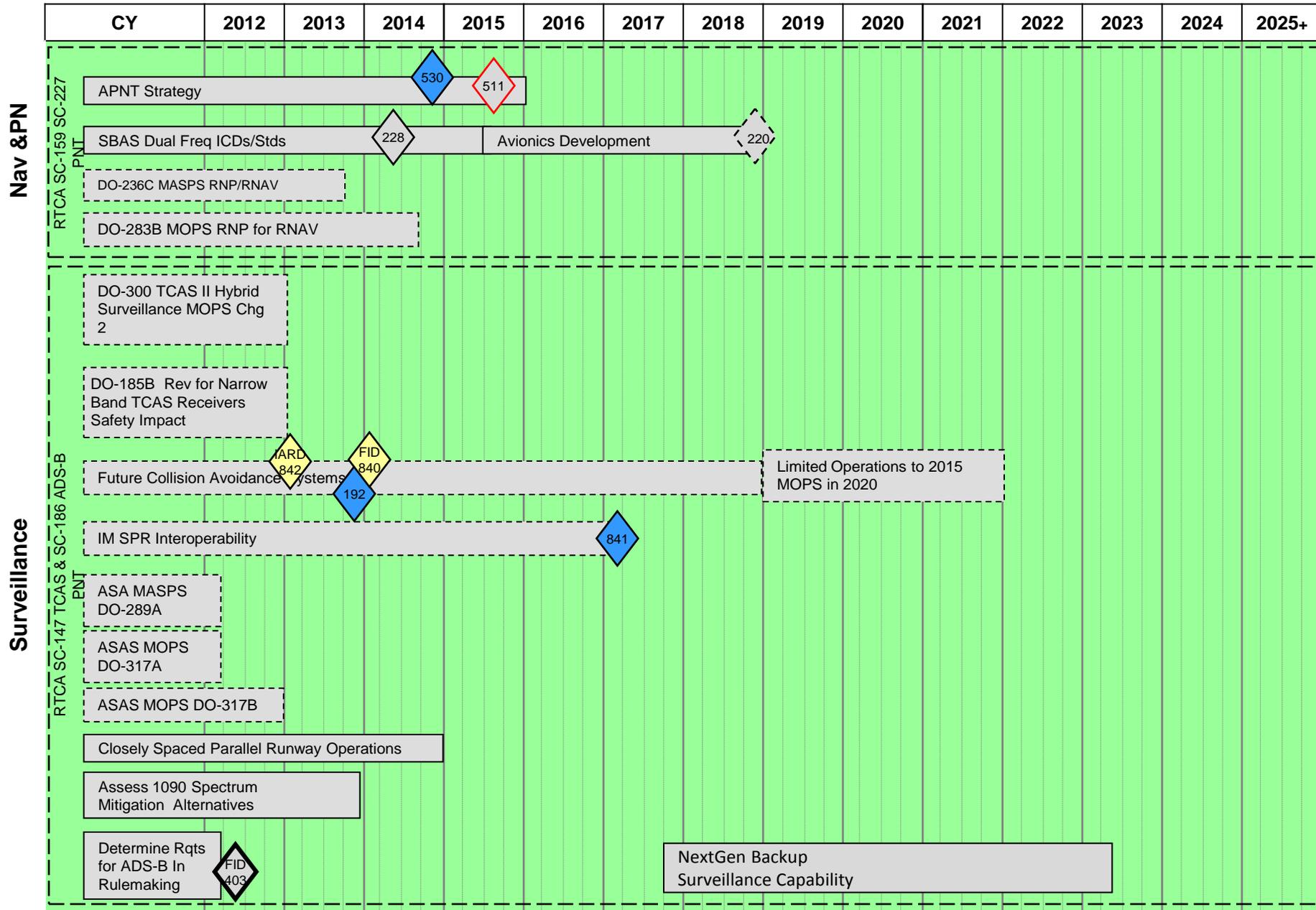
APPROVED

Aircraft Roadmap (6 of 10)



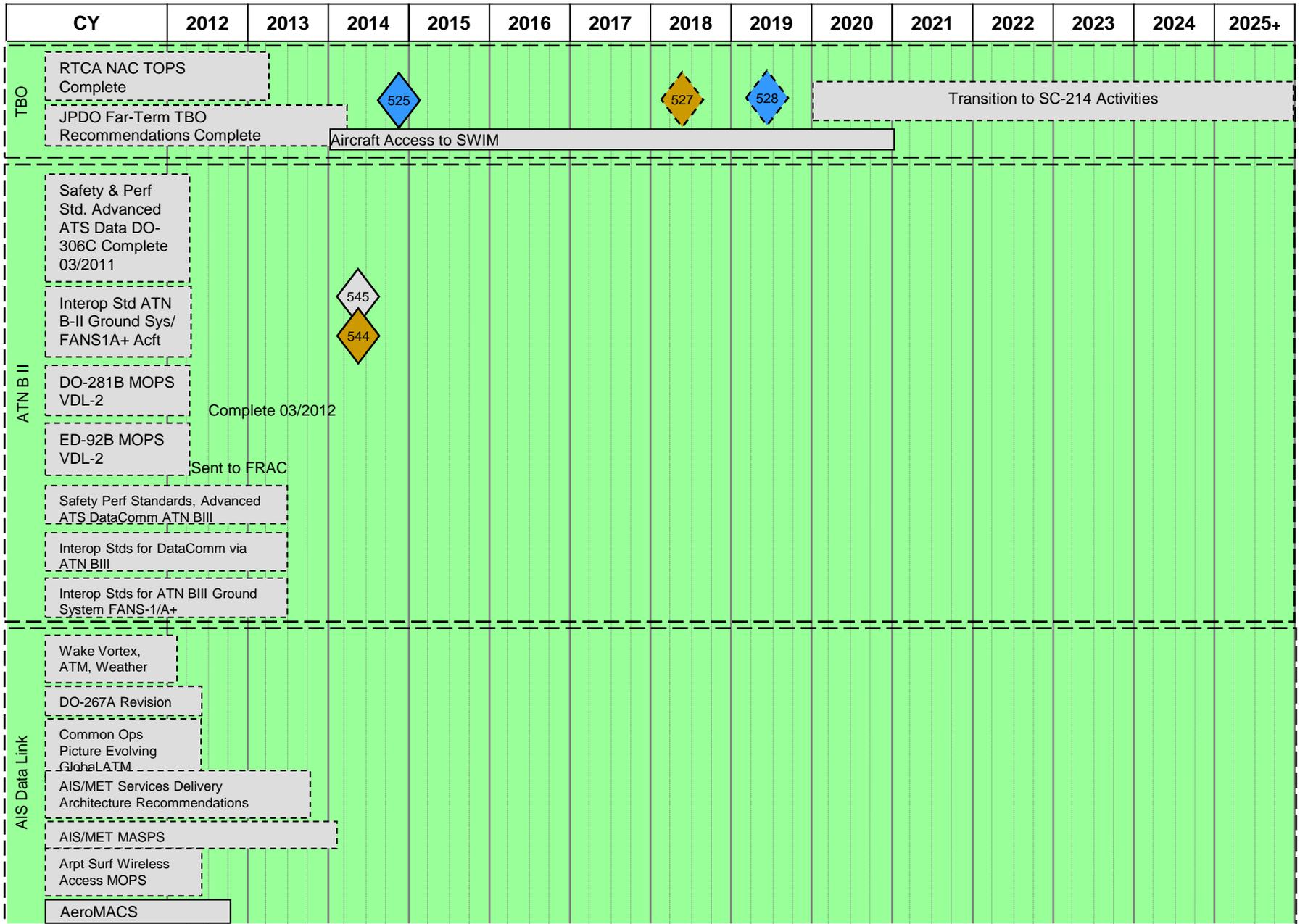
APPROVED

Aircraft Roadmap (7 of 10)



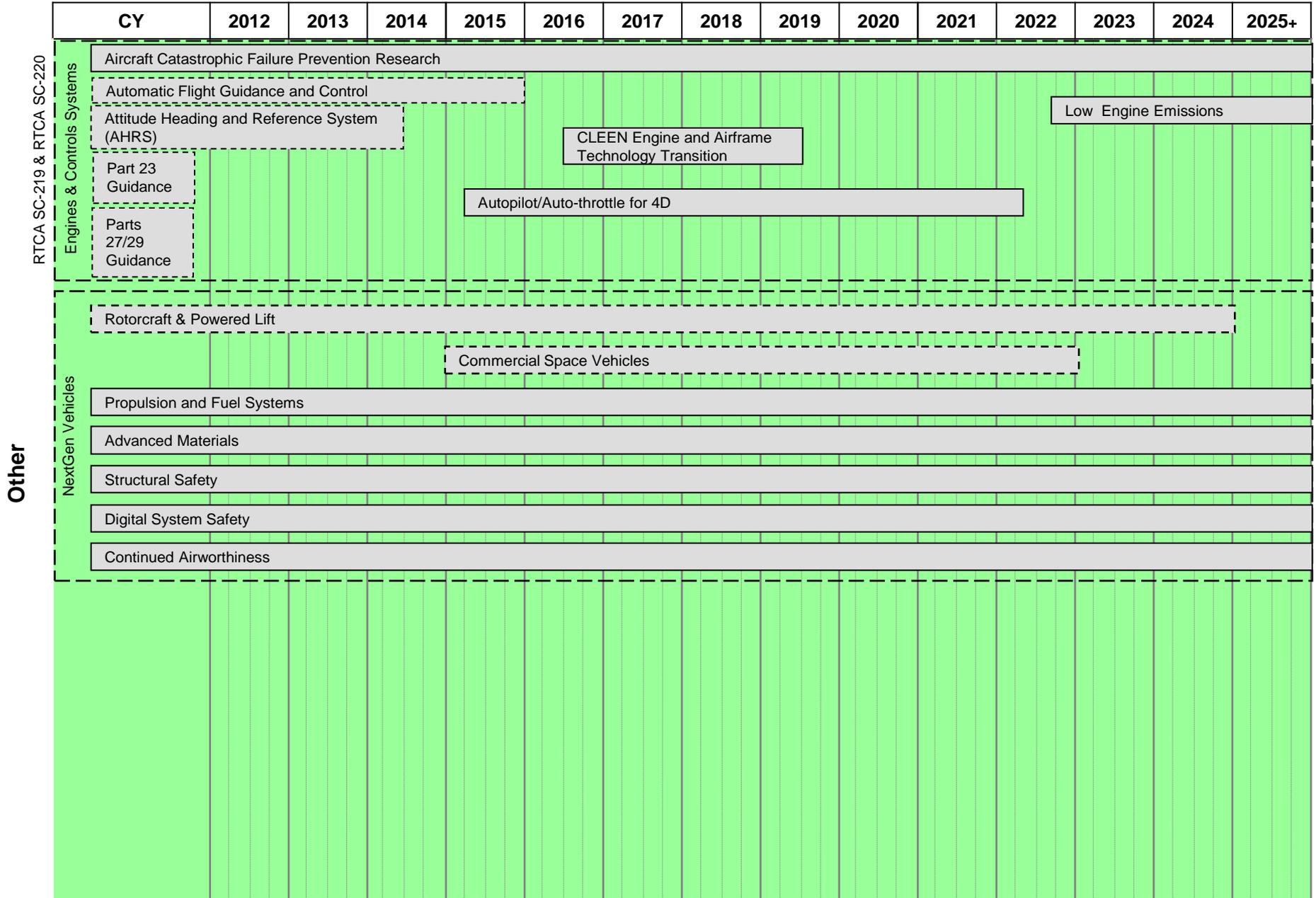
APPROVED

Aircraft Roadmap (8 of 10)



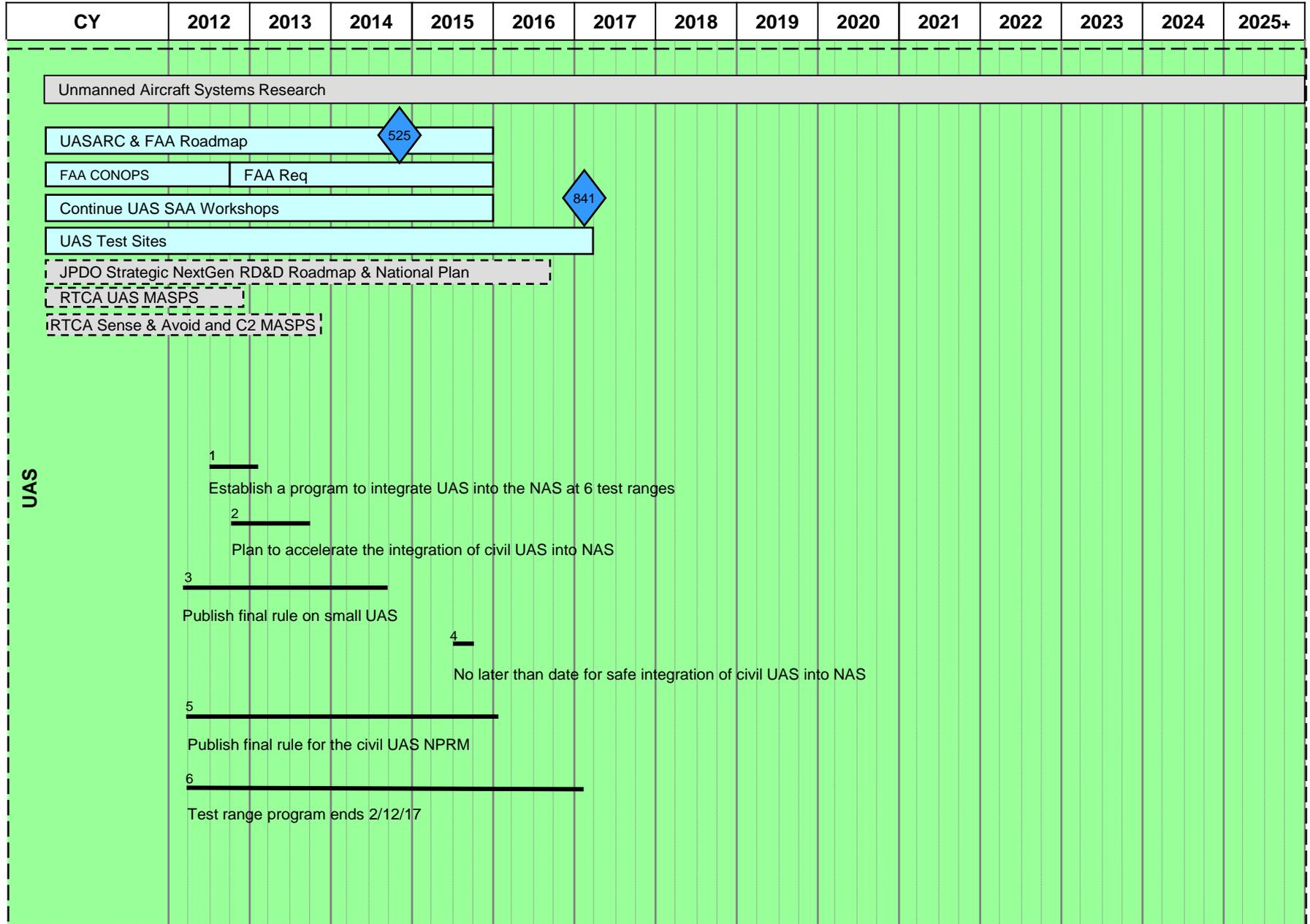
APPROVED

Aircraft Roadmap (9 of 10)



APPROVED

Aircraft Roadmap (10 of 10)



APPROVED

Aircraft Roadmap: Assumptions

Identifier	Description
AC-01	<p>The roadmap identifies four phases</p> <ul style="list-style-type: none">a) Conops development and R&D in required areasb) Standards developmentc) AVS Approvald) ATC Procedure developmente) Deployment. After the standards process is complete, and manufacturers have developed, integrated, fully tested and made new avionics available, aircraft, engines and fuels available, an additional 7 to 10 years is needed to achieve wide scale equipage of a new capability<ul style="list-style-type: none">1. Different aircraft are expected to equip with different equipment. This roadmap does not currently distinguish between aircraft types.
AC-02	The aircraft roadmap includes environment research areas and assumptions and linkage to Non-NAS EA.
AC-03	Any aircraft to include any UAS that participates in the NAS must operate in a way that is transparent to the ANSP and ATSP.

Aircraft Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
94	2020 Q2	N	Navigation	Policy	Policy decision on complete Instrument Landing System (ILS) CAT I drawdown
192	2013 Q4	N	Aircraft	Strategy (Other)	Incorporate expected changes to TCAS, Conflict Probe, and Conflict Management into coordinated Air-Ground Safety Network
220	2018 Q4	N	Navigation	Strategy (Other)	Decision to cut over to Dual Frequency Operations based on completion of Dual Frequency (GPS L1 and L5) development & testing.
228	2014 Q2	Y	Navigation	Strategy (Other)	Decision to proceed with WAAS dual frequency avionics activities to validate standards and lower risk for avionics development.
235	2016 Q2	N	Navigation	Strategy (Other)	Strategy Decision on active drawdown of CAT I ILSs operating in the NAS
237	2018 Q2	N	Navigation	Strategy (Other)	Strategy Decision on replacement CAT II/III ILSs operating in the NAS
239	2015 Q2	N	Navigation	Strategy (Other)	Strategy Decision to proceed with ALS (I) Production LED Lamps for MALSRS systems based on results of Benefit Cost Analysis
324	2013 Q3	N	Navigation	Strategy (Other)	Decision to proceed with ALS (I) LED lamps, based on Operational Capability Demonstration with Enhanced Flight Vision System (EFVS) aircraft
403	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for SBS
511	2015 Q3	Y	Navigation	Strategy (JRC)	Alternate Position, Navigation, and Timing (APNT) solution determined
525	2014 Q4	N	Aircraft	Strategy (Other)	Decision to Harmonize UAS ARC Recommendations & FAA Roadmap
527	2018 Q2	N	Aircraft	Policy	Decision on proposed set of trajectory Management performance levels
528	2019 Q2	N	Aircraft	Strategy (Other)	Develop Initial Guidance for NextGen FMS
530	2014 Q4	N	Aircraft	Strategy (Other)	Complete MOPS Draft for GBAS Category I and Category II
544	2014 Q2	N	Aircraft	Policy	Complete Guidance under SC 214 for Avionics
545	2014 Q2	N	Communication	Strategy (Other)	Strategy Decision to Approve Draft SC-214 MOPS

Aircraft Roadmap: Decision Points (1 of 2)

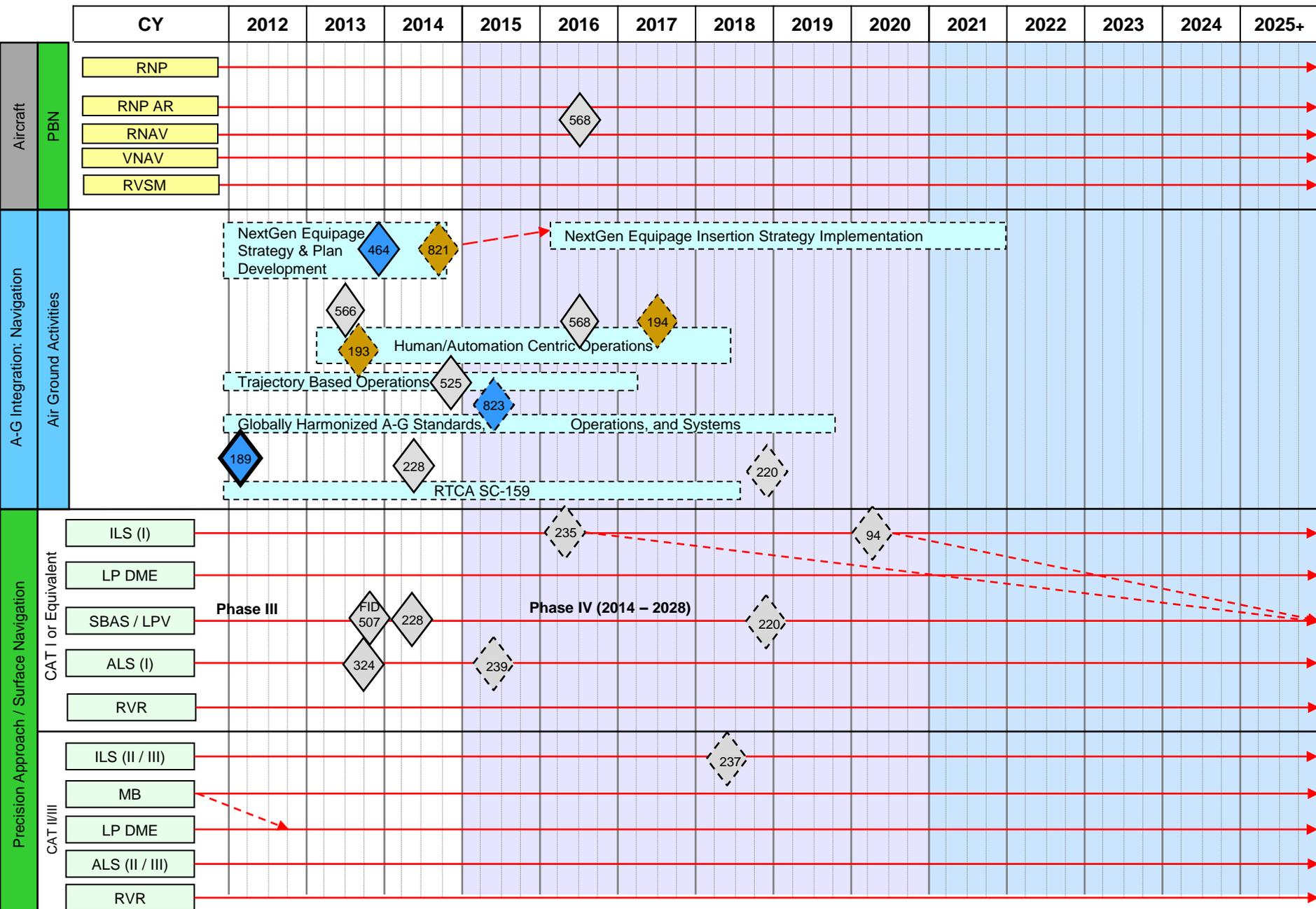
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
558	2013 Q4	N	Airport	Policy	Decision to Implement LED Airport Lighting Phase In
561	2013 Q4	N	Airport	Policy	Decision to Implement Energy Independence and Security Act (EISA) Compliance Policy
564	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Safety Requirements for NextGen Single Pilot Operations
566	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Air Crew DataComm Requirements for Displays & Procedures
567	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Procedures and Training Requirements for Low Visibility Ground Operations
568	2016 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Human Factors Guidelines for NextGen Instrument Procedures
569	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Requirements for Enhanced Flight Deck Displays for Separation and Collision Avoidance
578	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Guidelines for Flight Deck Functional Allocation and Roles for New Automated Systems
580	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Recommended Methods and Training for Managing Error with Flight Deck User Interfaces
840	2014 Q1	N	Aircraft	FID	Final Investment Decision (FID) for WP1 TCAS-2 Tech Refresh
841	2017 Q1	N	Aircraft	Strategy (Other)	Strategy Decision to move forward on WP2 for UAS GA Collision Avoidance Approving Authority AJM-O
842	2013 Q1	N	Aircraft	IARD	Investment Analysis Readiness Decision (IARD) for WP1 TCAS-2 Tech Refresh

APPROVED

Air-Ground

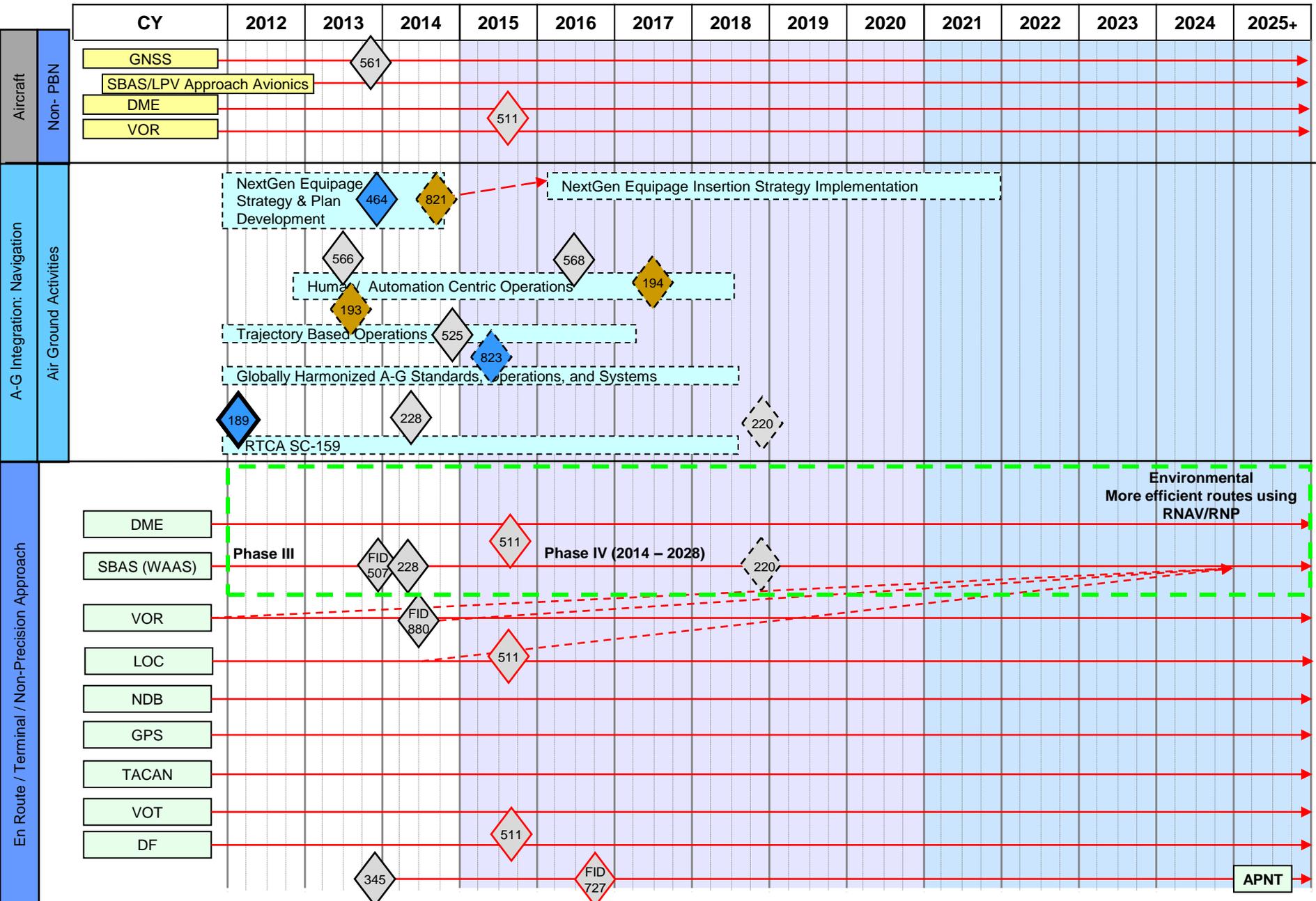
Objective: The Air / Ground Roadmap addresses those operational and Engineering Challenges associated with implementing NextGen Services. The Air- Ground Roadmap identifies enabling Support Activities and Initiatives that address Air-Ground Integration, Global Harmonization, and Air Traffic Management Interoperability.

Air-Ground Roadmap (2 of 8)



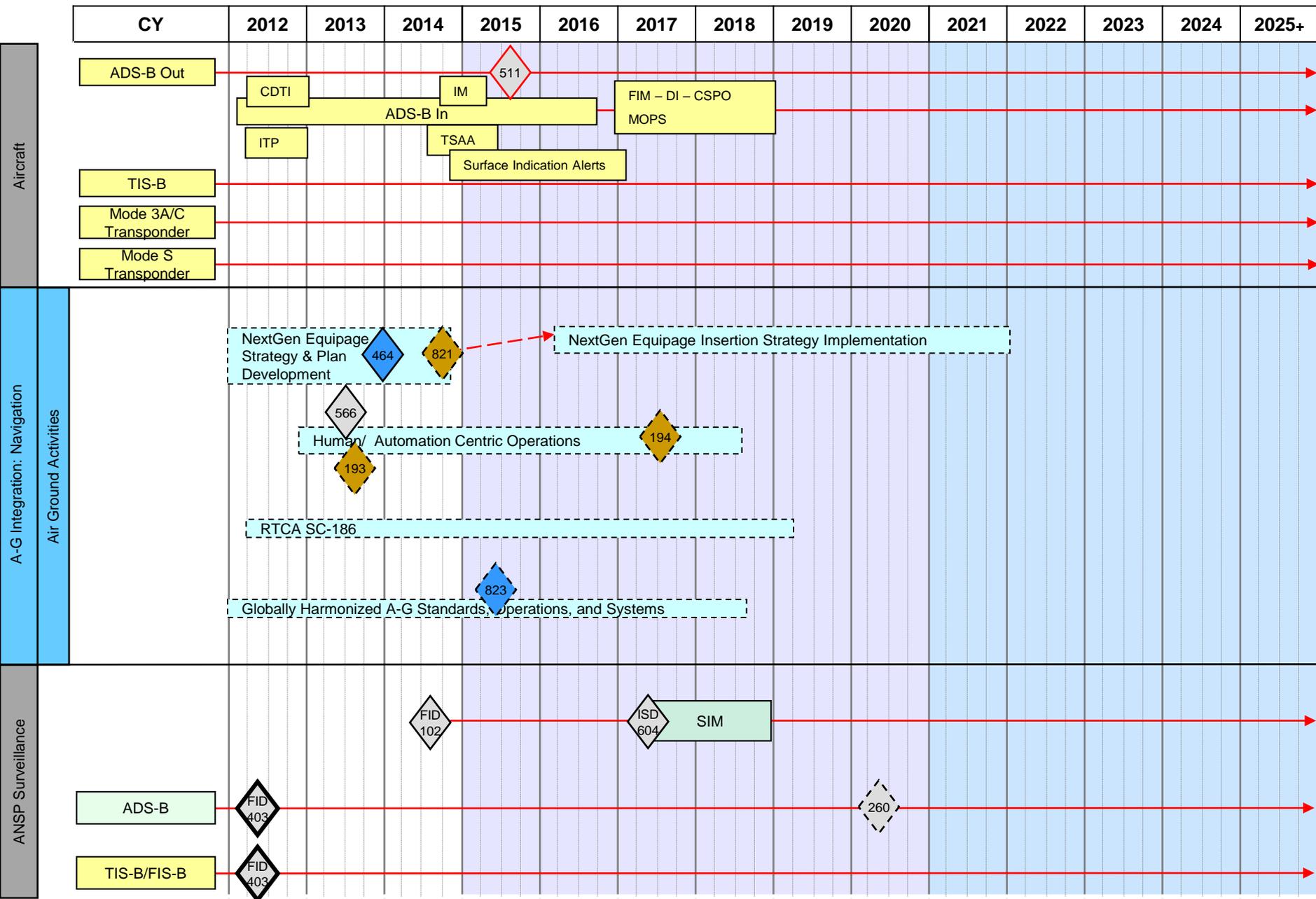
APPROVED

Air-Ground Roadmap (3 of 8)



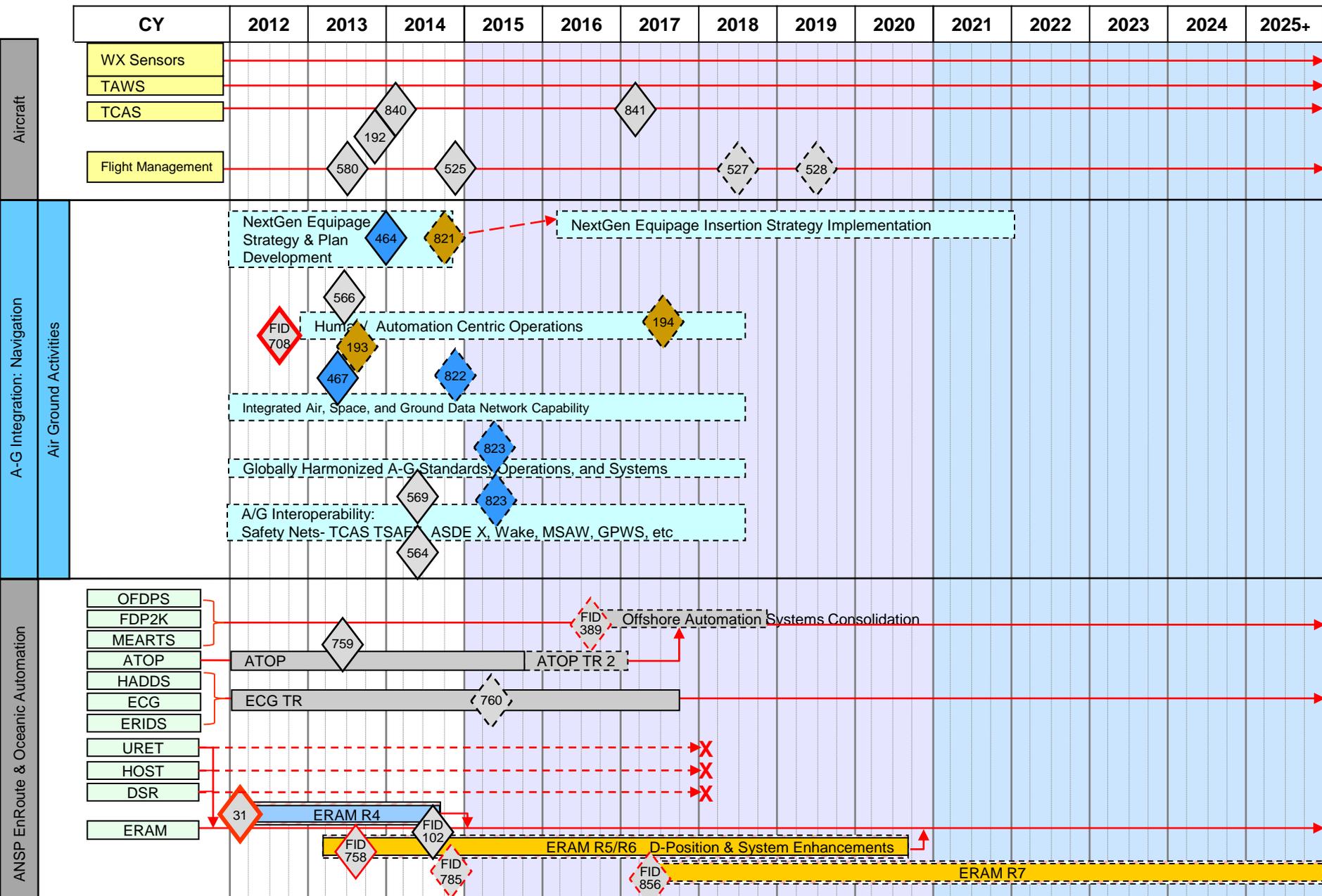
APPROVED

Air-Ground Roadmap (4 of 8)



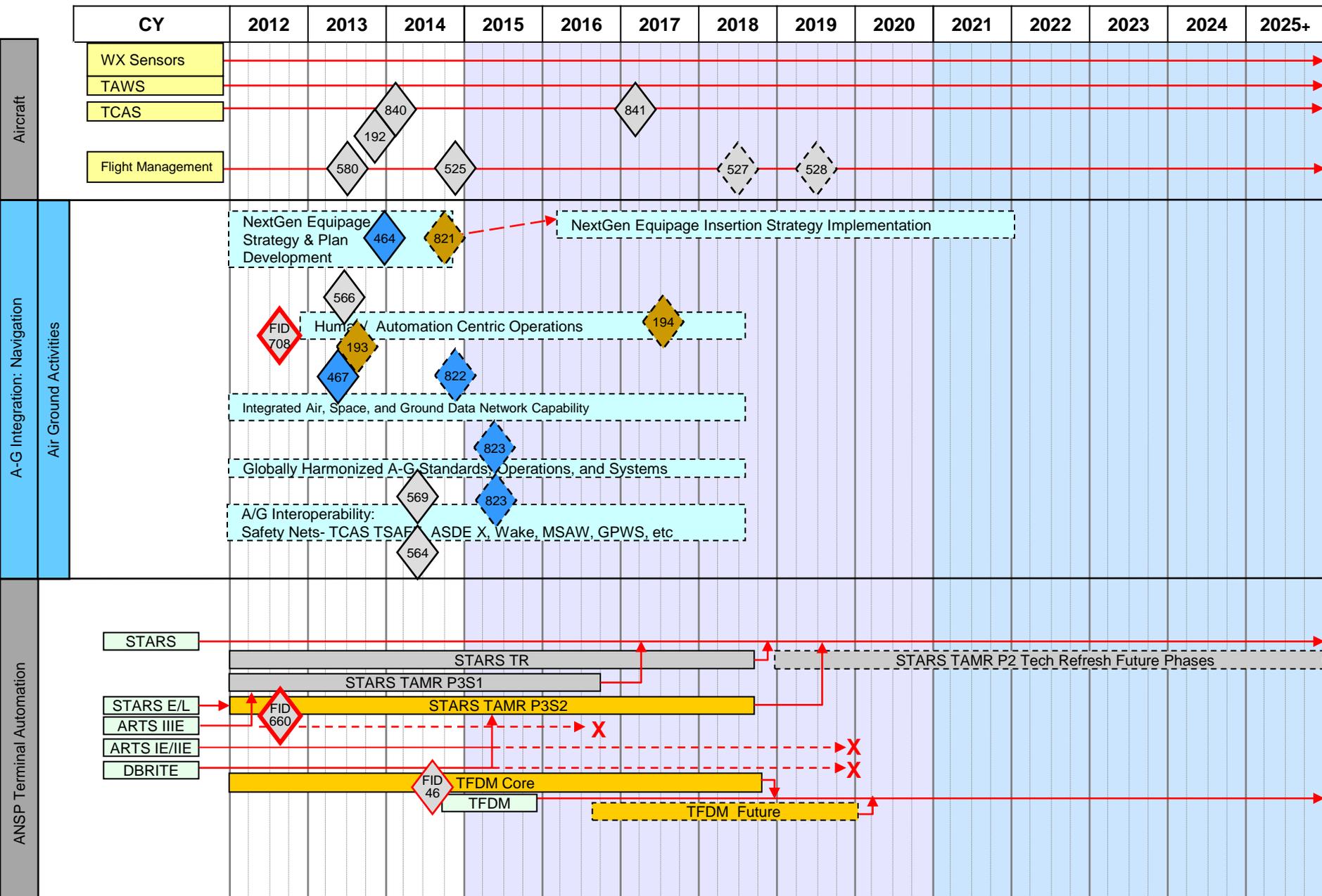
APPROVED

Air-Ground Roadmap (5 of 8)



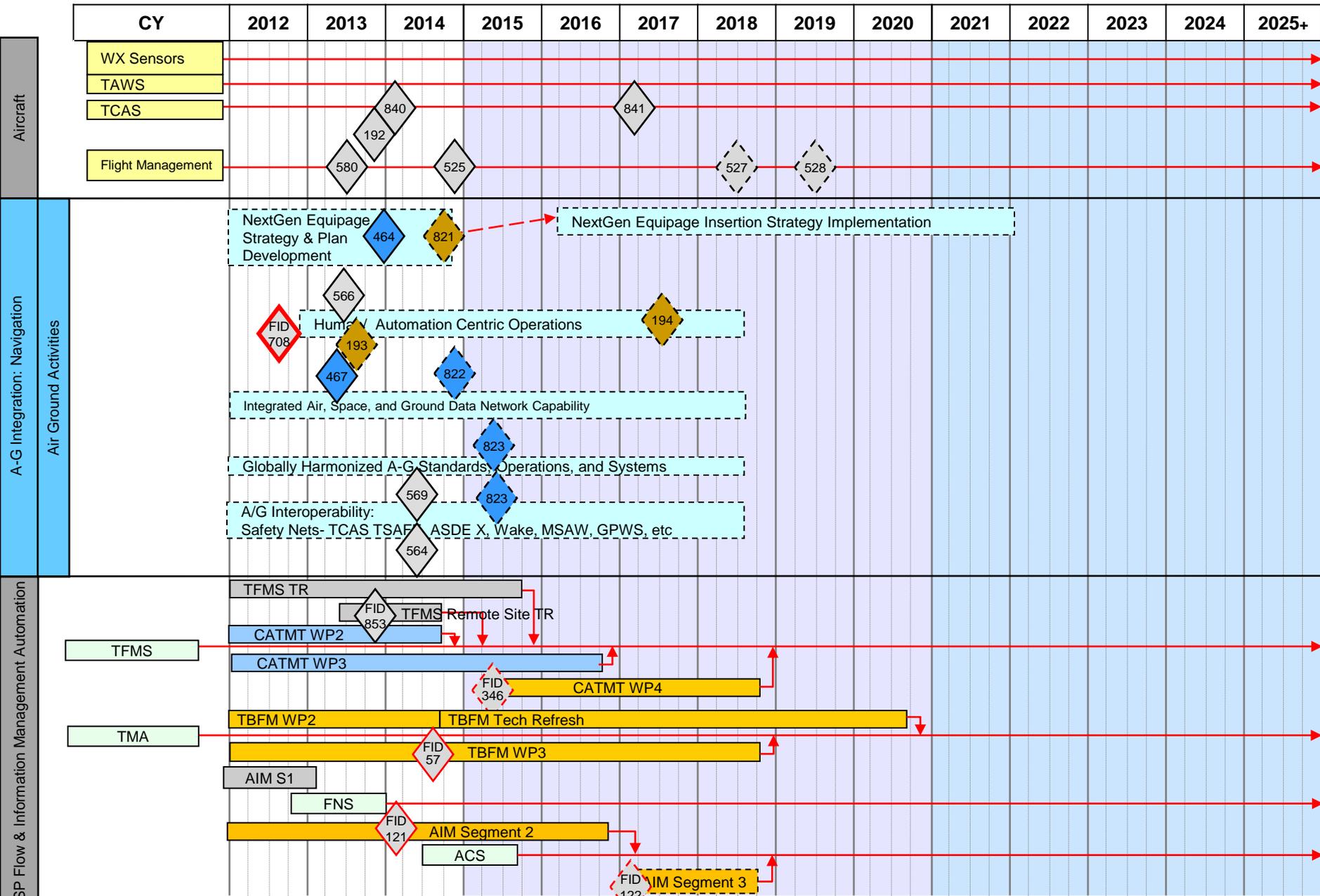
APPROVED

Air-Ground Roadmap (6 of 8)

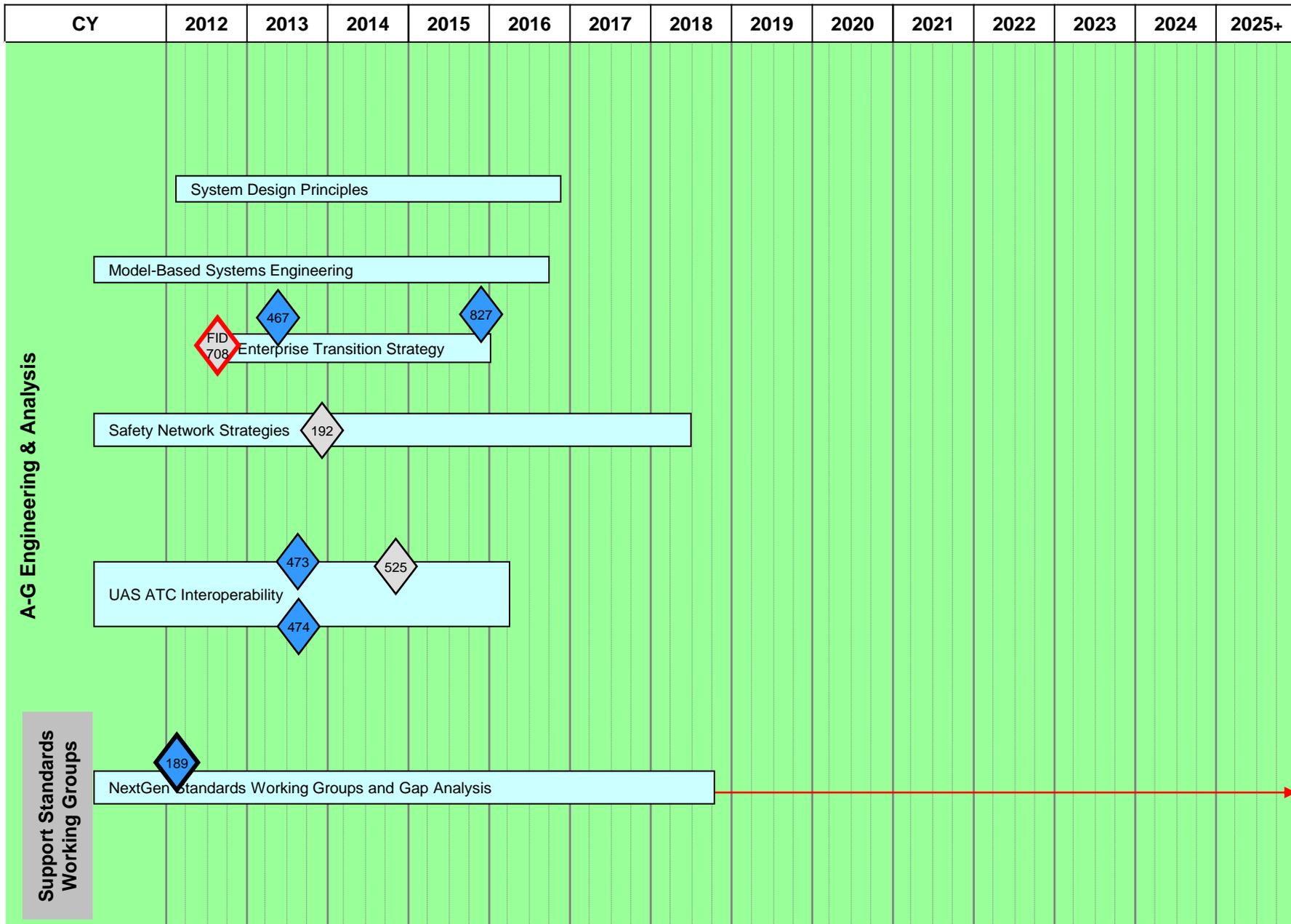


APPROVED

Air-Ground Roadmap (7 of 8)



Air-Ground Roadmap (8 of 8)



APPROVED

Air-Ground Roadmap: Assumptions (1 of 2)

Identifier	Description
AG-01	<p>Harmonization of Air/Ground System functions not complete:</p> <p>a) Any operations or improvement that is dependent on ACAS (TCAS), Airborne Automation (upgraded and standardized FMS), ADS-B In, and IP Addressing are far-term implementations.</p>
AG-02	<p>Synchronization of airborne and ground capabilities and infrastructure remains open</p> <p>a) A minimum of 7-10 years is needed to achieve fleet wide aircraft equipage from the time an equipment standard is acknowledged.</p> <p>b) A minimum of 3-4 years is needed to achieve pair-wise aircraft equipage from the time an equipment standard is acknowledged.</p>
AG-03	<p>Air-Ground standards will evolve from a technology-based to an integrated performance-based approach.</p>
AG-04	<p>Federated Air and Ground Safety tools are overlapping temporally leading to a need to develop an integrated safety net strategy</p> <p>a) TCAS, ADS-B Conflict Management Conflict Probe, Conflict Alert, and TSAFE to support separation management and collision avoidance of other aircraft.</p> <p>b) TAWS, EGPWS and MSAW to support separation management and collision avoidance of objects and obstacles.</p>
AG-05	<p>Reserved</p>
AG-06	<p>NAS weather systems are not depicted on the A/G Roadmap. (See Weather Roadmap).</p>
AG-07	<p>The A-G Roadmap facilitates the interoperability among roadmaps and does not include stand alone systems, but may identify integrated concepts/strategies not yet under consideration by individual programs.</p>
AG-08	<p>Reserved</p>
AG-09	<p>SWIM Air Capabilities:</p> <p>1) Airborne SWIM supports advisory communications through NNEW and commercial communication services (e.g. Iridium, InmarsatSBB, AirCell, XM Aviator).</p> <p>2) No mandatory equipment envisioned for airborne SWIM capability.</p>
AG-10	<p>A-G tasks are aligned and compliment NASEA DP' s and Air-Ground Evolution Environment. NASEA DP' s should address A-G Challenge to support NextGen success.</p>

Air-Ground Roadmap: Assumptions (2 of 2)

Identifier	Description
AG-11	Reserved
AG-12	An operations-based approach is applied to provide consistent context across the domains.
AG-13	NAS Voice switching systems are not depicted on the A-G Roadmap (CCS, ICSS, GSA 400/466, RDVS, STVS, ETVS, IVSR, VSCS/VTABS, and NVS).

APPROVED

Air-Ground Roadmap: Decision Points (1 of 4)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
31	2012 Q1	Y	Automation	Strategy (JRC)	Strategy Decision to proceed with ERAM R4 functions using combined program funds from DATA COMM, Airborne Reroute and GIM
46	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for Terminal Flight Data Manager (TFDM) Core
57	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for TBFM/WP3
94	2020 Q2	N	Navigation	Policy	Policy decision on complete Instrument Landing System (ILS) CAT I drawdown
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
121	2014 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 2
122	2017 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 3
189	2012 Q1	N	Air-Ground	Strategy (Other)	Develop a means to manage standards bodies to efficiently and effectively utilize resources and meet needs of NextGen
192	2013 Q4	N	Aircraft	Strategy (Other)	Incorporate expected changes to TCAS, Conflict Probe, and Conflict Management into coordinated Air-Ground Safety Network
193	2013 Q3	N	Air-Ground	Policy	Define Human/Automation design principles to support NextGen infrastructure
194	2017 Q2	N	Air-Ground	Policy	Incorporate results into future Requirement for NextGen Technology and Human/Automation intensive operations
198	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for TFDM Future
220	2018 Q4	N	Navigation	Strategy (Other)	Decision to cut over to Dual Frequency Operations based on completion of Dual Frequency (GPS L1 and L5) development & testing.
228	2014 Q2	N	Navigation	Strategy (Other)	Decision to proceed with WAAS dual frequency avionics activities to validate standards and lower risk for avionics development.
235	2016 Q2	N	Navigation	Strategy (Other)	Strategy Decision on active drawdown of CAT I ILSs operating in the NAS
237	2018 Q2	N	Navigation	Strategy (Other)	Strategy Decision on replacement CAT II/III ILSs operating in the NAS
239	2015 Q2	N	Navigation	Strategy (Other)	Strategy Decision to proceed with ALS (I) Production LED Lamps for MALS systems based on results of Benefit Cost Analysis
260	2020 Q2	N	Surveillance	Policy	Decision on ADS-B Rule Compliance

APPROVED

Air-Ground Roadmap: Decision Points (2 of 4)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
260	2020 Q2	N	Surveillance	Policy	Decision on ADS-B Rule Compliance
304	2022 Q1	Y	Communication	FID	Final Investment Decision (FID) for Data Comm Segment 2
324	2013 Q3	N	Navigation	Strategy (Other)	Decision to proceed with ALS (I) LED lamps, based on Operational Capability Demonstration with Enhanced Flight Vision System (EFVS) aircraft
345	2013 Q4	N	Enterprise Services	Strategy (JRC)	Strategy Decision for the implementation of a GPS timing backup
346	2015 Q2	Y	Automation	FID	Final Investment Decision (FID) for CATMT Work Package 4
353	2012 Q2	Y	Communication	FID	Final Investment Decision (FID) for Data Communications Segment 1 Phase 1: Tower Services, DCIS Contract and ERAM PGW and Logon.
389	2016 Q3	Y	Automation	FID	Final Investment Decision (FID) for Offshore Automation Systems Consolidation
403	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for SBS
464	2013 Q4	N	Air-Ground	Strategy (Other)	Deliver Equipage Insertion Plan- Output Boeing OTA
467	2013 Q2	N	Air-Ground	Strategy (Other)	Deliver A-G Future Communications Analysis
473	2013 Q3	N	Air-Ground	Strategy (Other)	Planning Decision: Develop Requirements for UAS Performance Envelope for UAS Fleets
474	2013 Q3	N	Air-Ground	Strategy (Other)	Planning Decision: Develop UAS ATC Interoperability Performance Requirements
507	2013 Q4	N	Navigation	FID	Final Investment Decision (FID) to move WAAS from Phase III to Phase IV
511	2015 Q3	Y	Navigation	Strategy (JRC)	Alternate Position, Navigation, and Timing (APNT) solution determined

APPROVED

Air-Ground Roadmap: Decision Points (3 of 4)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
525	2014 Q4	N	Aircraft	Strategy (Other)	Decision to Harmonize UAS ARC Recommendations & FAA Roadmap
527	2018 Q2	N	Aircraft	Policy	Decision on proposed set of trajectory Management performance levels
528	2019 Q2	N	Aircraft	Strategy (Other)	Develop Initial Guidance for NextGen FMS
544	2014 Q2	N	Aircraft	Policy	Complete Guidance under SC 214 for Avionics
545	2014 Q2	N	Communication	Strategy (Other)	Strategy Decision to Approve Draft SC-214 MOPS
561	2013 Q4	N	Airport	Policy	Decision to Implement Energy Independence and Security Act (EISA) Compliance Policy
564	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Safety Requirements for NextGen Single Pilot Operations
566	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Air Crew DataComm Requirements for Displays & Procedures
568	2016 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Human Factors Guidelines for NextGen Instrument Procedures
569	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Requirements for Enhanced Flight Deck Displays for Separation and Collision Avoidance
580	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Recommended Methods and Training for Managing Error with Flight Deck User Interfaces
604	2017 Q2	N	Surveillance	ISD	Initial In-Service Decision (ISD) for SIM in Terminal and En Route Legacy Radar Systems for first platform
660	2012 Q3	Y	Automation	FID	Final Investment Decision (FID) for TAMR P3S2 (Phase 3 Segment 2)
708	2012 Q3	Y	Enterprise Services	FID	Final Investment Decision (FID) for SWIM Segment 2

APPROVED

Air-Ground Roadmap: Decision Points (4 of 4)

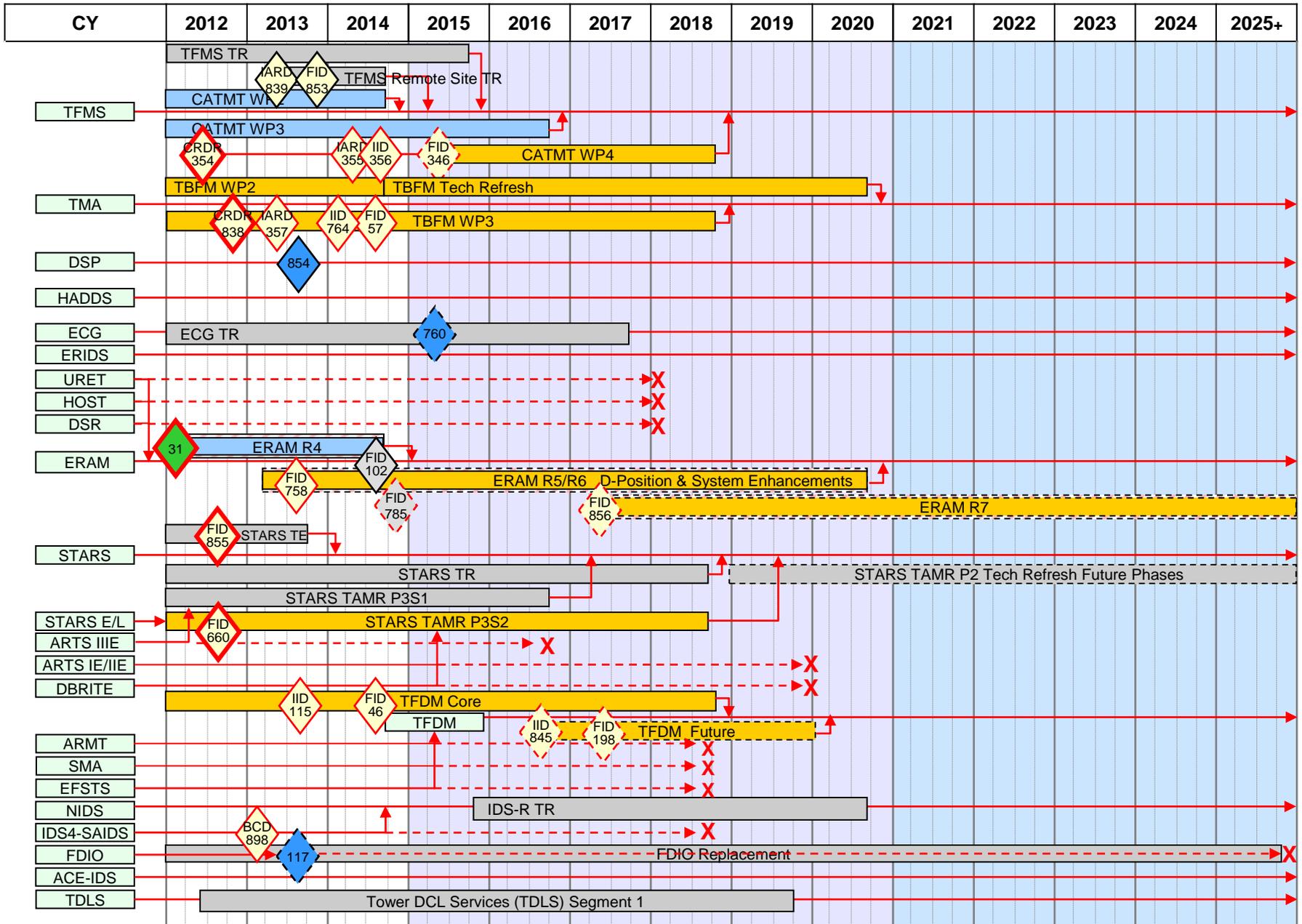
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
727	2016 Q3	Y	Navigation	FID	Final Investment Decision (FID) for Alternate Positioning, Navigation and Timing (APNT)
758	2013 Q3	Y	Automation	FID	Final Investment Decision (FID) for ERAM D-Position and System Enhancements
759	2013 Q2	N	Automation	Strategy (Other)	Strategy decision on direction of oceanic and offshore platforms including sustainment, termination, migration, and consolidation
760	2015 Q2	N	Automation	Strategy (Other)	Strategy decision on the direction of HADDS, ECG and ERIDS including sustainment, termination, migration, and consolidation
785	2014 Q4	Y	Communication	FID	Final Investment Decision (FID) for Data Communications Segment 1 Phase 2 En Route Services
821	2014 Q3	N	Air-Ground	Policy	Decision execute NextGen Enabler Plan (Evolving Equipage Plan) (was 188)
822	2014 Q4	N	Air-Ground	Strategy (Other)	Define strategy for Integrated Air, Space, and Ground Data Network. (was 183 & 184)
823	2015 Q2	N	Air-Ground	Strategy (Other)	Define NextGen - SESAR Harmonization Strategy
827	2015 Q4	N	Air-Ground	Strategy (Other)	Define Enterprise Transition Strategy
840	2014 Q1	N	Aircraft	FID	Final Investment Decision (FID) for WP1 TCAS-2 Replacement
841	2017 Q1	N	Aircraft	Strategy (Other)	Strategy Decision to move forward on WP2 for UAS GA Collision Avoidance Approving Authority AJM-O
853	2013 Q4	N	Automation	FID	Final Investment Decision (FID) for TFMS Remote Site TR
856	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for ERAM R7
864	2016 Q4	N	Communication	ISD	In Service Decision for DataComm Segment 1
880	2014 Q2	N	Navigation	FID	FID for the VOR MON Implementation

APPROVED

Automation

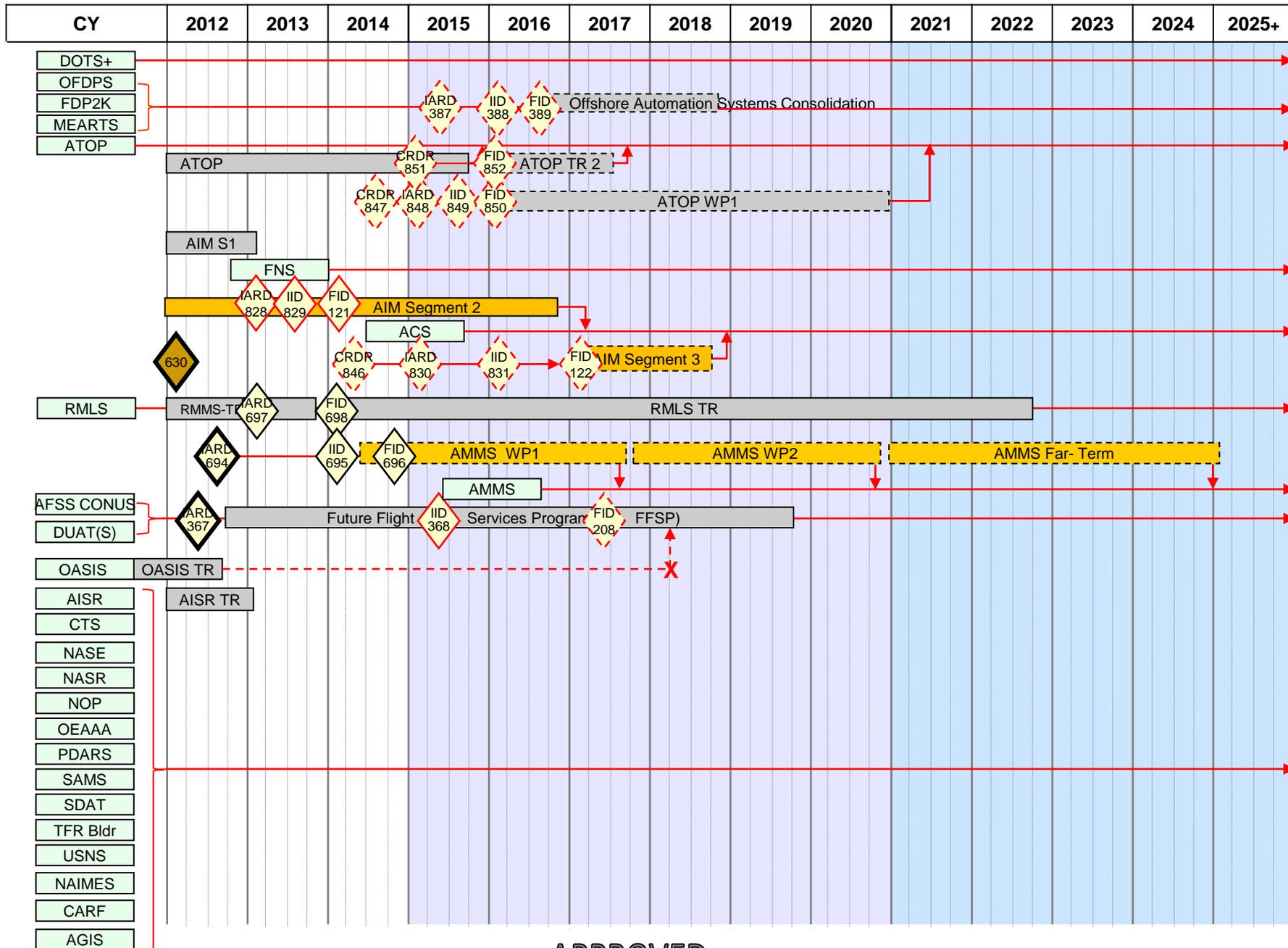
Objective: The Automation Roadmap presents an Executive View (EV) of the current automation systems supporting the National Airspace System (NAS) and their enhancement, sustainment or replacement through major development programs and support activities. The Automation Roadmap is intended to convey the major automation program strategy and acquisition decision points as well as program execution through the In-Service Decision. The roadmap serves as a summary view of more detailed plans within each development program.

Automation Roadmap (1 of 16)



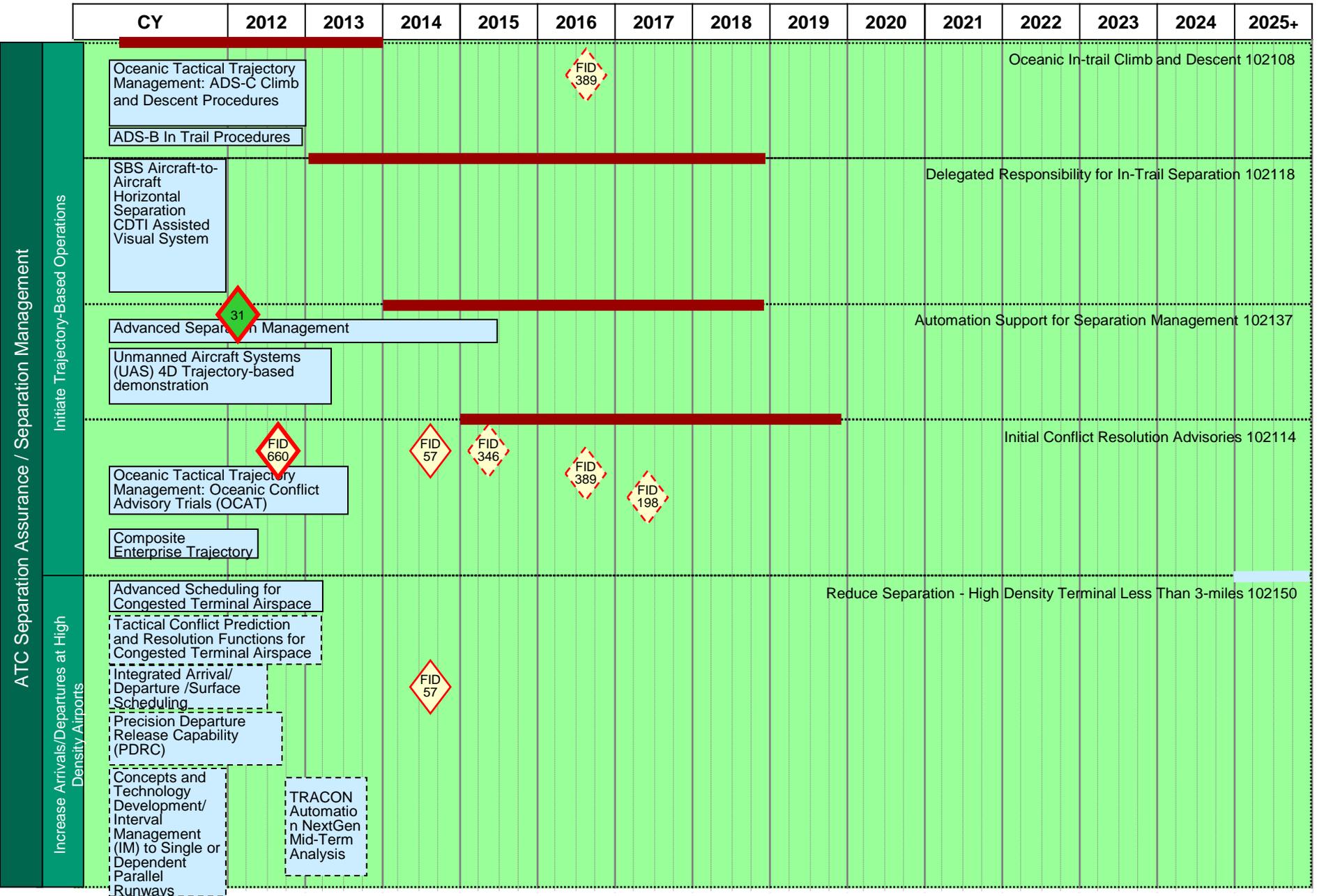
APPROVED

Automation Roadmap (2 of 16)



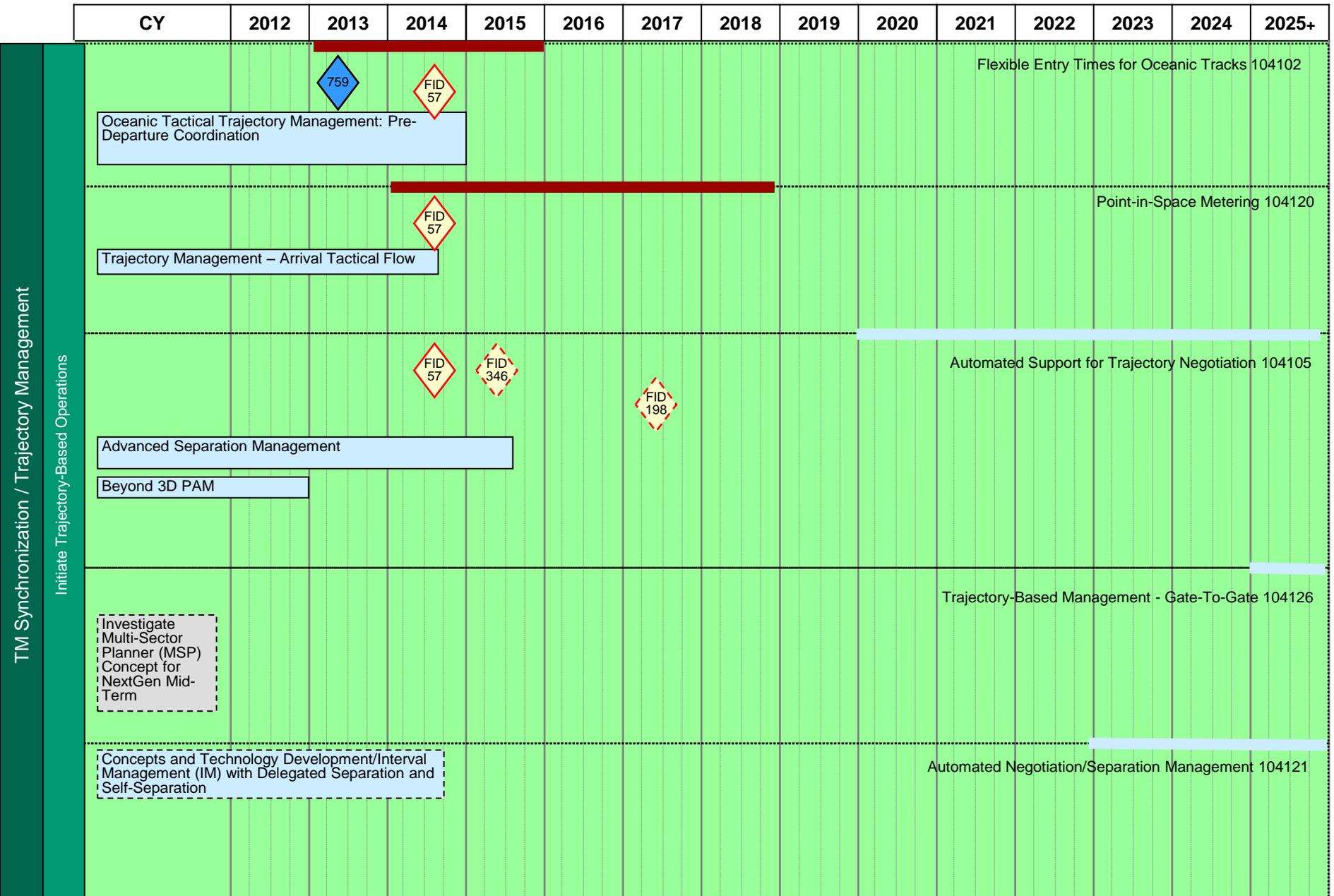
APPROVED

Automation Roadmap (3 of 16)



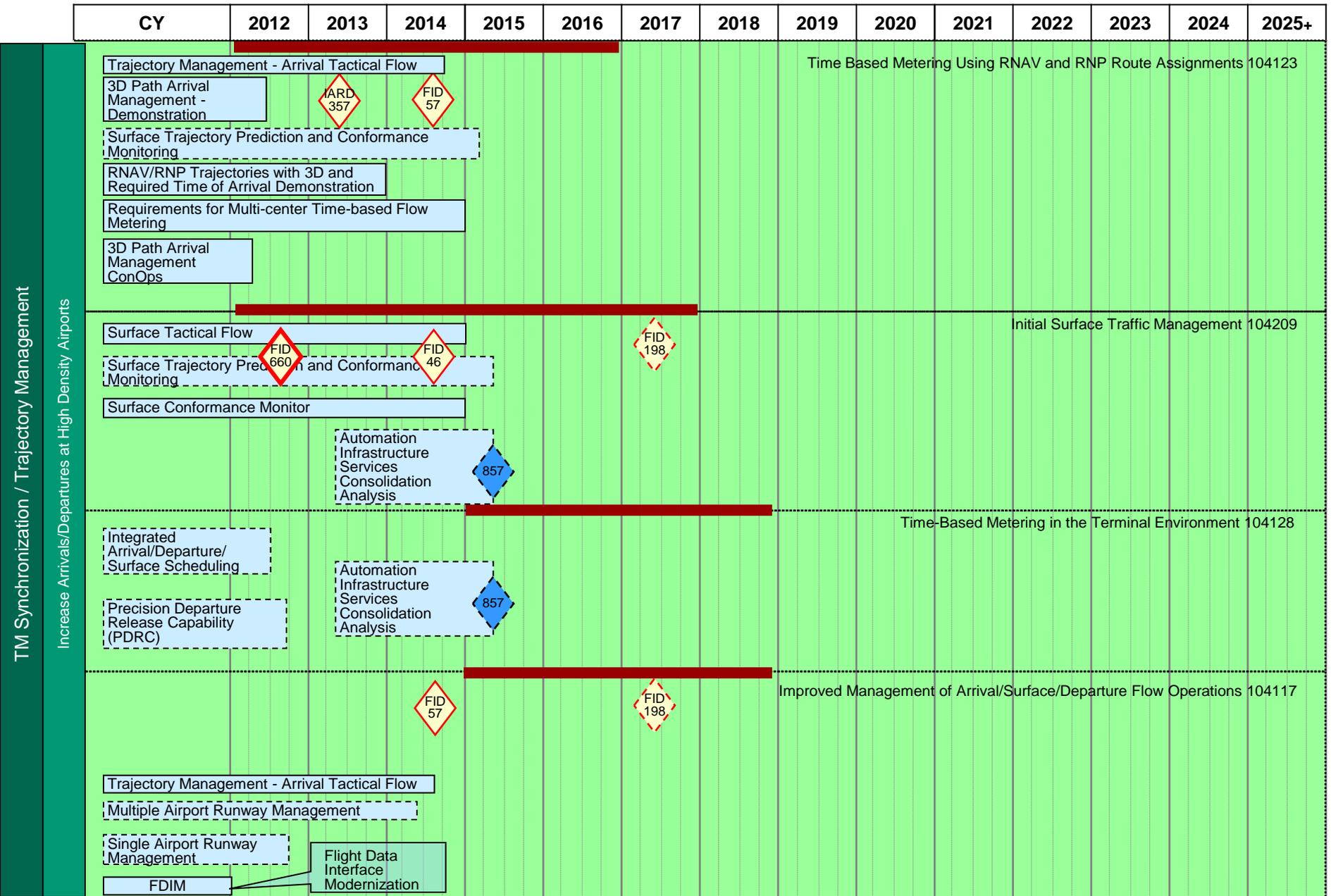
APPROVED

Automation Roadmap (5 of 16)



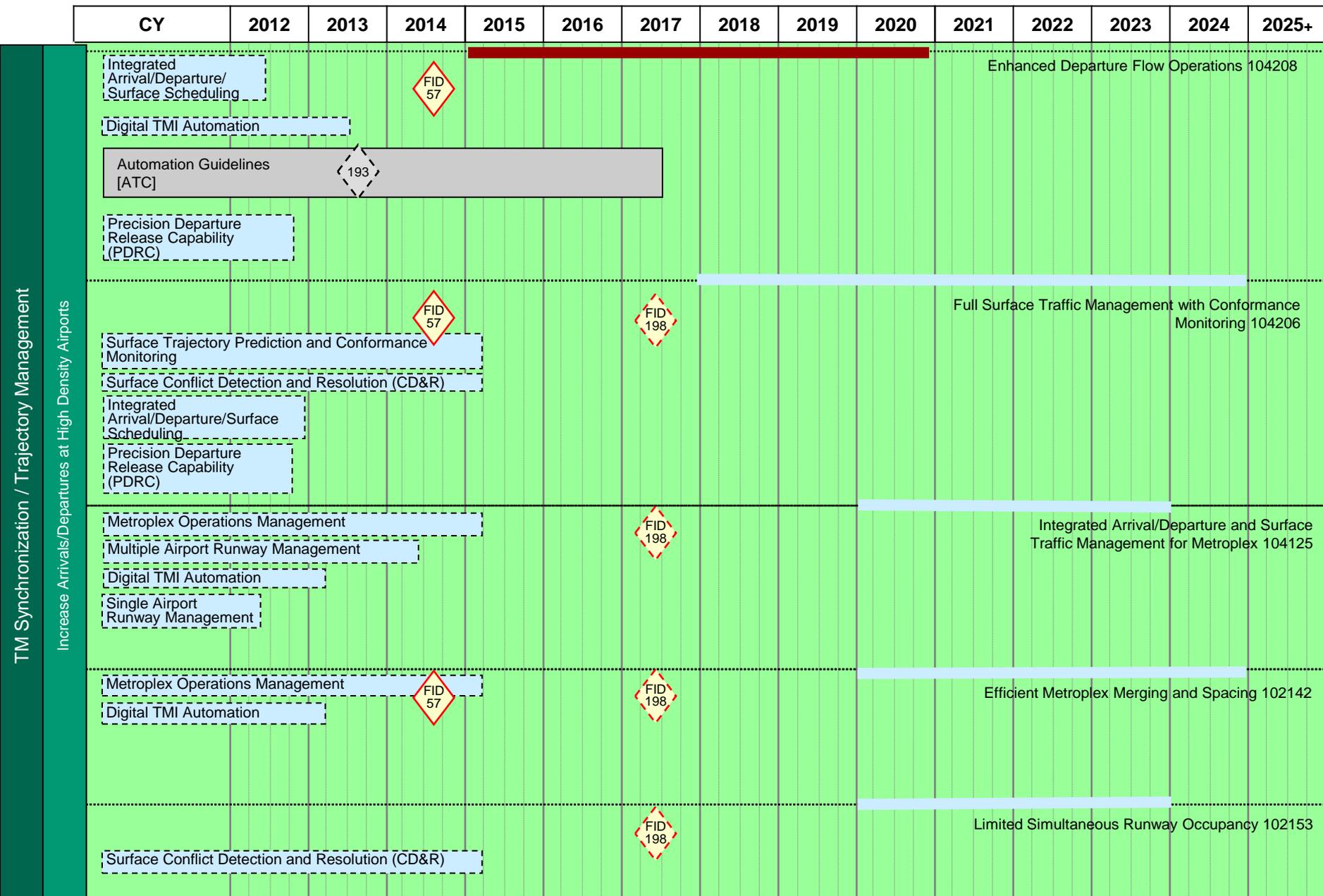
APPROVED

Automation Roadmap (6 of 16)



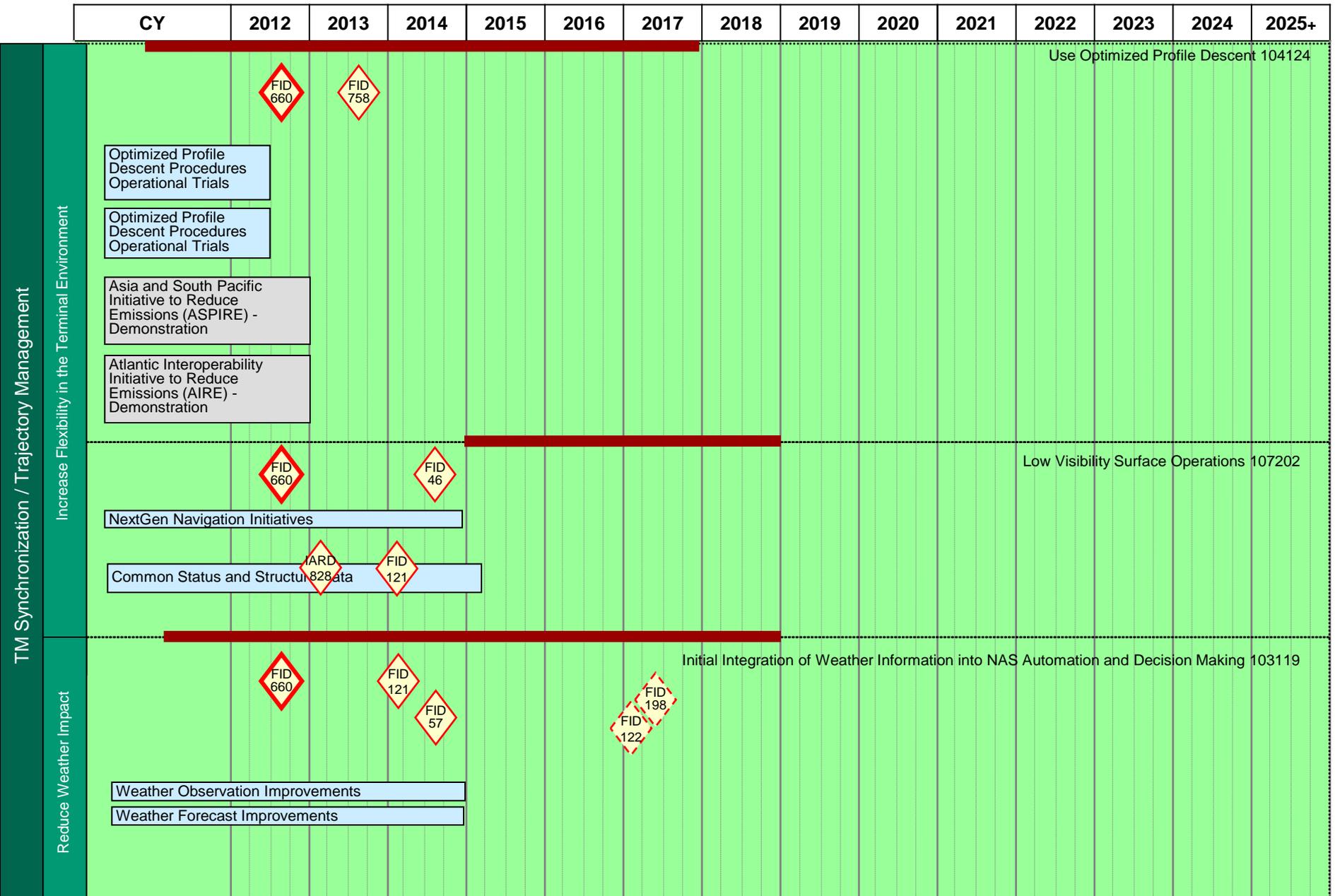
APPROVED

Automation Roadmap (7 of 16)



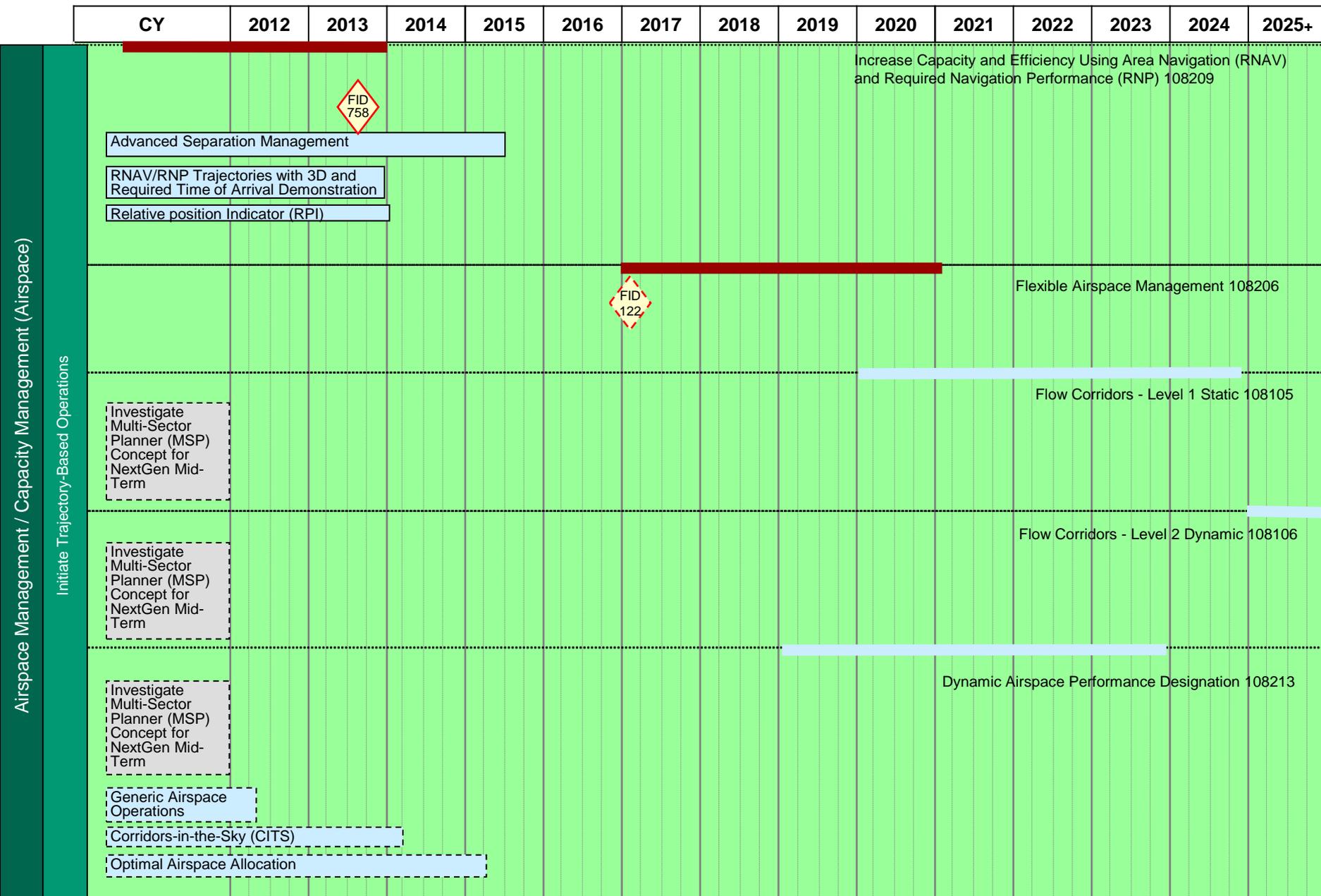
APPROVED

Automation Roadmap (8 of 16)



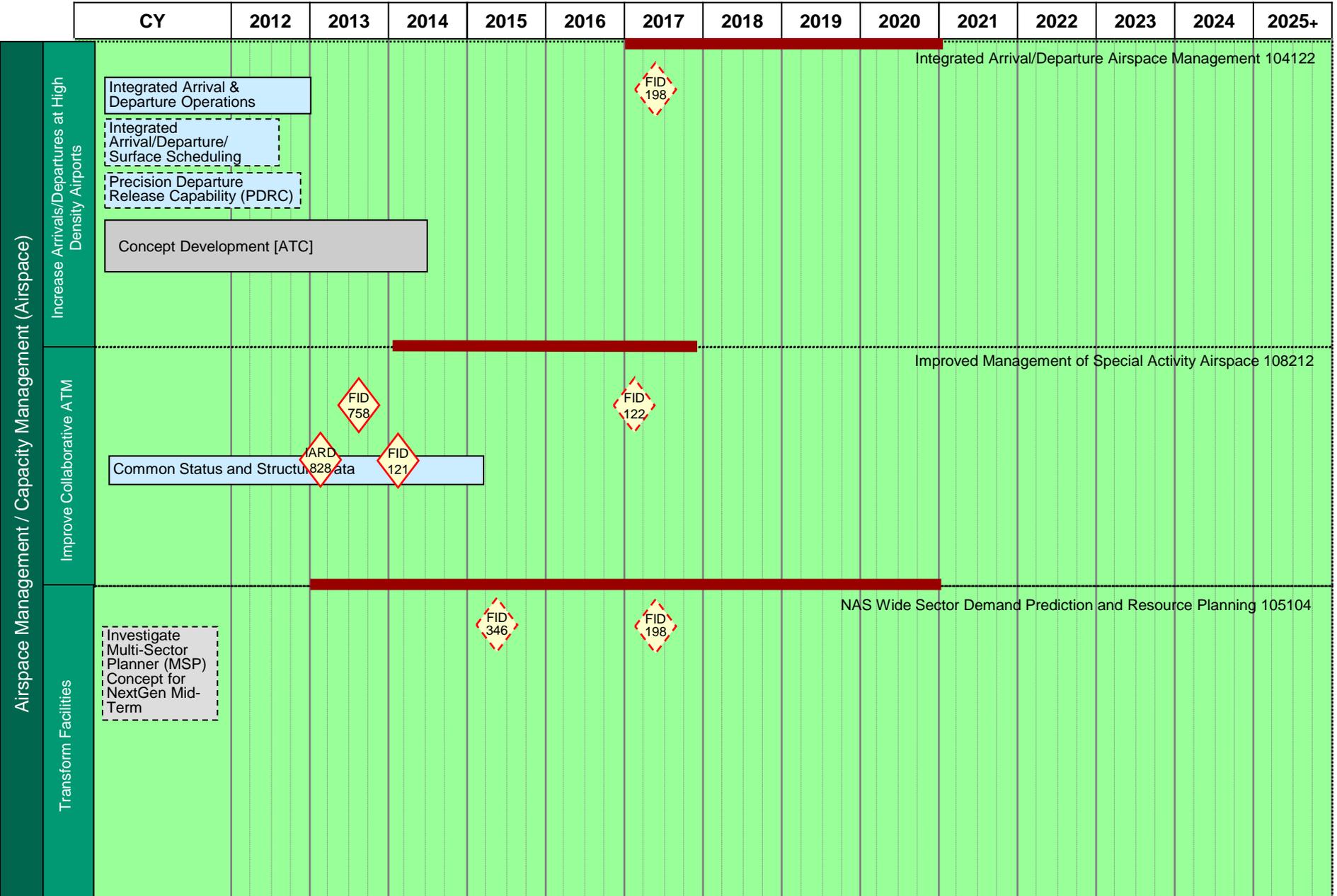
APPROVED

Automation Roadmap (9 of 16)



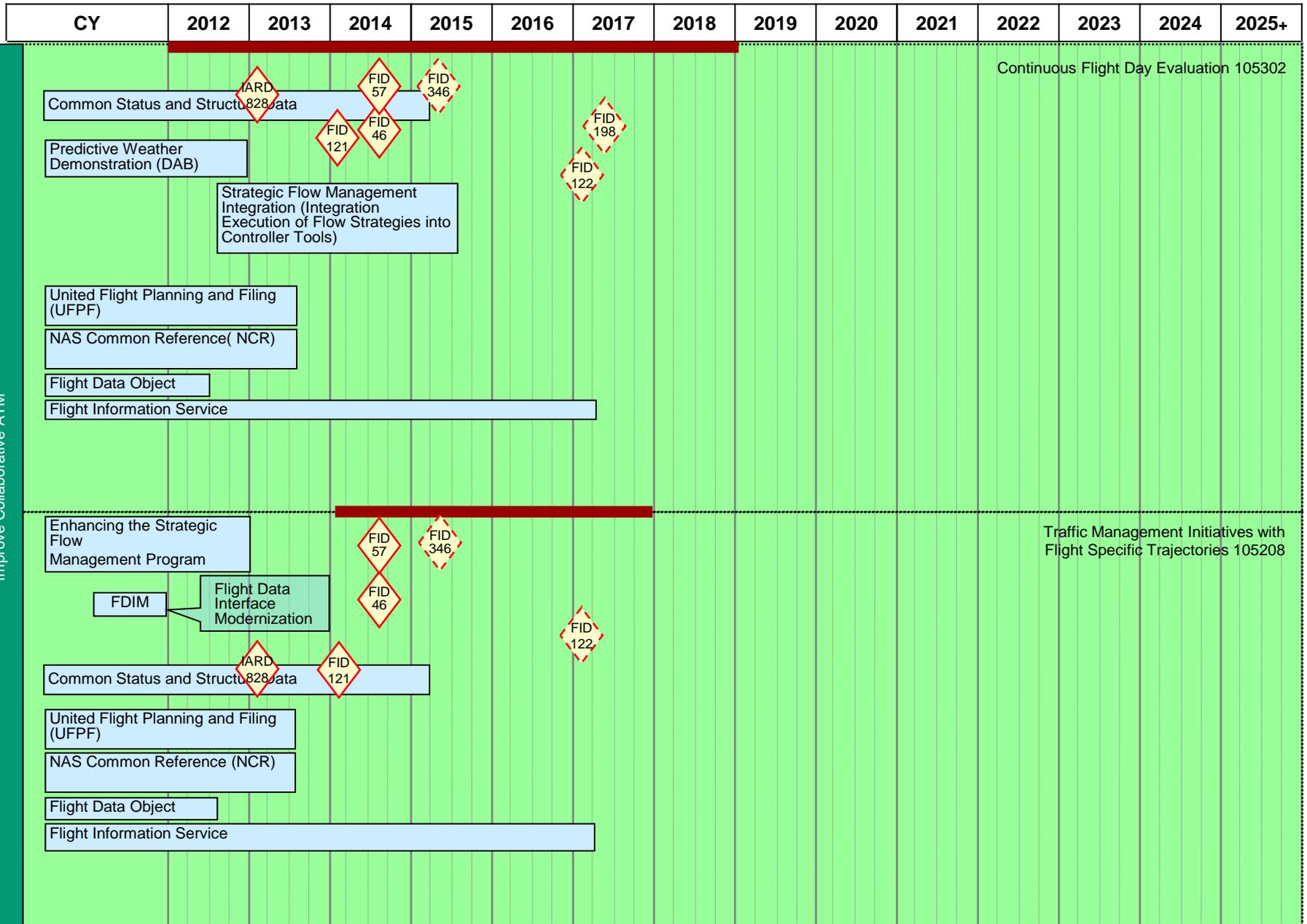
APPROVED

Automation Roadmap (10 of 16)

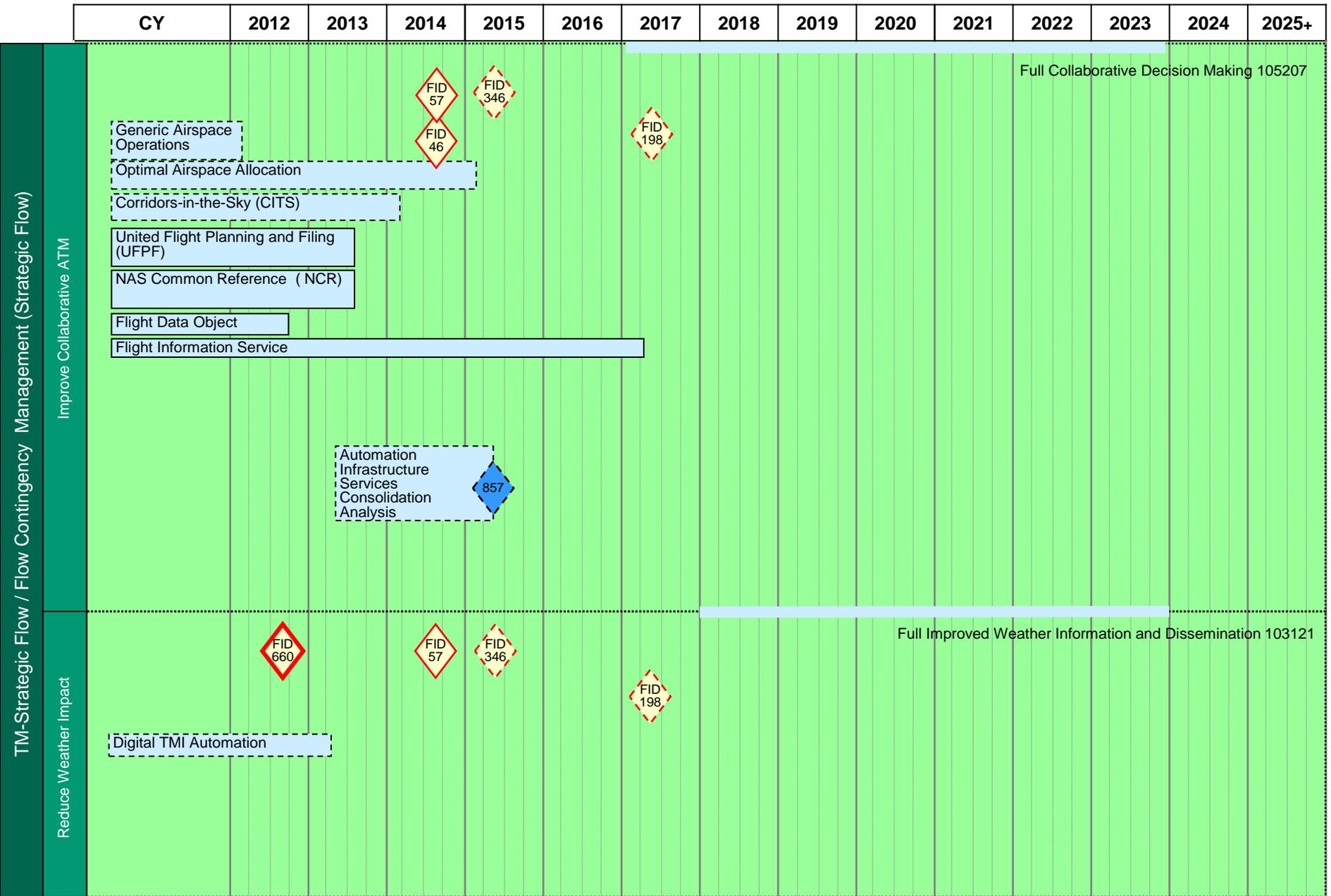


APPROVED

Automation Roadmap (11 of 16)

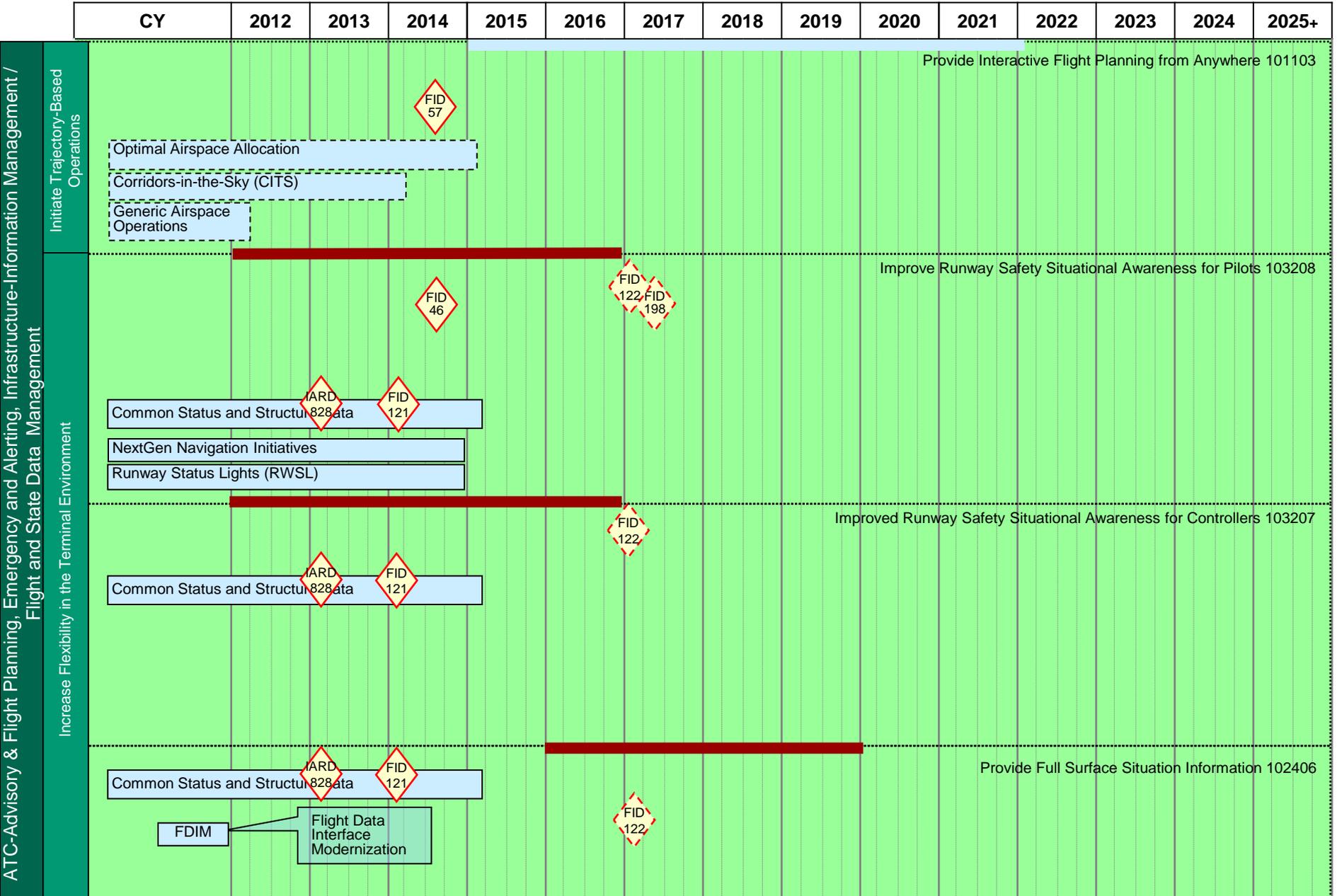


Automation Roadmap (12 of 16)



APPROVED

Automation Roadmap (13 of 16)

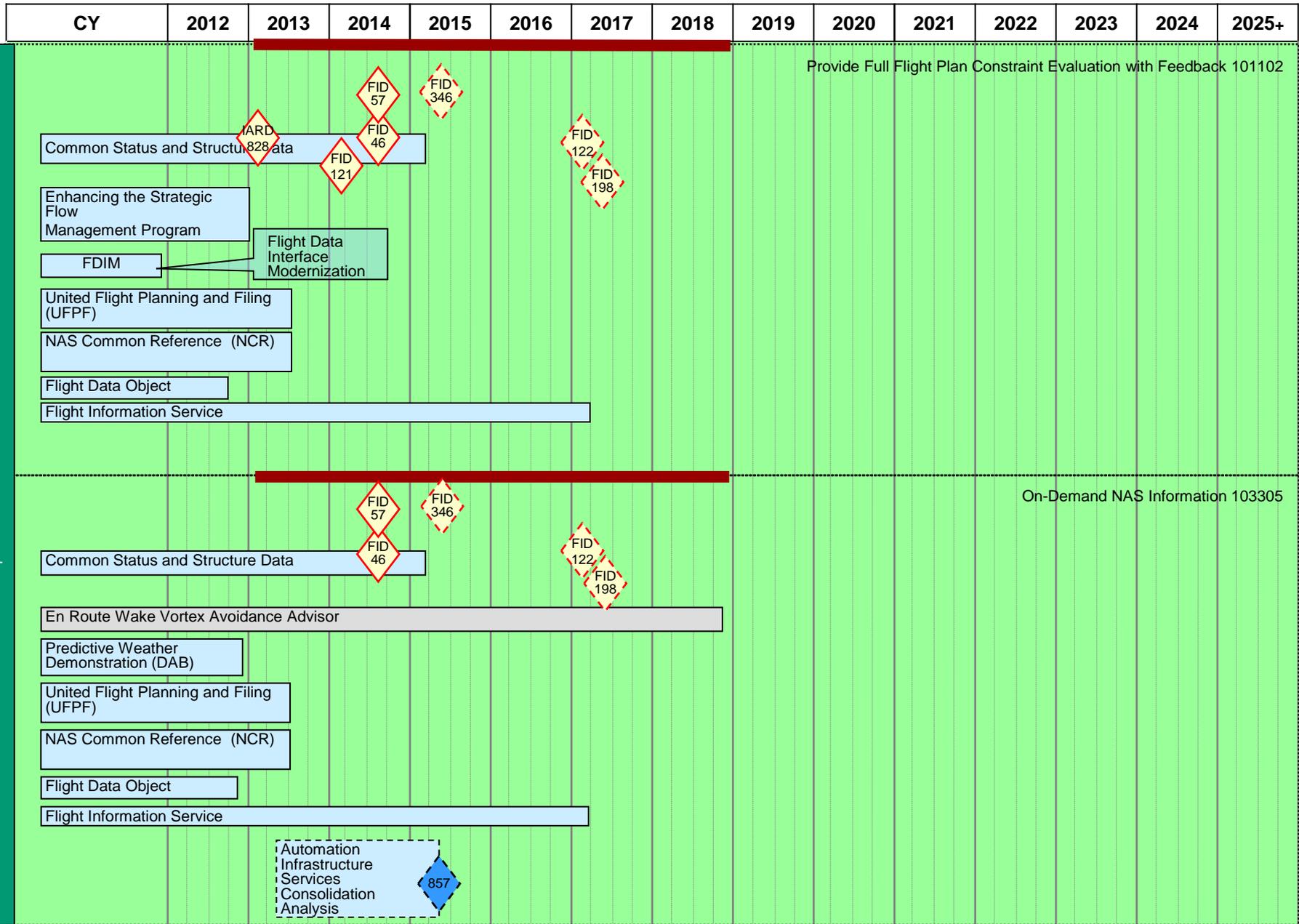


APPROVED

Automation Roadmap (14 of 16)

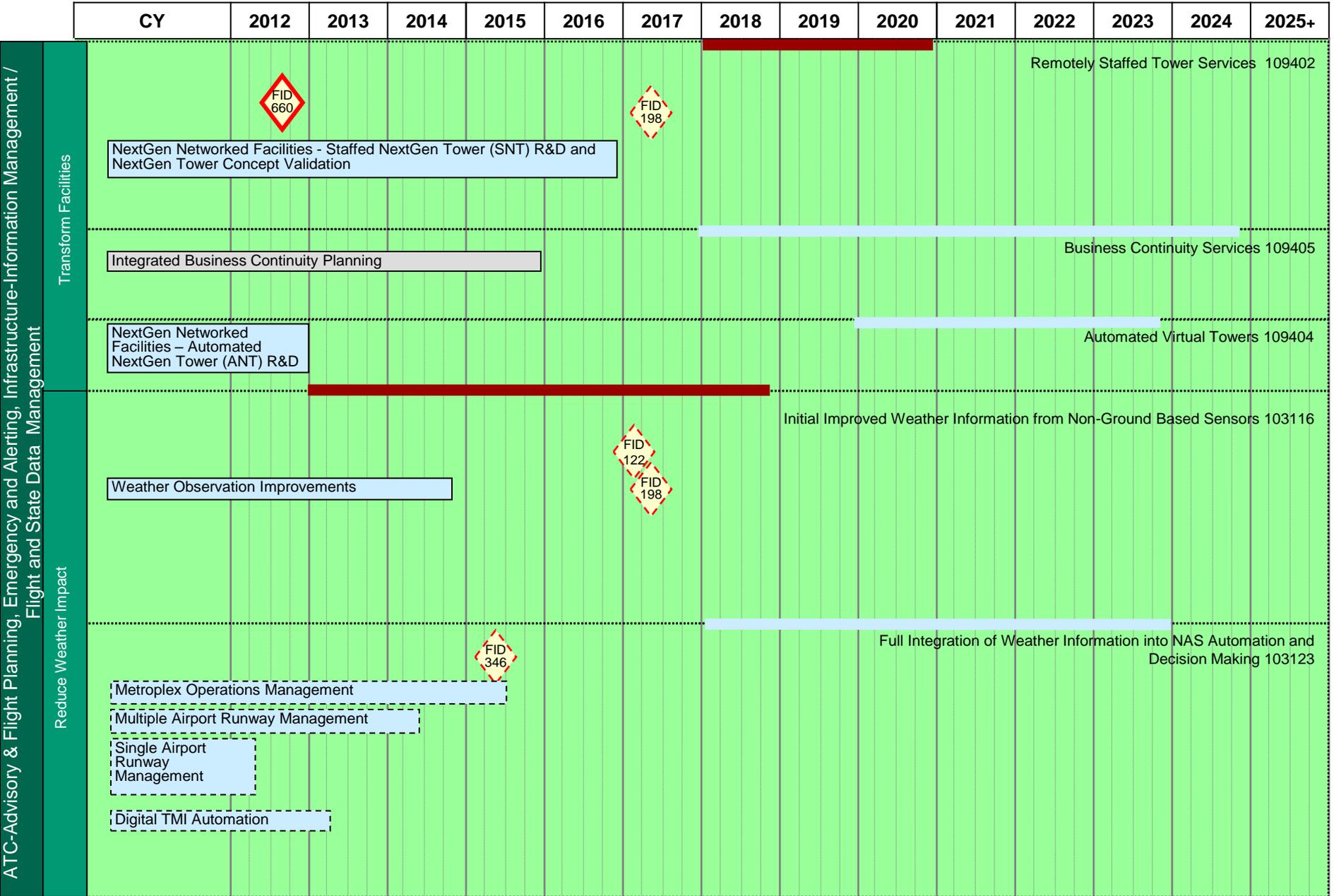
ATC-Advisory & Flight Planning, Emergency and Alerting, Infrastructure-Information Management / Flight and State Data Management

Improve Collaborative ATM



APPROVED

Automation Roadmap (15 of 16)



APPROVED

Automation Roadmap: Assumptions

Identifier	Description
AUTO-01	Net-centric Enterprise Services will replace designated existing point to point interfaces with a system based on a Service Oriented Architecture providing enhanced data exchange, enhanced flexibility, and enhanced security for FAA Operations Personnel, and airspace users within a common information environment to support NextGen Operational Improvements.
AUTO-02	ADS-B is a necessary infrastructure element to support Trajectory Based Operations, Flexible Terminal, and High Density Terminal solution sets.
AUTO-03	Data Communication is a necessary infrastructure element to support Trajectory Based Operations, Flexible Terminal, and High Density Terminal solution sets.
AUTO-06	Operational Service Units will be responsible for JRC Final Investment Decisions.
AUTO-07	Policy and standards decisions prescribing the use of hand-held devices for data messaging by General Aviation pilots and aircraft are established.
AUTO-08	Consistent security management across Data Communication, Automation and SWIM support the evolution.
AUTO-09	Human-system integration will be conducted during analysis, design, development, and testing of Automation programs.
AUTO-10	Safety analysis and considerations will be included in all applicable phases of Automation analysis, design, development, and testing and platforms will provide data as required for safety monitoring and analysis.
AUTO-11	Automation platform designs will support environmental and energy saving initiatives.

Automation Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
31	2012 Q1	Y	Automation	Strategy (JRC)	Strategy Decision to proceed with ERAM R4 functions using combined program funds from DATA COMM, Airborne Reroute and GIM
46	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for Terminal Flight Data Manager (TFDM) Core
57	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for TBFM/WP3
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
115	2013 Q3	Y	Automation	IID	Initial Investment Decision (IID) for Terminal Flight Data Manager Core
117	2013 Q3	N	Automation	Strategy (Other)	Strategy decision to determine the future platforms and allocation of FDIO functions
121	2014 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 2
122	2017 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 3
193	2013 Q3	N	Air-Ground	Policy	Define Human/Automation design principles to support NextGen infrastructure
198	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for TFDM Future
208	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for Future Flight Services Program (FFSP)
346	2015 Q2	Y	Automation	FID	Final Investment Decision (FID) for CATMT Work Package 4
354	2012 Q2	Y	Automation	CRDR	Concept Requirements (CRDR) for CATMT Work Package 4
355	2014 Q2	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for CATMT Work Package 4
356	2014 Q3	Y	Automation	IID	Initial Investment Decision (IID) for CATMT Work Package 4
357	2013 Q2	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for TBFM/WP3
367	2012 Q2	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for Future Flight Services Program (FFSP)
368	2015 Q2	Y	Automation	IID	Initial Investment Decision (IID) for Future Flight Services Program (FFSP)
387	2015 Q2	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for Offshore Automation Systems Consolidation
388	2016 Q1	Y	Automation	IID	Initial Investment Decision (IID) for Offshore Automation Systems Consolidation
389	2016 Q3	Y	Automation	FID	Final Investment Decision (FID) for Offshore Automation Systems Consolidation
575	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use HSI Requirements to Support ATC Efficiency and Effectiveness Objectives
630	2012 Q1	N	Automation	Policy	Policy Decision on Data Rights and Release Policies For Sharing Surface and Arrival Data
660	2012 Q3	Y	Automation	FID	Final Investment Decision (FID) for TAMR P3S2 (Phase 3 Segment 2)
694	2012 Q3	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AMMS Work Package 1 and Work Package 2
695	2014 Q1	N	Automation	IID	Initial Investment Decision (IID) for AMMS Work Package 1 and Work Package 2

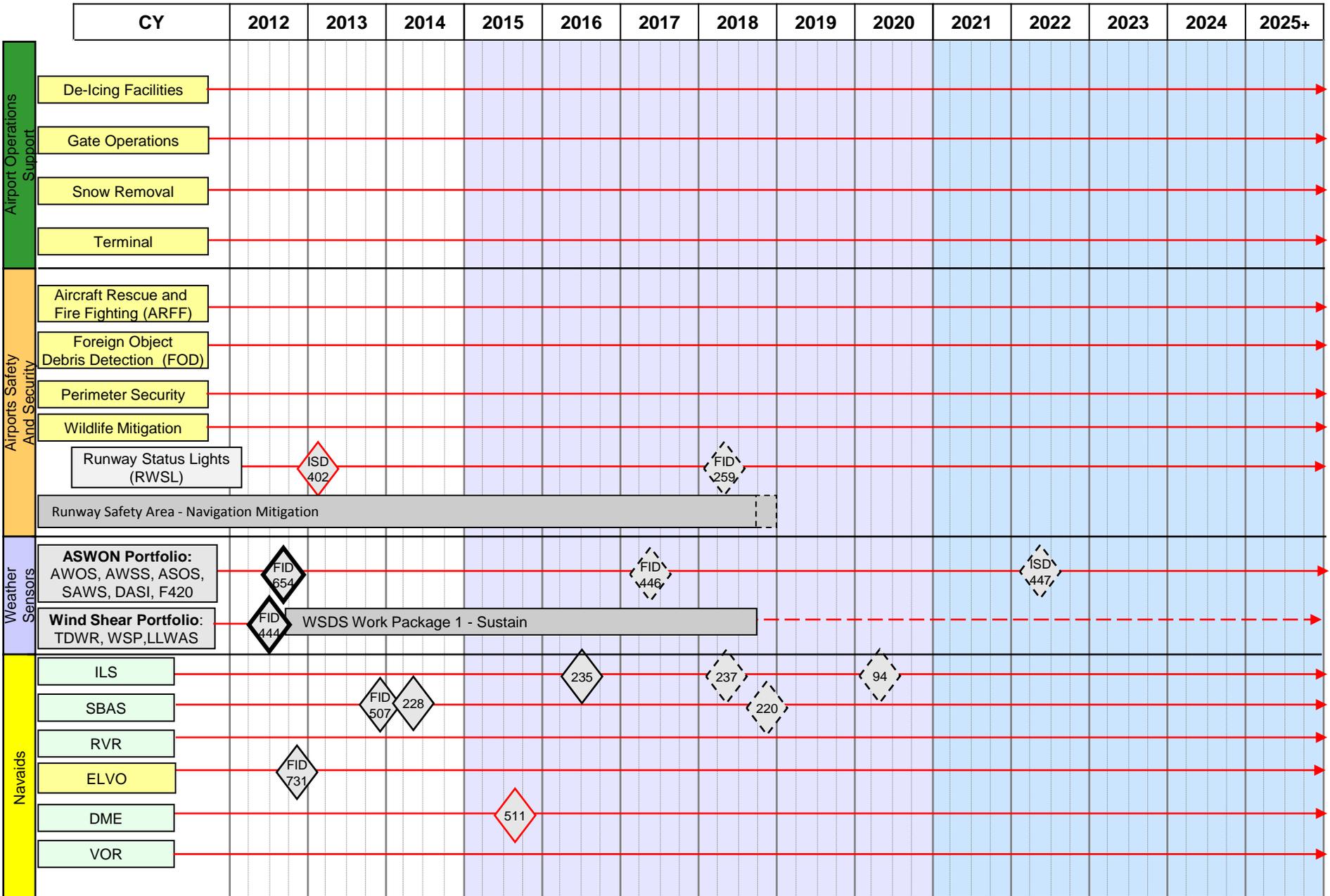
Automation Roadmap: Decision Points (2 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
696	2014 Q4	N	Automation	FID	Final Investment Decision (FID) for AMMS Work Package 1 and Work Package 2
697	2013 Q1	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for RMLS Technology Refresh
698	2014 Q1	N	Automation	FID	Final Investment Decision (FID) for RMLS Technology Refresh
758	2013 Q3	Y	Automation	FID	Final Investment Decision (FID) for ERAM D-Position and System Enhancements
759	2013 Q2	N	Automation	Strategy (Other)	Strategy decision on direction of oceanic and offshore platforms including sustainment, termination, migration, and consolidation
760	2015 Q2	N	Automation	Strategy (Other)	Strategy decision on the direction of HADDS, ECG and ERIDS including sustainment, termination, migration, and consolidation
764	2014 Q1	Y	Automation	IID	Initial Investment Decision (IID) for TBFM Work Package 3
785	2014 Q4	Y	Communication	FID	Final Investment Decision (FID) for Data Communications Segment 1 Phase 2 En Route Services
828	2013 Q1	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AIM Segment 2
829	2013 Q3	Y	Automation	IID	Initial Investment Decision (IID) for AIM Segment 2
830	2015 Q1	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AIM Segment 3
831	2016 Q1	Y	Automation	IID	Initial Investment Decision (IID) for AIM Segment 3
838	2012 Q4	N	Automation	CRDR	Concept and Requirements Definition Readiness (CRDR) for TBFM Work Package 3
839	2013 Q2	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for TFMS Remote Site TR
845	2016 Q3	N	Automation	IID	Initial Investment Decision (IID) for TFD Future
846	2014 Q2	Y	Automation	CRDR	Concept and Requirements Definition Readiness (CRDR) for AIM Segment 3
847	2014 Q3	Y	Automation	CRDR	Concept and Requirements Definition Readiness (CRDR) for ATOP WP1
848	2015 Q1	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for ATOP WP1
849	2015 Q3	Y	Automation	IID	Initial Investment Decision (IID) for ATOP WP1
850	2016 Q1	Y	Automation	FID	Final Investment Decision (FID) for ATOP WP1
851	2015 Q1	Y	Automation	CRDR	Concept and Requirements Definition Readiness (CRDR) for ATOP TR2
852	2016 Q1	Y	Automation	FID	Final Investment Decision (FID) for ATOP TR2
853	2013 Q4	N	Automation	FID	Final Investment Decision (FID) for TFMS Remote Site TR
854	2013 Q3	N	Automation	Strategy (Other)	Strategy decision to determine the future platforms and allocation of DSP functions
855	2012 Q3	N	Automation	FID	Final Investment Decision (FID) for STARS Tech Refresh and Terminal Enhancements
856	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for ERAM R7
857	2015 Q2	N	Automation	Strategy (Other)	Strategy Decision to determine the direction for automation infrastructure reduction
898	2013 Q1	N	Automation	BCD	Baseline Change Decision (BCD) for IDS-R

Airport

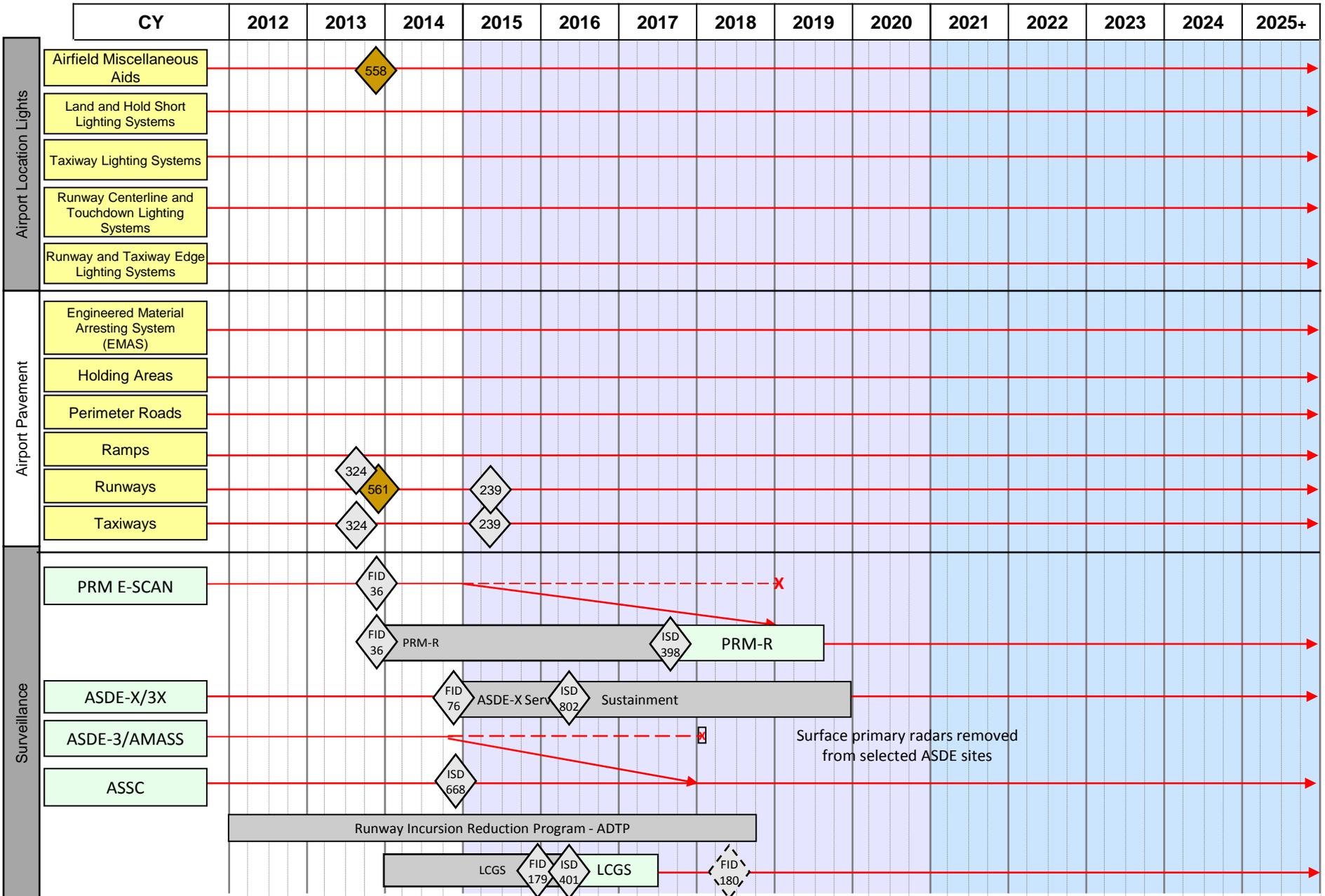
Objective: The Airport Roadmap identifies NextGen progression of services, procedures and systems in the airport environment.

Airport Roadmap (1 of 5)



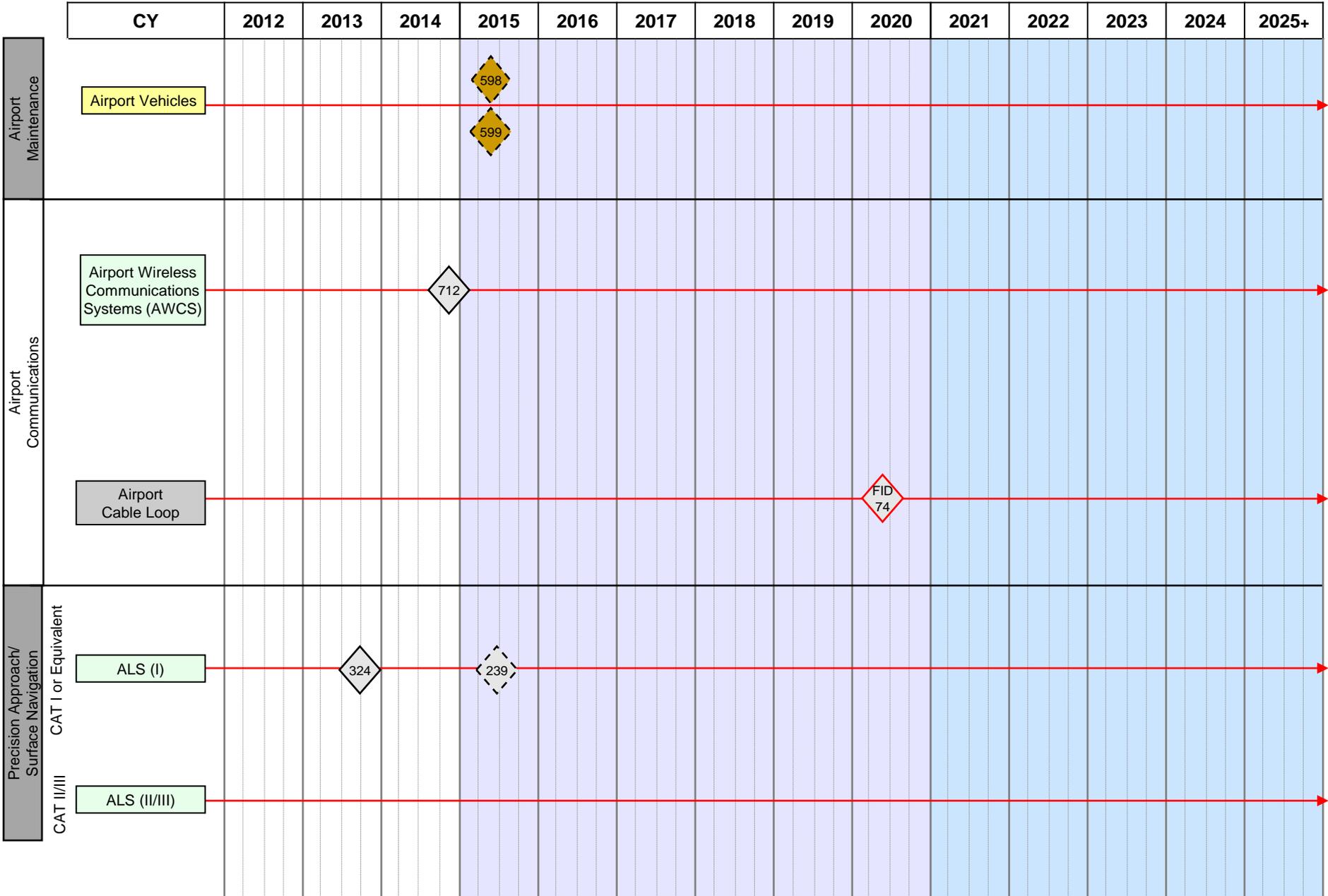
APPROVED

Airport Roadmap (2 of 5)



APPROVED

Airport Roadmap (4 of 5)



APPROVED

Airport Roadmap: Assumptions

Identifier	Description
APT-01	This roadmap will focus on airport airside and landside activities (not including inside the airport terminal), and arrival/departure operations out to about 5 miles.
APT-02	Airports are covered in general; specific airports are not described.
APT-03	Initial work covers large/medium hub airports.
APT-04	Key decisions are pulled from other roadmaps.
APT-05	This is an initial roadmap that connects FAA infrastructure elements to airport airside infrastructure elements, and provides a basis for future tracking of the boundary and boundary issues.

Airport Roadmap: Decision Points (1 of 3)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
36	2013 Q4	N	Surveillance	FID	Final Investment Decision (FID) for migration of PRM to PRM-R
46	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for Terminal Flight Data Manager (TFDM) Core
74	2020 Q2	Y	Communication	FID	Final Investment Decision (FID) for FTI 2
76	2014 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ASDE-3 Service Sustainment
94	2020 Q2	N	Navigation	Policy	Policy decision on complete Instrument Landing System (ILS) CAT I drawdown
117	2013 Q3	N	Automation	Strategy (Other)	Strategy decision to determine the future platforms and allocation of FDIO functions
179	2015 Q4	N	Surveillance	FID	Final Investment Decision (FID) for LCGS
180	2018 Q2	N	Surveillance	FID	Final Investment Decision (FID) for ADS-B to assume LCGS function, or approve a Technology Refresh for LCGS
198	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for TFDM Future
220	2018 Q4	N	Navigation	Strategy (Other)	Decision to cut over to Dual Frequency Operations based on completion of Dual Frequency (GPS L1 and L5) development & testing.
228	2014 Q2	N	Navigation	Strategy (Other)	Decision to proceed with WAAS dual frequency avionics activities to validate standards and lower risk for avionics development.
235	2016 Q2	N	Navigation	Strategy (Other)	Strategy Decision on active drawdown of CAT I ILSs operating in the NAS
237	2018 Q2	N	Navigation	Strategy (Other)	Strategy Decision on replacement CAT II/III ILSs operating in the NAS
239	2015 Q2	N	Navigation	Strategy (Other)	Strategy Decision to proceed with ALS (I) Production LED Lamps for MALSR systems based on results of Benefit Cost Analysis
259	2018 Q2	N	Navigation	FID	Final Investment Decision (FID) for RWSL Technology Refresh
324	2013 Q3	N	Navigation	Strategy (Other)	Decision to proceed with ALS (I) LED lamps, based on Operational Capability Demonstration with Enhanced Flight Vision System (EFVS) aircraft
398	2017 Q3	N	Surveillance	ISD	In-Service Decision (ISD) for PRM-R

Airport Roadmap: Decision Points (2 of 3)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
401	2016 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for Low Cost Ground Surveillance system
402	2013 Q1	Y	Navigation	ISD	In-Service Decision (ISD) for Runway Status Light System
444	2012 Q2	N	Weather	FID	Final Investment Decision (FID) for WSDS WP1 "Sustain"
446	2017 Q2	N	Weather	FID	Final Investment Decision (FID) for NSOC
447	2022 Q2	N	Weather	ISD	In-Service Decision (ISD) for NSOC
507	2013 Q4	N	Navigation	FID	Final Investment Decision (FID) to move WAAS from Phase III to Phase IV
511	2015 Q3	Y	Navigation	Strategy (JRC)	Alternate Position, Navigation, and Timing (APNT) solution determined
558	2013 Q4	N	Airport	Policy	Decision to Implement LED Airport Lighting Phase In
561	2013 Q4	N	Airport	Policy	Decision to Implement Energy Independence and Security Act (EISA) Compliance Policy
598	2015 Q2	N	Airport	Policy	Decision on Requirements/Policy for beacon/transponders in airport surface vehicles
599	2015 Q2	N	Airport	Policy	Decision on Requirements/Policy for Surface Moving Maps in airport surface vehicles
654	2012 Q3	N	Weather	FID	Final Investment Decision (FID) for ASWON Tech Refresh
661	2014 Q4	N	Airspace & Procedures	Policy	Decision to incorporate Wake Re-Categorization (Phase 1) into 7110.65
668	2014 Q4	N	Surveillance	ISD	In Service Decision (ISD) for Airport Surface Surveillance Capability
692	2016 Q2	N	Facilities	Strategy (JRC)	Strategy Decision for Integration of Certain ATCT Functions into NextGen Facilities
712	2014 Q4	N	Communication	Strategy (Other)	Strategy Decision on AeroMacs

APPROVED

Airport Roadmap: Decision Points (3 of 3)

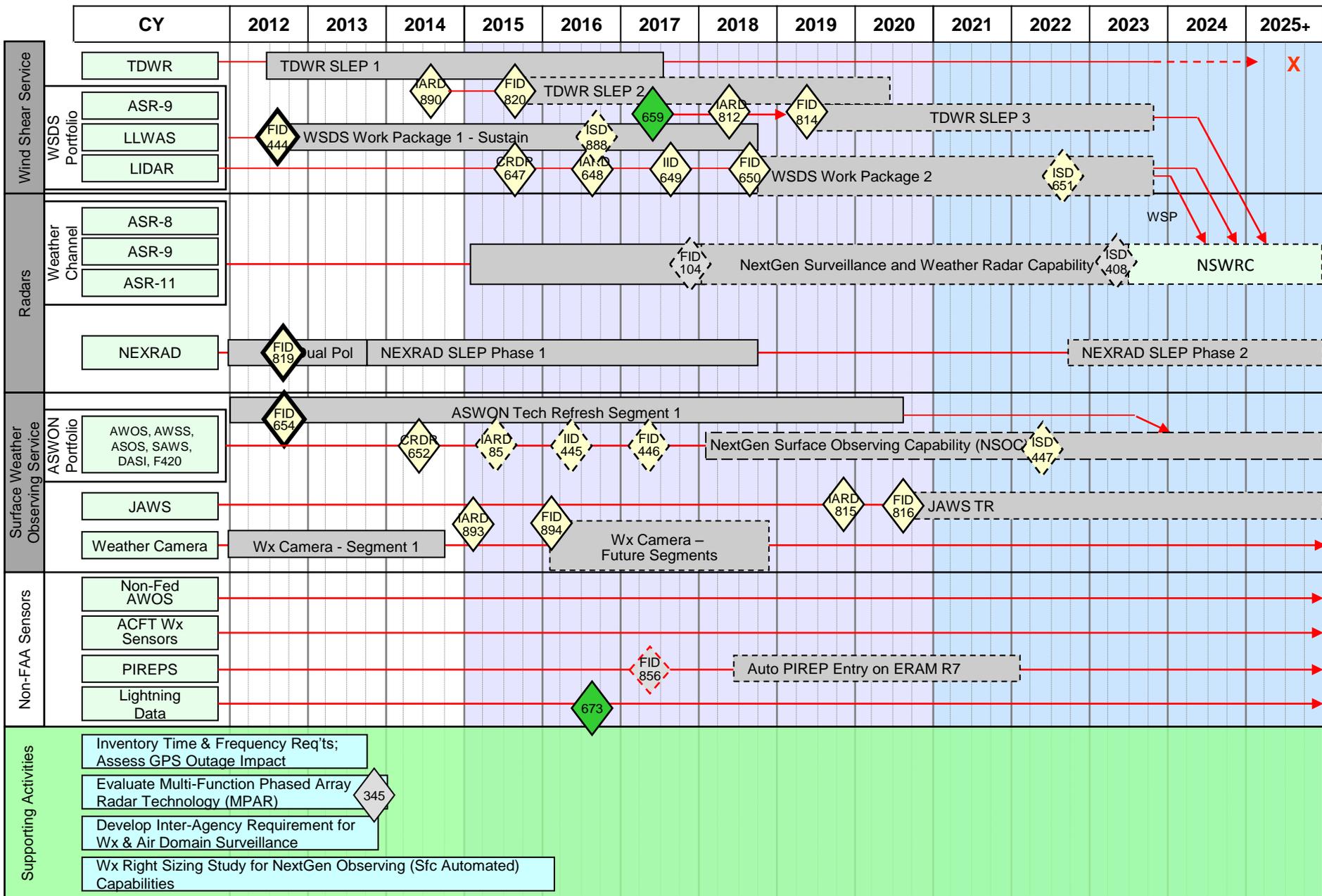
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
731	2012 Q4	N	Navigation	FID	Final Investment Decision (FID) for Enhanced Low Visibility Operations (ELVO)
770	2014 Q4	N	Airspace & Procedures	Strategy (Other)	Strategy Decision to incorporate Wake Turbulence system functions & wake procedures into terminal automation programs
772	2016 Q1	N	Airspace & Procedures	Policy	Decision to incorporate Wake Re-Categorization (Phase 2) into 7110.65
773	2020 Q1	N	Airspace & Procedures	Policy	Decision to incorporate Wake Re-Categorization (Phase 3) into 7110.65
774	2014 Q2	N	Airspace & Procedures	Policy	Decision to incorporate CSPR-specific Wake Turbulence Mitigation for Arrival Procedures into 7110.65 or other order prescribing air traffic control procedures
792	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Fuel Storage Tank
802	2016 Q2	N	Surveillance	ISD	In Service Decision (ISD) for ASDE-3 Surface Sustainment
843	2018 Q4	N	Airspace & Procedures	Strategy (Other)	Decision to incorporate a single runway arrival/departure wake turbulence mitigation system requirements into Terminal and TRACON automation systems
844	2019 Q4	N	Airspace & Procedures	Strategy (Other)	Decision to incorporate a Closely Spaced Parallel Runways (CSPR) wake turbulence mitigation system requirements into Terminal and TRACON automation systems

APPROVED

Weather

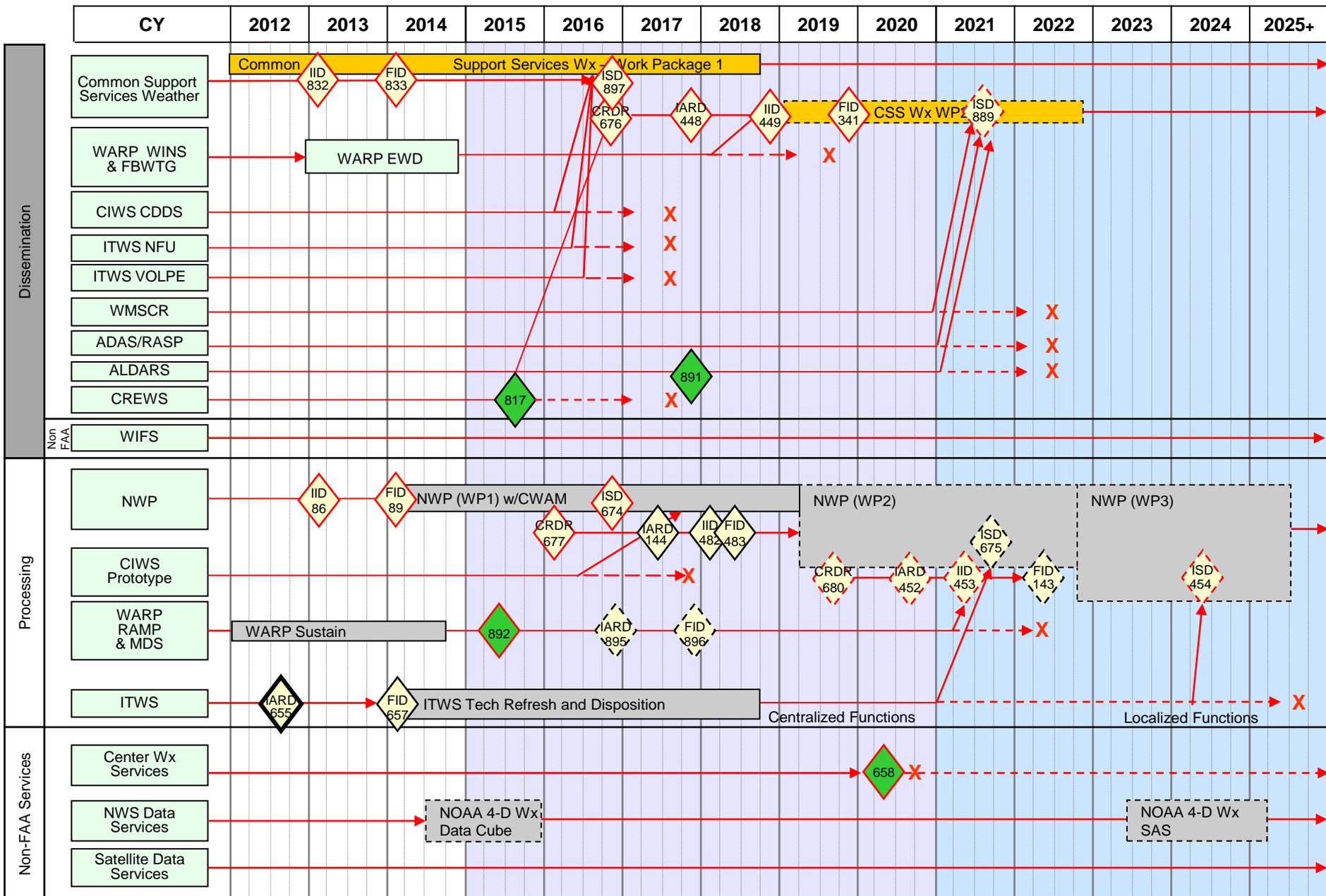
Objective: The Weather Roadmap presents an Executive View (EV) of weather-related acquisition activities and the changes to these activities that exist within the Weather enterprise architecture (EA) domain (projects and programs) of the Federal Aviation Administration (FAA). The Weather Roadmap provides the evolution of the weather architecture via AMS milestones and related activities (e.g., aviation weather research, demonstrations, and other agency activities) necessary to achieve the performance objectives and capabilities to support NextGen. As a perspective of the changes in the NAS operational environment, the Weather Roadmap reflects major Weather interdependencies to support (or be supported by) other domains in the NAS enterprise architecture as depicted in NAS Roadmaps.

Weather Roadmap (1 of 4)



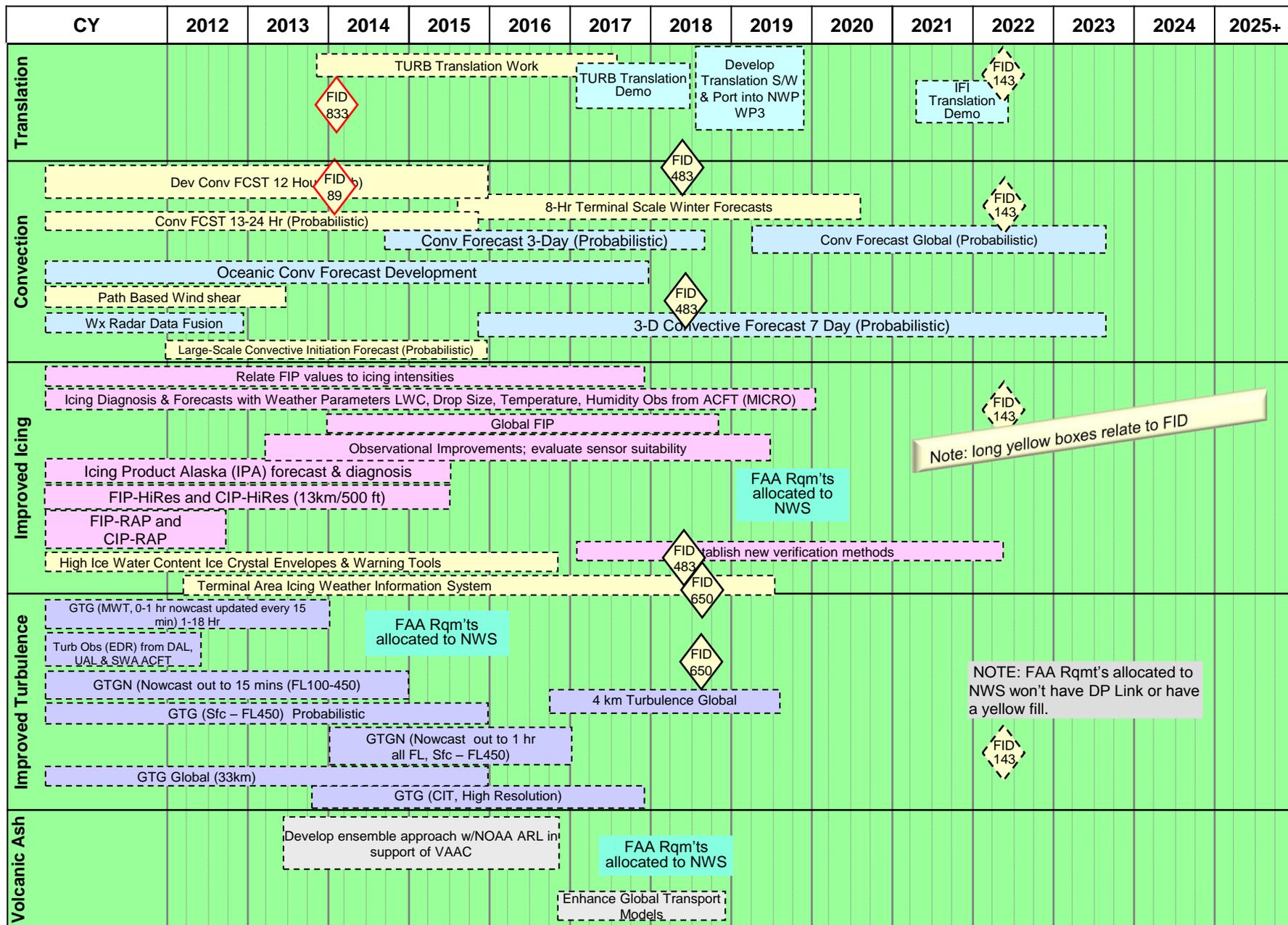
APPROVED

Weather Roadmap (2 of 4)



APPROVED

Weather Roadmap (3 of 4)

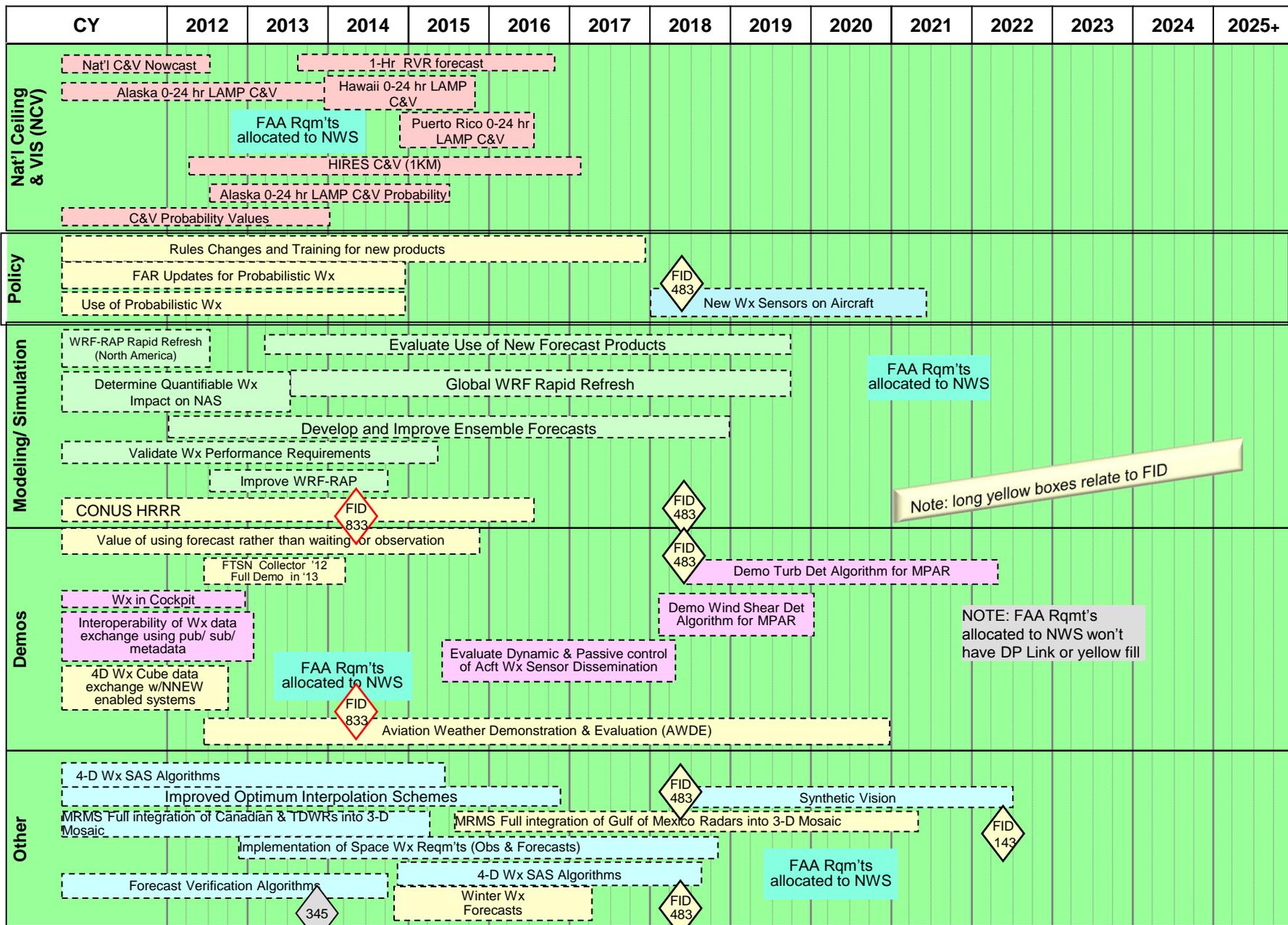


Note: long yellow boxes relate to FID

NOTE: FAA Rqmt's allocated to NWS won't have DP Link or have a yellow fill.

APPROVED

Weather Roadmap (4 of 4)



Note: long yellow boxes relate to FID

NOTE: FAA Rqm'ts allocated to NWS won't have DP Link or yellow fill

APPROVED

Weather Roadmap: Assumptions (1 of 2)

Identifier	Description
WX-01	Ongoing NextGen (NG) Weather functional & performance requirements validation for Midterm may result in new/emerging requirements that create perturbations in NextGen Weather Architecture
WX-02	<p>Weather Sensor Sustainment Issues:</p> <ol style="list-style-type: none"> 1) Terminal Portfolio approach <ul style="list-style-type: none"> Wind Shear systems (LLWAS, WSP & LIDAR) consolidated into Wind Shear Detection Services (WSDS) to sustain capabilities with DP's for IARD, IID, FID & ISD; WSDS to split into 2 Work Packages—Sustain & NextGen Instantiation (Sensor Expansion, LIDAR, New Requirements) – TDWR SLEP 2 is pulled out of Portfolio Implement ANG-C6 'Right Sizing' study results in NextGen Surface Observing Capability <ol style="list-style-type: none"> a) Incorporate 'Right Sizing' study results (FTSN) into ASWON TR as appropriate b) Consolidate Automated Surface Observing systems (ASOS/SAWS, AWOS, AWSS) plus F-420, DASI, WME & CHI into a single capability c) NextGen Surveillance/Weather Radar Capability continues to support Terminal & En route Weather requirements 2) Continue obtaining Surface Observations from non-Fed AWOS systems 3) Both NextGen Radar & Surface Observing capabilities will consider multi-agency requirements. Anticipate both of these capabilities will be implemented as multi-agency systems [Note combined WX-10 with this one.]
WX-03	<ol style="list-style-type: none"> 1) ADAS-Rehost serves as a consolidating access point for Weather observations for CSS-Wx. 2) Evaluate WMSCR communications to determine if movement of functionality to CSS-Wx should occur in WP1 or WP2. ALDARS functionality (in ADAS) to be subsumed by CSS-Wx WP 2 (information extraction functionality of CSS-Wx WP1 enables publishing of lightning reports to NextGen Surface Observing Capability)
WX-04	<p>Migrate Weather information distribution to envisioned enterprise Network Enabled Operations (NEO)</p> <ol style="list-style-type: none"> 1) Provide FAA Requirements for 4-D Weather Data Cube & 4-D Weather SAS information <p>NOTE: 1) NWS modeling capability is not part of the 4-D Wx SAS but is required to create data 2) IAW ICAO ConOps for ATM, ATM includes Service Providers & Users, e.g., pilots & dispatchers</p>
WX-05	<p>Improved observations & enhanced forecasts, require significant commitment to R&D and infrastructure changes must continue:</p> <ol style="list-style-type: none"> 1) R&D prioritized to meet NextGen Capabilities 2) Ample funding for Wx R&D, with increased focus on translation, must be available to realized the NextGen goals 3) Output of R&D-developed Algorithms will be available from the 4-D Wx SAS. All weather information available in 4-D Wx SAS by 2025. 4) Sensor measurement, accuracy & frequency must be increased IAW mid-term & far-term Performance Requirements. 5) Weather R&D must be coordinated and collaborative with NWS efforts 6) Initiate work with ICAO to harmonize NextGen/SESAR weather requirements

Weather Roadmap: Assumptions (2 of 2)

Identifier	Description
WX-06	<p>Convergence of Wx Processing Capability into NextGen Wx Processor (NWP)</p> <ol style="list-style-type: none"> 1) NextGen Weather Processor Work Package 1 (NWP WP 1) <ol style="list-style-type: none"> a) CIWS continues as prototype until integrated into NWP WP1 as part of 0-8 hour convective forecast (CoSPA) capability; CIWS Communications functionality (CDDS) is subsumed into CSS-Wx WP1 b) WARP RAMP (radar acquisition & mosaic processor) must be sustained until functionality transferred to NWP WP1. c) NAS IDS (or NIDS) incorporates WARP Remote BT functions, CIWS product display, ITWS display and CSS-Wx-provided data (Note: not a Wx display). d) Strategy Decision to either perform ITWS Tech Refresh (and incorporate into NWP WP2), or include ITWS into NWP WP1 <ol style="list-style-type: none"> a) Pending 1) d) - ITWS TR may be required to continue functionality until NWP WP2 fielded 2) NWP WP2: <ol style="list-style-type: none"> a) Selected Wx R&D algorithms matured since WP1 baseline frozen will be incorporated, e.g., 2-8 hour Winter Wx Forecast b) Implement improved Convective algorithms from Aviation Wx R&D c) Pending 1) d) – ITWS functionality transferred at this time except functions allocated to NextGen Far-Term Work Pkg to meet latency requirements of Wind shear/Microburst Detection & Prediction alerts d) Due to the delay in the implementation of NWP WP2 and FAA-NWS agreement to move forecasting functionality to NWS when NWS can meet all FAA requirements associated with forecasts, anticipate that FAA NWP WP2 will contain only the convective translation algorithms, any other maturing translations functionality and the ITWS functionality that overlays convective activity on the runway complex, while the CIWS/CoSPA and ITWS forecasting capability are implemented at NWS. 3) FAA NWP Translation WP3 will implement selected weather translations that have matured out of R&D since the WP2 baseline was frozen. NWS will implement selected WX R&D algorithms that have matured since their NWP Weather WP2 baseline was frozen.
WX-07	NextGen Weather information becomes available at user-specified resolution but weather impact is determined by user DST
WX-08	Weather Communications functionality to be provided by CSS-Wx
WX-09	Center Weather Service Unit support addressed as Strategy DP 658 to discontinue as advanced DSTs are fielded (~2020)
WX-10	NWP WP1 implements a convective “translation” product that provides Weather Avoidance Fields (WAFS) to change state of the atmosphere information into weather-related constraints to NAS airspace, which will be delivered by CSS-Wx Segment 1
WX-11	Weather-related constraints on NAS Airspace will be translated into NAS operational Impacts by User DSTs
WX-12	Products developed from Reqmts allocated to NWS, will be accessible via CSS-Wx as they become operational
WX-13	EPI sensor essential to mitigate ASOS shortfalls in Aircraft and Airport Ground Anti/De-icing operations will be deployed to support NextGen capacity/safety goals late in the mid-term
WX-14	FTSN (Flexible Terminal Sensor Network) conducts a series of CMTD activities starting in CY mid-2013

APPROVED

Weather Roadmap: Decision Points (1 of 3)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
85	2015 Q2	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for NSOC
86	2013 Q1	Y	Weather	IID	Initial Investment Decision (IID) for NWP WP1
89	2014 Q1	Y	Weather	FID	Final Investment Decision (FID) for NWP WP1
104	2017 Q4	N	Surveillance	FID	Final Investment Decision (FID) to implement a NextGen Surveillance and Weather Radar Capability for ATC
143	2022 Q2	N	Weather	FID	Final Investment Decision (FID) for NWP WP3
144	2017 Q2	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for NWP WP2
341	2019 Q4	Y	Weather	FID	Final Investment Decision (FID) for CSS-Wx WP2 and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
345	2013 Q4	N	Enterprise Services	Strategy (JRC)	Strategy Decision for the implementation of a GPS timing backup
408	2023 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for NextGen Surveillance and Weather Radar Capability
444	2012 Q2	N	Weather	FID	Final Investment Decision (FID) for WSDS WP1 "Sustain"
445	2016 Q2	N	Weather	IID	Initial Investment Decision (IID) for NSOC
446	2017 Q2	N	Weather	FID	Final Investment Decision (FID) for NSOC
447	2022 Q2	N	Weather	ISD	In-Service Decision (ISD) for NSOC
448	2017 Q4	Y	Weather	IARD	Investment Analysis Readiness Decision (IARD) for CSS-Wx WP2 and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
449	2018 Q4	Y	Weather	IID	Initial Investment Decision (IID) for CSS-Wx and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
452	2020 Q3	Y	Weather	IARD	Investment Analysis Readiness Decision (IARD) for NWP WP3
453	2021 Q2	Y	Weather	IID	Initial Investment Decision (IID) for NWP WP3
454	2024 Q2	Y	Weather	ISD	In-Service Decision (ISD) for NWP WP3
482	2018 Q1	N	Weather	IID	Initial Investment Decision (IID) for NWP WP2
483	2018 Q2	N	Weather	FID	Final Investment Decision (FID) for NWP WP2
647	2015 Q3	N	Weather	CRDR	Concept and Requirements Definition Readiness (CRDR) for WSDS Work Pkg 2
648	2016 Q3	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for WSDS Work Pkg 2
649	2017 Q3	N	Weather	IID	Initial Investment Decision (IID) for WSDS Work Pkg 2
650	2018 Q3	N	Weather	FID	Final Investment Decision (FID) for WSDS Work Pkg 2
651	2022 Q3	N	Weather	ISD	In-Service Decision (ISD) for WSDS Work Pkg 2
652	2014 Q2	N	Weather	CRDR	Concept and Requirements Definition Readiness (CRDR) for NextGen Surface Observing Capability

Weather Roadmap: Decision Points (2 of 3)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
654	2012 Q3	N	Weather	FID	Final Investment Decision (FID) for ASWON Tech Refresh
655	2012 Q3	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for ITWS Tech Refresh
657	2014 Q1	N	Weather	FID	Final Investment Decision (FID) for ITWS Tech Refresh
658	2020 Q2	Y	Weather	Strategy (JRC)	Strategy Decision to determine if Automation/DSTs can provide sufficient weather support services that CWSU contract with NWS may not need to be renewed or if CWSU weather support services are continued, will specify the system to provide the meteorological workstation capability
659	2017 Q2	N	Weather	Strategy (JRC)	Strategy Decision for SLEP 3 on TDWR
673	2016 Q3	N	Weather	Strategy (JRC)	Strategy Decision to execute option for FAA obtaining Total Lightning Data
674	2016 Q4	Y	Weather	ISD	In Service Decision (ISD) for NWP WP1
675	2021 Q3	N	Weather	ISD	In Service Decision (ISD) for NWP WP2
676	2016 Q4	Y	Weather	CRDR	Concept and Requirements Definition Readiness (CRDR) for CSS Weather Work Package 2
677	2016 Q1	Y	Weather	CRDR	Concept and Requirements Definition Readiness (CRDR) for NWP WP2
680	2019 Q3	Y	Weather	CRDR	Concept and Requirements Definition Readiness (CRDR) for NWP WP3
812	2018 Q2	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for TDWR SLEP 3
814	2019 Q2	N	Weather	FID	Final Investment Decision (FID) for TDWR SLEP 3
815	2019 Q4	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for JAWS SLEP
816	2020 Q3	N	Weather	FID	Final Investment Decision (FID) for JAWS SLEP
817	2015 Q3	N	Weather	Strategy (JRC)	Strategy Decision to move source of TMA model data (RUC) from CREWS (CTAS Remote Weather System) to CSS-Wx
819	2012 Q3	N	Weather	FID	Final Investment Decision (FID) for NEXRAD (12 FAA Radars) SLEP
820	2015 Q3	N	Weather	FID	Final Investment Decision (FID) for TDWR SLEP 2
832	2013 Q1	Y	Weather	IID	Initial Investment Decision (IID) for CSS-Wx WP1
833	2014 Q1	Y	Weather	FID	Final Investment Decision (FID) for CSS-Wx WP1
856	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for ERAM R7
888	2016 Q3	N	Weather	ISD	In Service Decision (ISD) for WSDS WP1 "Sustain"
889	2021 Q3	Y	Weather	ISD	In-Service Decision (ISD) for CSS-Wx WP2
890	2014 Q3	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for TDWR SLEP 2
891	2017 Q4	N	Weather	Strategy (JRC)	Strategy Decision to determine the source of lightning data between satellite mapper and surface lighting systems
892	2015 Q2	Y	Weather	Strategy (JRC)	Strategy Decision to sustain WARP maintenance until decommission

Weather Roadmap: Decision Points (3 of 3)

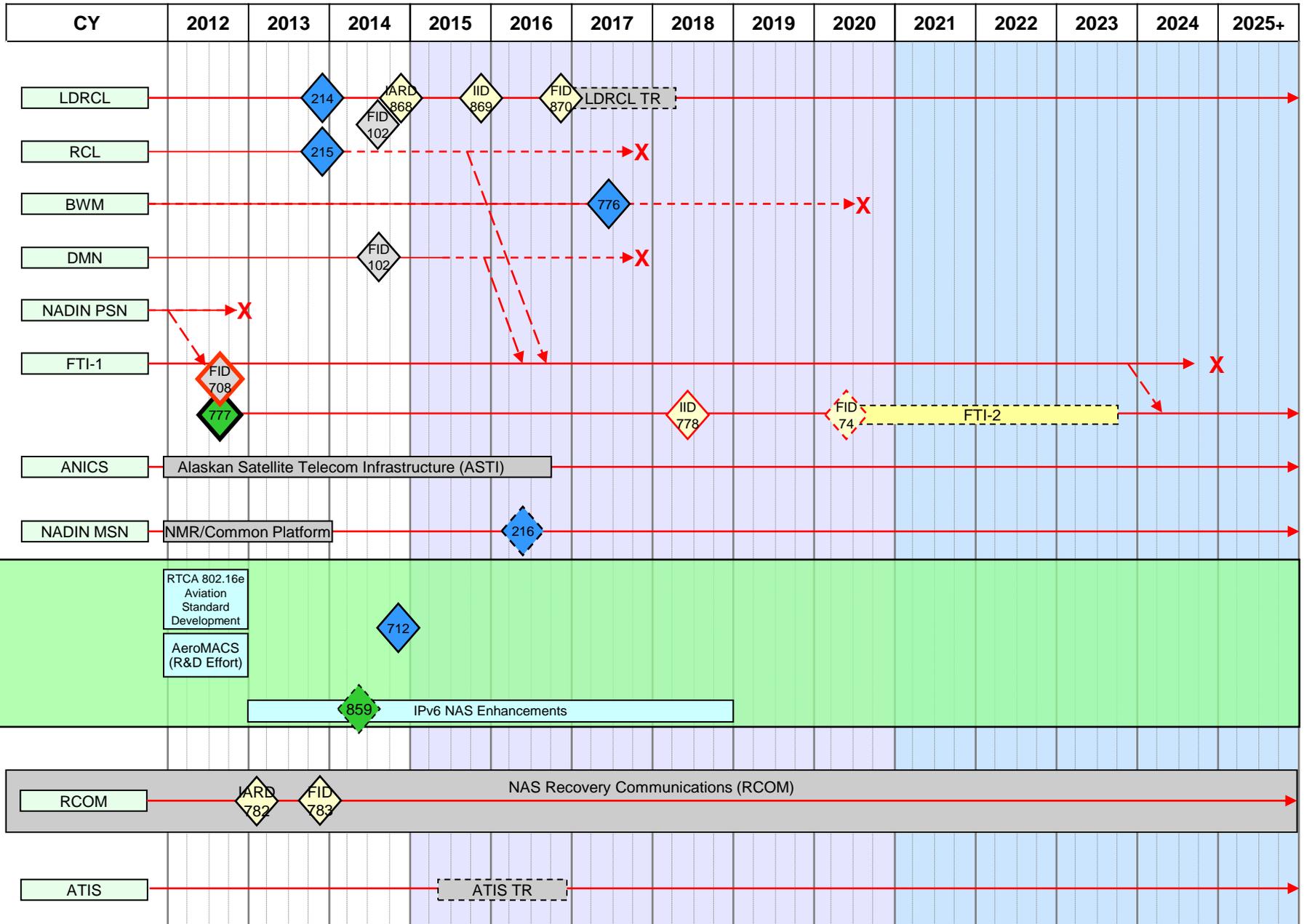
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
893	2015 Q1	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for the Weather Camera Program - Future Segments
894	2016 Q1	N	Weather	FID	Final Investment Decision (FID) for the Weather Camera Program - Future Segments
895	2016 Q4	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for WARP SLEP / decommission
896	2017 Q4	N	Weather	FID	Final Investment Decision (FID) for WARP SLEP / decommission
897	2016 Q4	Y	Weather	ISD	In-Service Decision (ISD) for CSS-Wx WP1

APPROVED

Communications

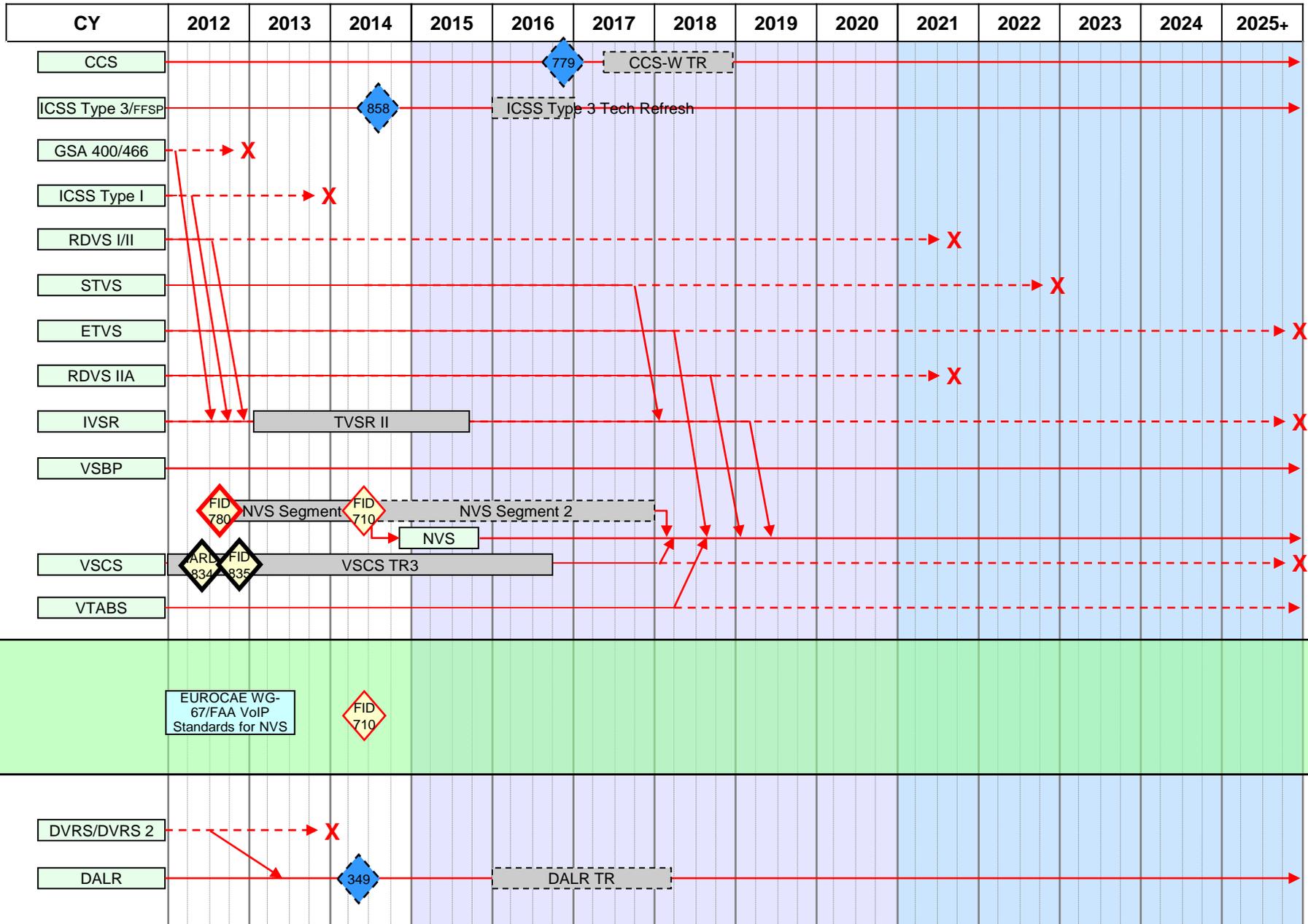
Objective : The Communication Roadmap presents an Executive View (EV) of the current communication systems supporting the National Airspace System and their enhancement, sustainment or replacement through major development programs and support activities. The Communication Roadmap is intended to convey the major communication program strategy and acquisition decision points as well as program funding. The roadmap serves as a summary view of more detailed plans within each development program.

Communications Roadmap (1 of 4)



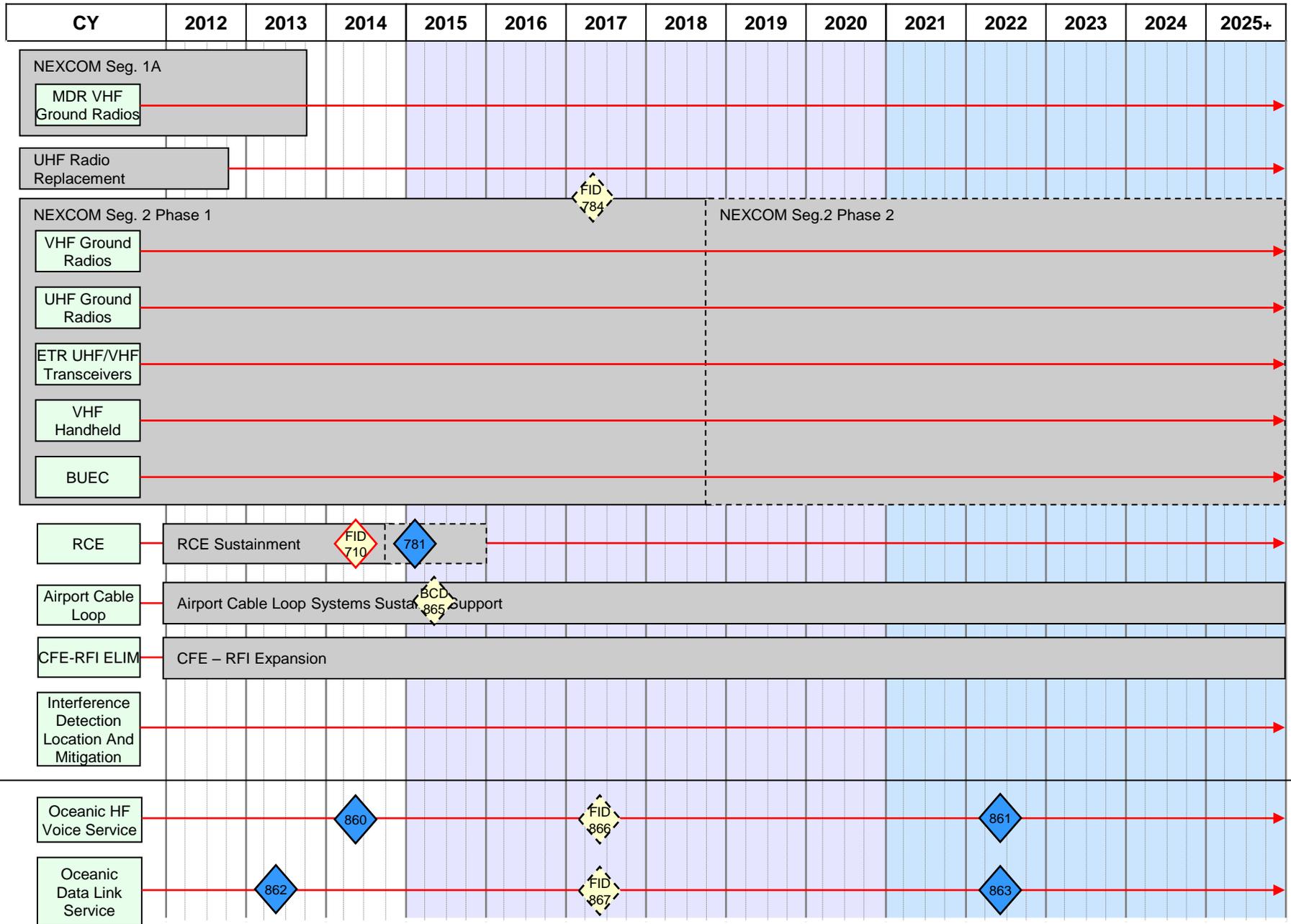
APPROVED

Communications Roadmap (2 of 4)



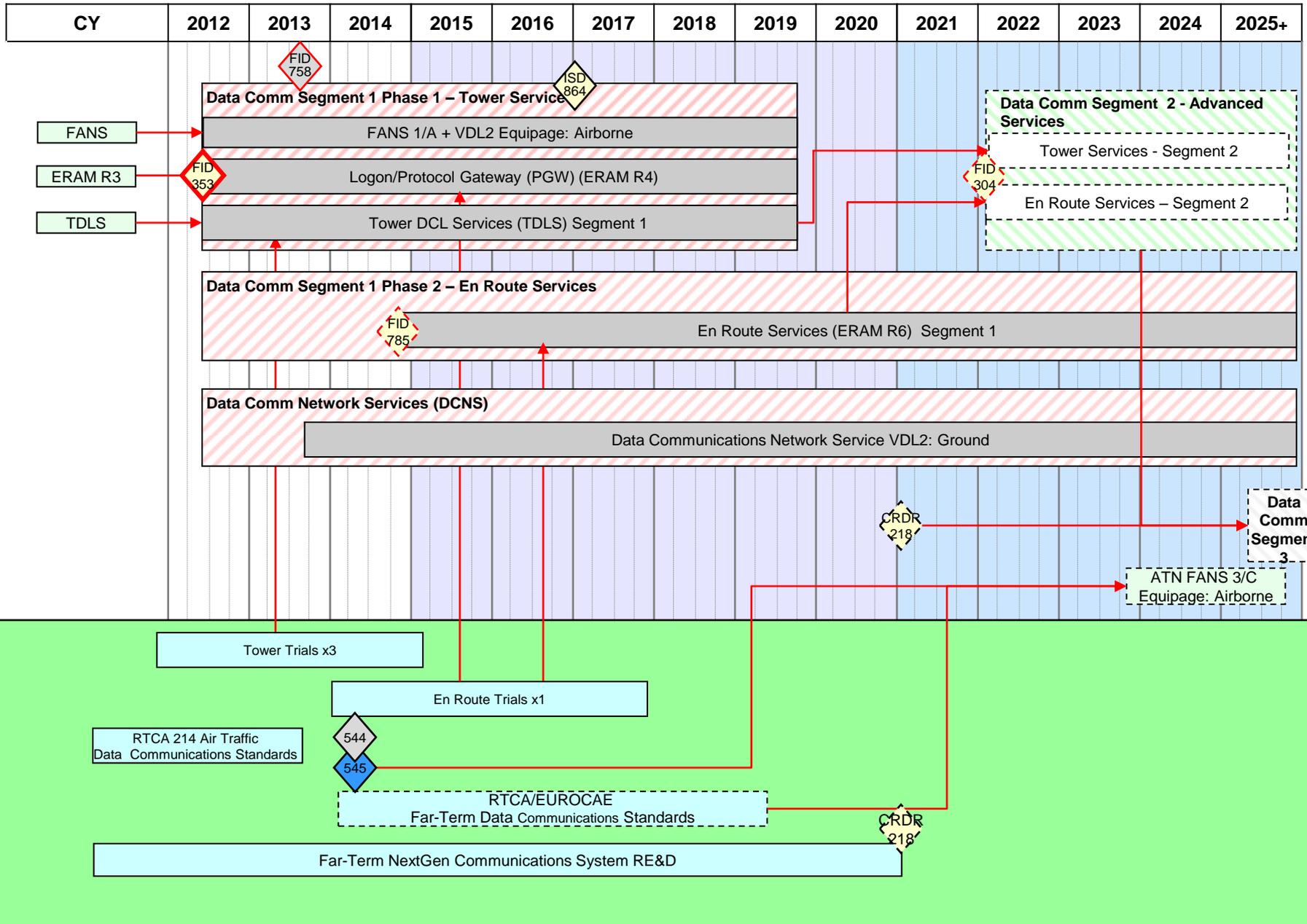
APPROVED

Communications Roadmap (3 of 4)



APPROVED

Communications Roadmap (4 of 4)



APPROVED

Communications Roadmap: Assumptions (1 of 2)

Identifier	Description
COMM-01	NAS must transition from dedicated “nailed up” sector-based and independent facility operations to networked area-based operations
COMM-02	FTI will become the primary ground-based Voice/Data transport system.
COMM-03	The NAS Voice System (NVS) is required to meet the following FAA business objectives: Consolidation/collocation; Business Continuity Plan; Load Balancing/Load Sharing; 4D Trajectory concepts
COMM-04	All flight safety critical A/G communications are over VHF based systems. Advisory communications (e.g. Weather, NAS Status, NOTAMS) may be supported by commercial communications services through "airborne access to SWIM" services.
COMM-05	<p>Infrastructure evolution is driven by:</p> <ul style="list-style-type: none"> a) Transition strategies start in higher altitude airspaces migrating toward lower altitudes b) Implementation starts in large facilities migrating to small facilities c) Expectation for reduction in number of facilities—(staffed and unstaffed) d) Infrastructure and people “dedicated to specific airspace” changing to “quickly and easily adapted to airspace as needed” e) Expectation for very low growth in number of operational sectors (“airspace growth”) through the mid term, limiting demand on dedicated resources
COMM-07	There will be a JRC decision in 2013 Q4 (DP 214) to decommission LDRCL.
COMM-08	There will be a JRC decision in 2013 Q4 (DP 215) to decommission RCL. Schedule will be determined based on the SIM program milestones. BWM will remain and transition to the replacement RCL service.
COMM-09	There is an approved transition plan for migrating real-time surveillance data directly onto FTI services in order to allow DMN decommissioning. Plan on hold awaiting SIM decision.

Communications Roadmap: Assumptions (2 of 2)

Identifier	Description
COMM-10	There will be a decision (DP 218) whether to implement ATC data communications capabilities using yet to be defined broad-band communications links in addition to VDL-2.
COMM-11	Relationship between SWIM and Communications: SWIM Dataflows all leverage NAS OPS IP service and initial SWIM Segment 2 infrastructure is being implemented with FTI.
COMM-12	Three ICSS switches in Alaska AFSSs are to be replaced by NVS switches.
COMM-13	ASTI (ANICS) will not be integrated into FAA Telecommunications Infrastructure contract .

APPROVED

Communications Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
74	2020 Q2	Y	Communication	FID	Final Investment Decision (FID) for FTI 2
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
214	2013 Q4	N	Communication	Strategy (Other)	Strategy Decision to determine to sustain or decommission LDRCL
215	2013 Q4	N	Communication	Strategy (Other)	Strategy Decision to determine to sustain or decommission RCL
216	2016 Q2	N	Communication	Strategy (Other)	Strategy Decision to determine to sustain or replace NMR
218	2021 Q1	N	Communication	CRDR	Concept and Requirements Definition Readiness (CRDR) Decision for DataComm Segment 3 and the migration to L-band
304	2022 Q1	Y	Communication	FID	Final Investment Decision (FID) for Data Comm Segment 2
345	2013 Q4	N	Enterprise Services	Strategy (JRC)	Strategy Decision for the implementation of a GPS timing backup
349	2014 Q2	N	Communication	Strategy (Other)	Strategy Decision to approve digital audio legal recorder replacement
353	2012 Q2	Y	Communication	FID	Final Investment Decision (FID) for Data Communications Segment 1 Phase 1: Tower Services, DCIS Contract and ERAM PGW and Logon.
544	2014 Q2	N	Aircraft	Policy	Complete Guidance under SC 214 for Avionics
545	2014 Q2	N	Communication	Strategy (Other)	Strategy Decision to Approve Draft SC-214 MOPS
708	2012 Q3	Y	Enterprise Services	FID	Final Investment Decision for SWIM Segment 2
710	2014 Q2	Y	Communication	FID	Final Investment Decision (FID) for NVS Segment 2
712	2014 Q4	N	Communication	Strategy (Other)	Strategy Decision on AeroMacs
758	2013 Q3	Y	Automation	FID	Final Investment Decision (FID) for ERAM D-Position and System Enhancements
776	2017 Q2	N	Communication	Strategy (Other)	Strategy Decision for future of BWM

Communications Roadmap: Decision Points (2 of 2)

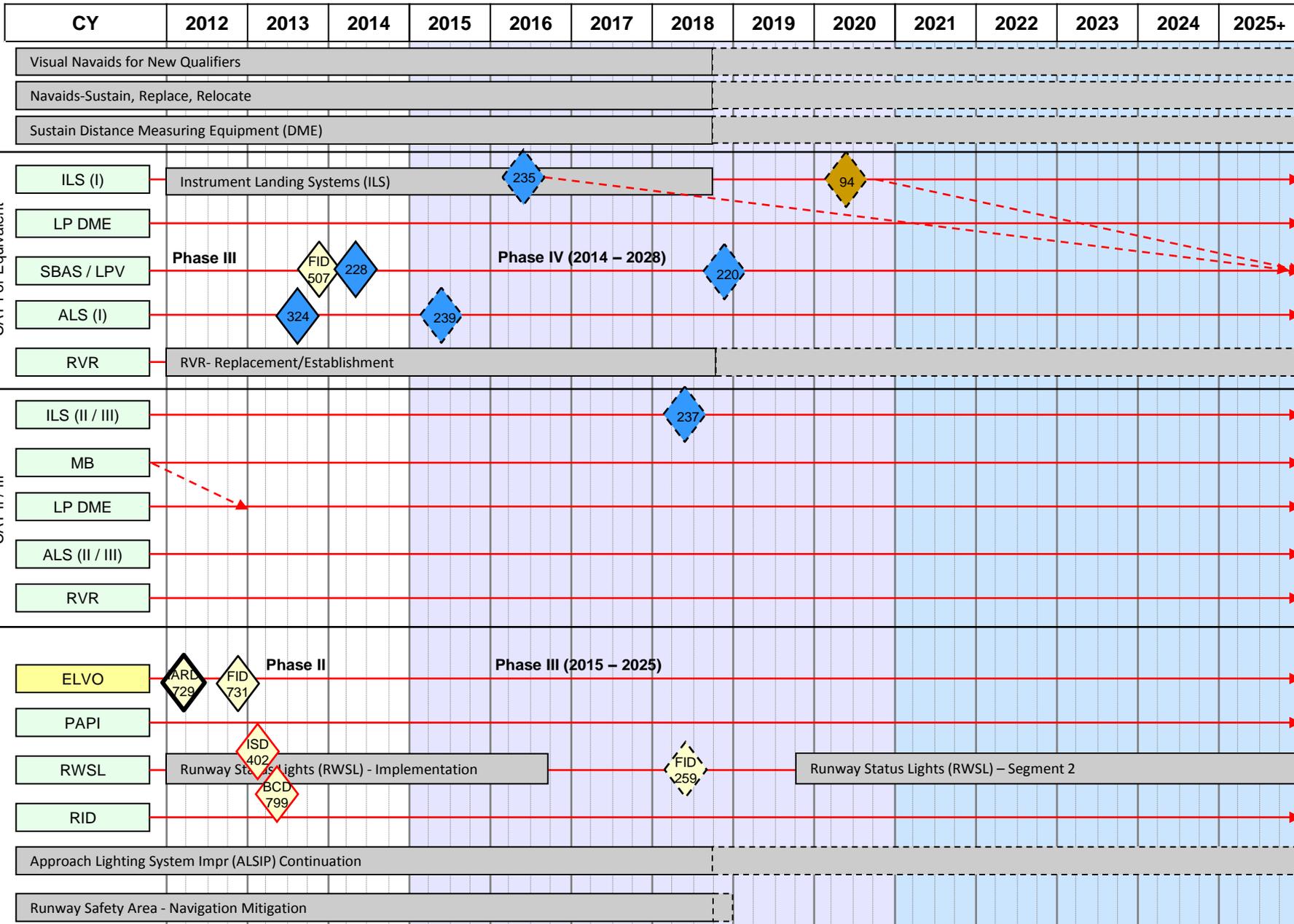
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
777	2012 Q3	N	Communication	Strategy (JRC)	Strategy Decision to determine the direction of the FTI-2 program
778	2018 Q2	Y	Communication	IID	Initial Investment Decision (IID) for FTI-2 program
779	2016 Q4	N	Communication	Strategy (Other)	Strategy Decision to set future direction of CCS-W technical platform and need for refresh
780	2012 Q3	Y	Communication	FID	Final Investment Decision (FID) for NVS Segment 1
781	2015 Q1	N	Communication	Strategy (Other)	Strategy Decision to determine RCE replacement by NVS
782	2013 Q1	N	Communication	IARD	Investment Analysis Readiness Decision (IARD) for RCOM
783	2013 Q4	N	Communication	FID	Final Investment Decision (FID) for RCOM
784	2017 Q2	N	Communication	FID	Final Investment Decision (FID) for NEXCOM Segment 2 Phase 2 in remaining Terminal and Flight Service areas
785	2014 Q4	Y	Communication	FID	Final Investment Decision (FID) for Data Communications Segment 1 Phase 2 En Route Services
834	2012 Q2	N	Communication	IARD	Investment Analysis Readiness Decision (IARD) for VSCS TR3
835	2012 Q4	N	Communication	FID	Final Investment Decision (FID) for VSCS TR3
858	2014 Q3	N	Communication	Strategy (Other)	Strategy decision to determine ICSS Type 3 Replacement
859	2014 Q2	N	Communication	Strategy (JRC)	Strategy for NAS IPv6 Enhancements
860	2014 Q2	N	Communication	Strategy (Other)	Strategy decision to determine need for Oceanic HF Voice Services Contract re-compete
861	2022 Q2	N	Communication	Strategy (Other))	Strategy decision to determine need for continuation of Oceanic HF Voice Service
862	2013 Q2	N	Communication	Strategy (Other)	Strategy decision to determine need for Oceanic Data Link Services contract re-compete
863	2022 Q2	N	Communication	Strategy (Other)	Strategy decision to determine need for continuation of Oceanic Data Link Services
864	2016 Q4	N	Communication	ISD	In Service Decision for DataComm Segment 1
865	2015 Q2	N	Communication	FID	Final Investment Decision (FID) for Airport Cable Loop Program
866	2017 Q2	N	Communication	FID	Final Investment Decision (FID) for Oceanic HF Voice Service
867	2017 Q2	N	Communication	FID	Final Investment Decision (FID) for Oceanic Data link Service
868	2014 Q4	N	Communication	IARD	Investment Analysis Readiness (IARD) for LDRCL Tech Refresh
869	2015 Q4	N	Communication	IID	Initial Investment Decision (IID) for LDRCL Tech Refresh
870	2016 Q4	N	Communication	FID	Final Investment Decision (FID) for LDRCL Tech Refresh

APPROVED

Navigation

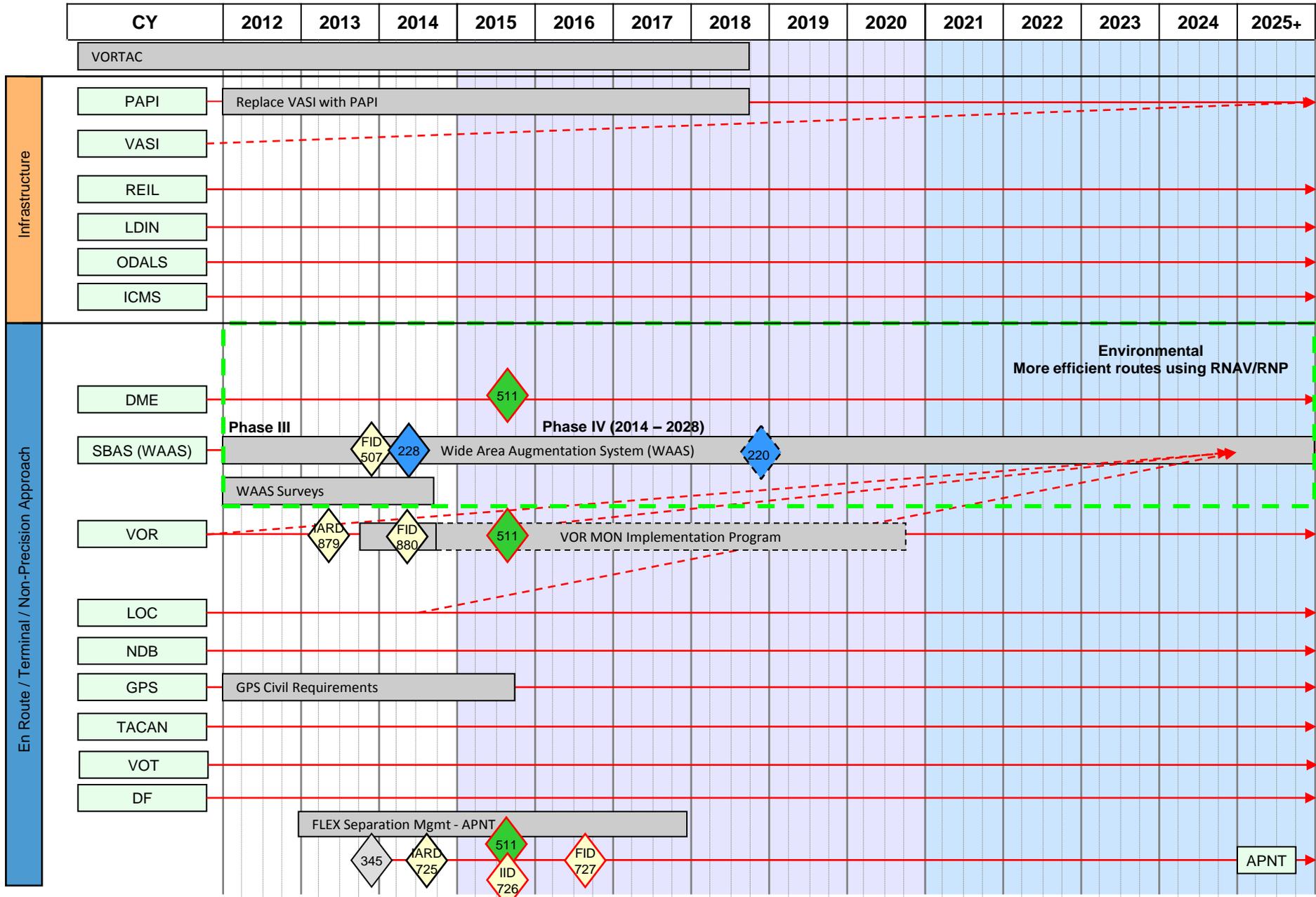
Objective : The Navigation roadmap depicts the sustainment of legacy ground-based Nav aids and the gradual evolution to navigation systems that support Performance-Based Navigation (PBN) in the NextGen environment.

Navigation Roadmap (1 of 3)



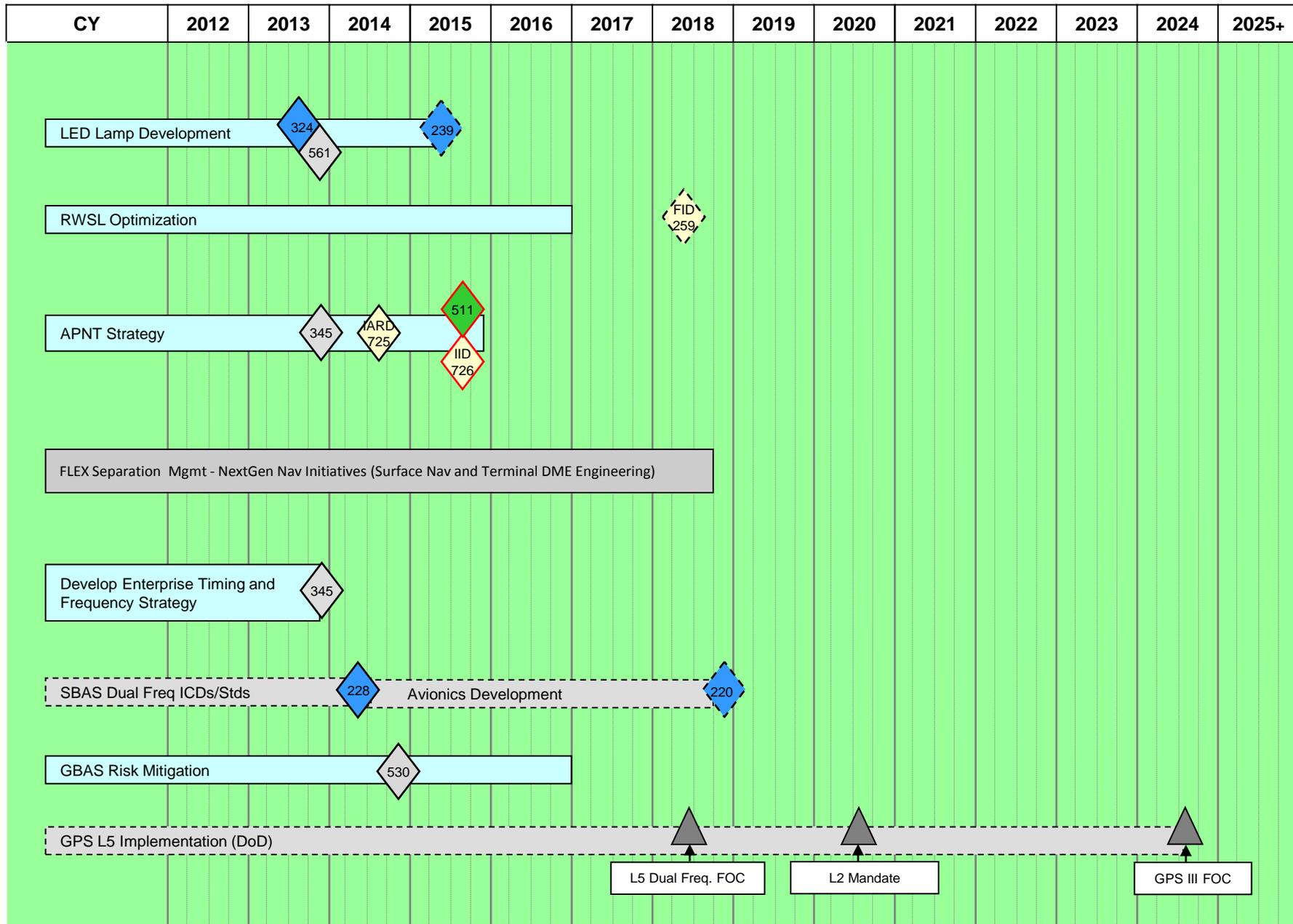
APPROVED

Navigation Roadmap (2 of 3)



APPROVED

Navigation Roadmap (3 of 3)



APPROVED

Navigation Roadmap: Assumptions

Identifier	Description
NAV-01	<p>NextGen implementation requires an aggressive transition to services that support performance-based navigation. This requires:</p> <ul style="list-style-type: none">a) Close collaboration with the aviation communityb) A clear definition of the standard services that will be provided by FAAc) Other services supported by non-Federal entities
NAV-02	<p>FAA is migrating to NAS-wide performance-based navigation—RNAV/RNP/LPV using GNSS and DME/DME for en route, terminal, and approach & landing domains. This will include:</p> <ul style="list-style-type: none">a) Transition from VORs to GNSS RNAV and APNT for en route and terminalb) Transition from ILS to GNSS (SBAS/GBAS)* for approach and landingc) Provision for CAT I or equivalent approach & landing service by SBAS at airports meeting minimum criteriad) Extent of CAT II and CAT III service by GBAS is TBD <p>* SBAS is WAAS; GBAS is LAAS</p>
NAV-03	<p>Need to continue working closely with users and the avionics industry on equipage issues</p> <ul style="list-style-type: none">a) Current equipage is insufficient to support transition from ground-based infrastructure to performance-based navigationb) In the future, equipage will be in place to support transition to performance-based navigationc) Implementation dates allow sufficient lead time to accommodate time-lines
NAV-04	<p>Policy will be in place to maintain safety, security, and capacity and preclude significant economic impact during GNSS outages</p>
NAV-05	<p>Department of Defense will maintain a GPS constellation consistent with the Standard Positioning Service.</p>

Navigation Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
94	2020 Q2	N	Navigation	Policy	Policy decision on complete Instrument Landing System (ILS) CAT I drawdown
220	2018 Q4	N	Navigation	Strategy (Other)	Decision to cut over to Dual Frequency Operations based on completion of Dual Frequency (GPS L1 and L5) development & testing.
228	2014 Q2	N	Navigation	Strategy (Other)	Decision to proceed with WAAS dual frequency avionics activities to validate standards and lower risk for avionics development.
235	2016 Q2	N	Navigation	Strategy (Other)	Strategy Decision on active drawdown of CAT I ILSs operating in the NAS
237	2018 Q2	N	Navigation	Strategy (Other)	Strategy Decision on replacement CAT II/III ILSs operating in the NAS
239	2015 Q2	N	Navigation	Strategy (Other)	Strategy Decision to proceed with ALS (I) Production LED Lamps for MALSR systems based on results of Benefit Cost Analysis
259	2018 Q2	N	Navigation	FID	Final Investment Decision (FID) for RWSL Technology Refresh
324	2013 Q3	N	Navigation	Strategy (Other)	Decision to proceed with ALS (I) LED lamps, based on Operational Capability Demonstration with Enhanced Flight Vision System (EFVS) aircraft
345	2013 Q4	N	Enterprise Services	Strategy (JRC)	Strategy Decision for the implementation of a GPS timing backup
402	2013 Q1	Y	Navigation	ISD	In-Service Decision (ISD) for Runway Status Light System
507	2013 Q4	N	Navigation	FID	Final Investment Decision (FID) to move WAAS from Phase III to Phase IV
511	2015 Q3	Y	Navigation	Strategy (JRC)	Alternate Position, Navigation, and Timing (APNT) solution determined
530	2014 Q4	N	Aircraft	Strategy (Other)	Complete MOPS Draft for GBAS Category I and Category II
561	2013 Q4	N	Airport	Policy	Decision to Implement Energy Independence and Security Act (EISA) Compliance Policy

APPROVED

Navigation Roadmap: Decision Points (2 of 2)

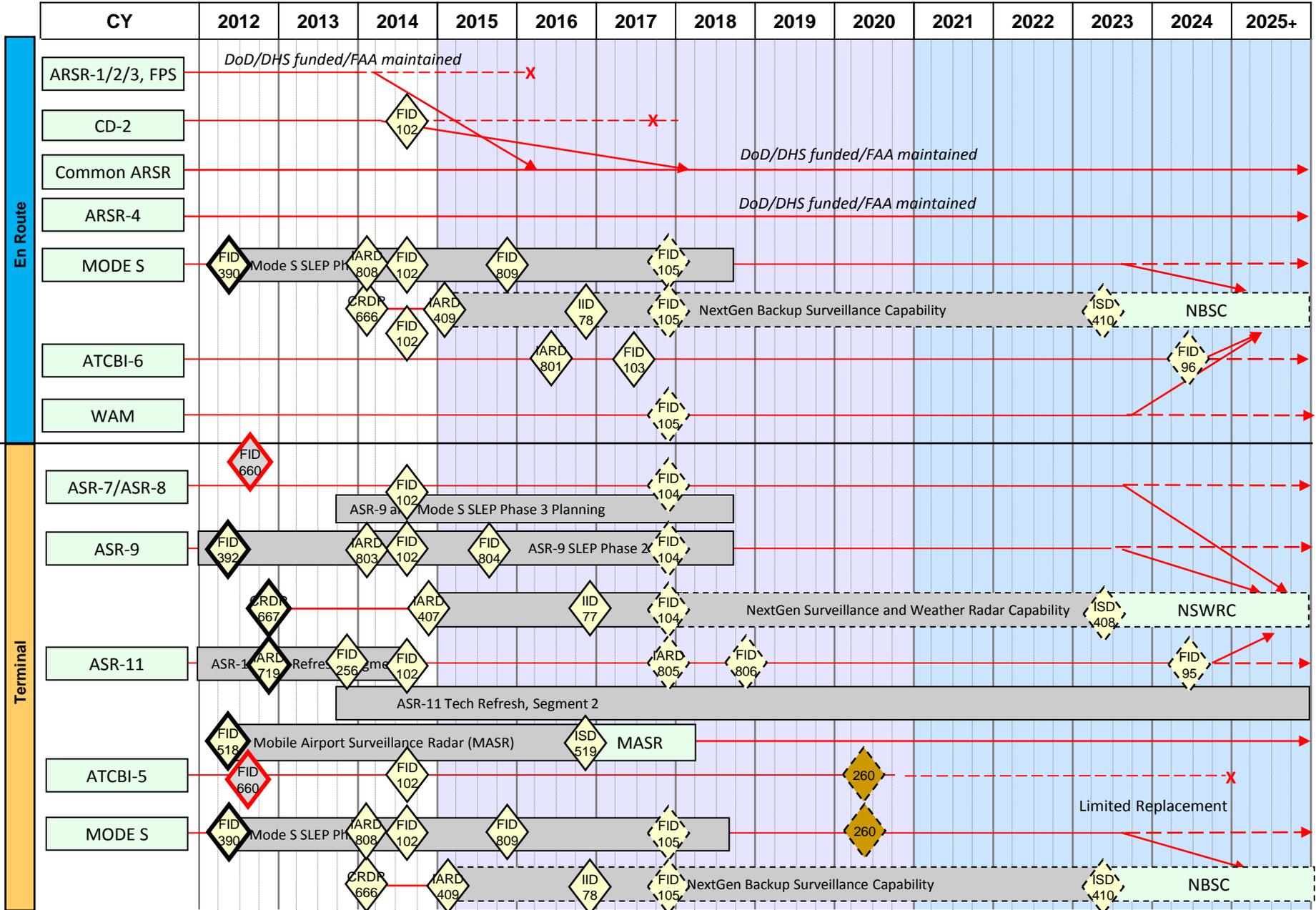
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
725	2014 Q3	N	Navigation	IARD	Investment Analysis Readiness Decision (IARD) for Alternate Positioning, Navigation and Timing (APNT)
726	2015 Q3	Y	Navigation	IID	Initial Investment Decision (IID) for Alternate Positioning, Navigation and Timing (APNT)
727	2016 Q3	Y	Navigation	FID	Final Investment Decision (FID) for Alternate Positioning, Navigation and Timing (APNT)
729	2012 Q1	N	Navigation	IARD	Investment Analysis Readiness Decision (IARD) for Enhanced Low Visibility Operations (ELVO)
731	2012 Q4	N	Navigation	FID	Final Investment Decision (FID) for Enhanced Low Visibility Operations (ELVO)
799	2013 Q2	Y	Navigation	BCD	Baseline Change Decision (BCD) for Runway Status Light Program
879	2013 Q2	N	Navigation	IARD	IARD for the VOR MON Implementation
880	2014 Q2	N	Navigation	FID	FID for the VOR MON Implementation

APPROVED

Surveillance

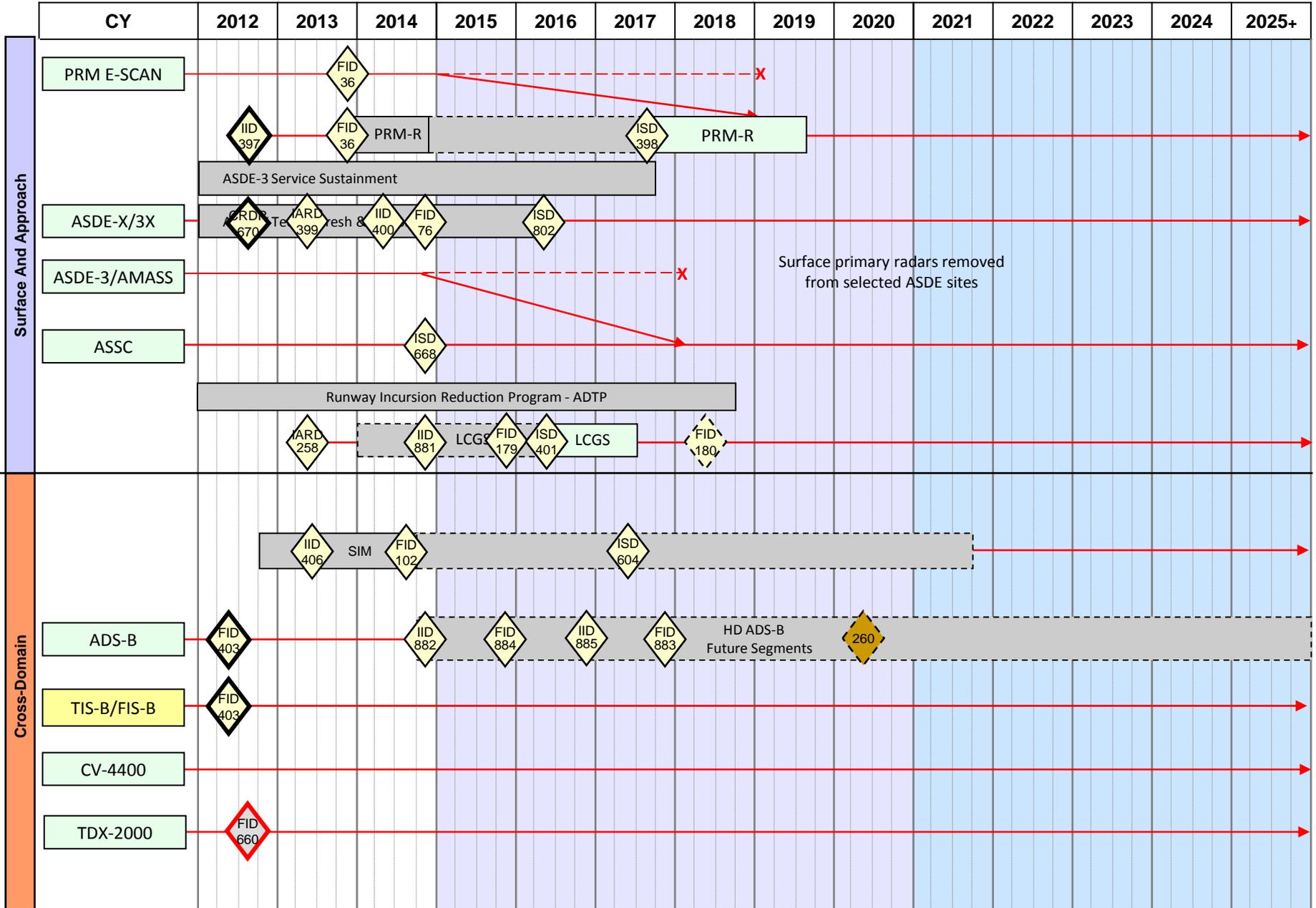
Objective : The Surveillance roadmap depicts the sustainment of legacy surveillance systems and the evolution towards the NextGen environment.

Surveillance Roadmap (1 of 3)



APPROVED

Surveillance Roadmap (2 of 3)



APPROVED

Surveillance Roadmap: Assumptions

Identifier	Description
SURV-01	Migration to Automatic Dependent Surveillance—Broadcast (ADS-B) as primary means of surveillance a) Airspace rule to be in effect and backup to be in place by 2020 (compliance date) <ol style="list-style-type: none"> 1. Existing surveillance infrastructure will remain in place until 2020
SURV-02	Backup to mitigate loss of on-board GPS positioning source required a) Backup strategy was identified in January 2007 <ol style="list-style-type: none"> 1. Retain all en route beacons (~150 monopulse systems with selective interrogation) 2. Retain limited set of terminal beacons at Operational Evolution Partnership (OEP)/High Density Terminals (~43 locations) b) All terminal primary radars are retained <ol style="list-style-type: none"> 1. Used as safety (ATC) backup 2. May also be retained for aviation security and/or weather requirements
SURV-03	Surface primary radar surveillance will not be required at selected ASDE sites a) Requires mandated equipage of all surface vehicles b) Surface surveillance to be supported by multilateration and ADS-B at these sites
SURV-04	PRM-A, with multilateration technology, will replace PRM E-Scan
SURV-06	Department of Defense/Department of Homeland Security continues to fund LRR systems through 2025
SURV-07	Digital automation system inputs are assumed for implementation of SIM

APPROVED

Surveillance Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
36	2013 Q4	N	Surveillance	FID	Final Investment Decision (FID) for migration of PRM to PRM-R
76	2014 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ASDE-3 Service Sustainment
77	2016 Q4	N	Surveillance	IID	Initial Investment Decision (IID) to implement a NextGen Surveillance and Weather Radar Capability for ATC
78	2016 Q4	N	Surveillance	IID	Initial Investment Decision (IID) for NextGen Backup Surveillance Capability
95	2024 Q2	N	Surveillance	FID	Final Investment Decision (FID) for replacement of terminal primary radars (ASR-11 PSR) and removal of terminal beacons (ASR-11 MSSR)
96	2024 Q2	N	Surveillance	FID	Final Investment Decision (FID) for replacement of en route beacons (ATCBI-6)
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
103	2017 Q2	N	Surveillance	FID	Final Investment Decision (FID) for technology refresh of beacons (ATCBI-6)
104	2017 Q4	N	Surveillance	FID	Final Investment Decision (FID) to implement a NextGen Surveillance and Weather Radar Capability for ATC
105	2017 Q4	N	Surveillance	FID	Final Investment Decision (FID) for NextGen Backup Surveillance Capability
179	2015 Q4	N	Surveillance	FID	Final Investment Decision (FID) for LCGS
180	2018 Q2	N	Surveillance	FID	Final Investment Decision (FID) for ADS-B to assume LCGS function, or approve a Technology Refresh for LCGS
256	2013 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ASR-11 Technology Refresh Segment 2 (through 2025)
258	2013 Q2	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for Low Cost Ground Surveillance (LCGS)
260	2020 Q2	N	Surveillance	Policy	Decision on ADS-B Rule Compliance
345	2013 Q4	N	Enterprise Services	Strategy (JRC)	Strategy Decision for the implementation of a GPS timing backup
390	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for legacy beacon (Mode S) Phase 2 SLEP through 2028
392	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for legacy radar (ASR-9) SLEP through 2027
397	2012 Q3	N	Surveillance	IID	Initial Investment Decision (IID) for migration of PRM to PRM-R
398	2017 Q3	N	Surveillance	ISD	In-Service Decision (ISD) for PRM-R
399	2013 Q2	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for ASDE-3 Service Sustainment
400	2014 Q2	N	Surveillance	IID	Initial Investment Decision (IID) for ASDE-3 Service Sustainment
401	2016 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for Low Cost Ground Surveillance system
403	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for SBS
406	2013 Q2	N	Surveillance	IID	Initial Investment Decision (IID) for SIM in terminal and en route legacy radar systems
407	2014 Q4	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for NextGen Surveillance and Weather Radar Capability
408	2023 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for NextGen Surveillance and Weather Radar Capability
409	2015 Q1	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for NextGen Backup Surveillance Capability

APPROVED

Surveillance Roadmap: Decision Points (2 of 2)

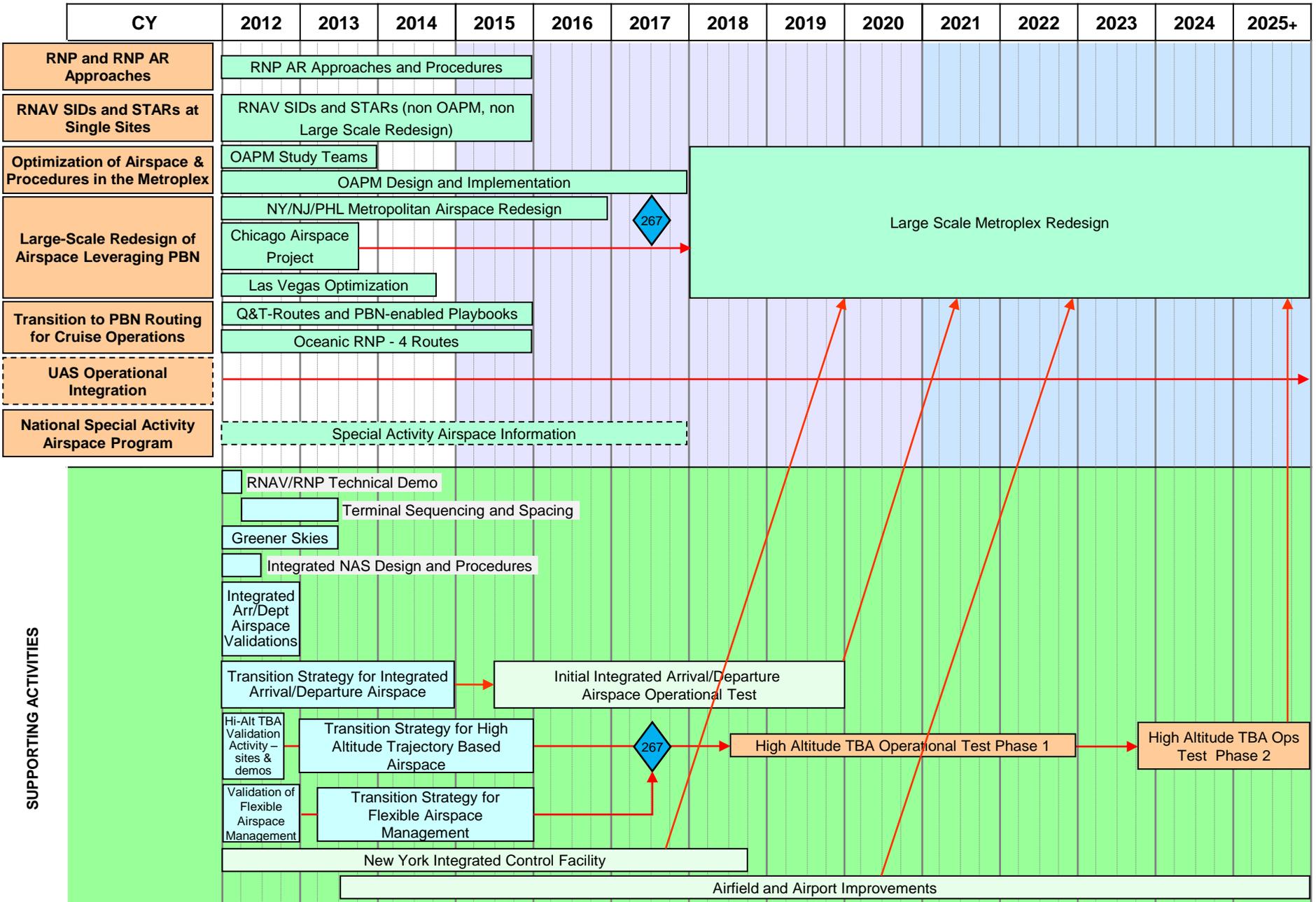
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
410	2023 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for NextGen Backup Surveillance Capability
511	2015 Q3	Y	Navigation	Strategy (JRC)	Alternate Position, Navigation, and Timing (APNT) solution determined
518	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for a Mobile/Transportable Airport Surveillance Radar (MASR)
519	2016 Q4	N	Surveillance	ISD	In-Service Decision (ISD) for a Mobile/Transportable Airport Surveillance Radar (MASR)
604	2017 Q2	N	Surveillance	ISD	Initial In-Service Decision (ISD) for SIM in Terminal and En Route Legacy Radar Systems for first platform
660	2012 Q3	Y	Automation	FID	Final Investment Decision (FID) for TAMR P3S2 (Phase 3 Segment 2)
666	2014 Q1	N	Surveillance	CRDR	Concept and Requirements Definition Readiness (CRDR) Decision for NextGen Backup Surveillance Capability
667	2012 Q4	N	Surveillance	CRDR	Concept and Requirements Definition Readiness (CRDR) Decision for NextGen Surveillance and Weather Radar Capability
668	2014 Q4	N	Surveillance	ISD	In Service Decision (ISD) for Airport Surface Surveillance Capability
670	2012 Q3	N	Surveillance	CRDR	Concept and Requirements Definition Readiness (CRDR) Decision for ASDE-X/3X
719	2012 Q4	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for ASR-11 Technology Refresh Segment 2 (through 2025)
801	2016 Q2	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for technology refresh of beacons (ATCBI-6)
802	2016 Q2	N	Surveillance	ISD	In Service Decision (ISD) for ASDE-3 Surface Sustainment
803	2014 Q1	N	Surveillance	IARD	Investment Analysis Readiness Decision for ASR-9 SLEP Phase 3
804	2015 Q3	N	Surveillance	FID	Final Investment Decision (FID) for ASR-9 SLEP Phase 3
805	2017 Q4	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for ASR-11 Technology Refresh Segment 3
806	2018 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ASR-11 Technology Refresh Segment 3
808	2014 Q1	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for Phase 3 legacy beacon (Mode S) SLEP through 2028
809	2015 Q4	N	Surveillance	FID	Final Investment Decision (FID) for Phase 3 legacy beacon (Mode S) SLEP through 2028
881	2014 Q4	N	Surveillance	IID	Initial Investment Decision (IID) for LCGS
882	2014 Q4	N	Surveillance	IID	Initial Investment Decision (IID) for ADS-B (New enhancement 1 for SBS)
883	2017 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ADS-B (New enhancement 2 for SBS)
884	2015 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ADS-B (New enhancement 1 for SBS)
885	2016 Q4	N	Surveillance	IID	Initial Investment Decision (IID) for ADS-B (New Enhancement 2 for SBS)

APPROVED

Airspace and Procedures

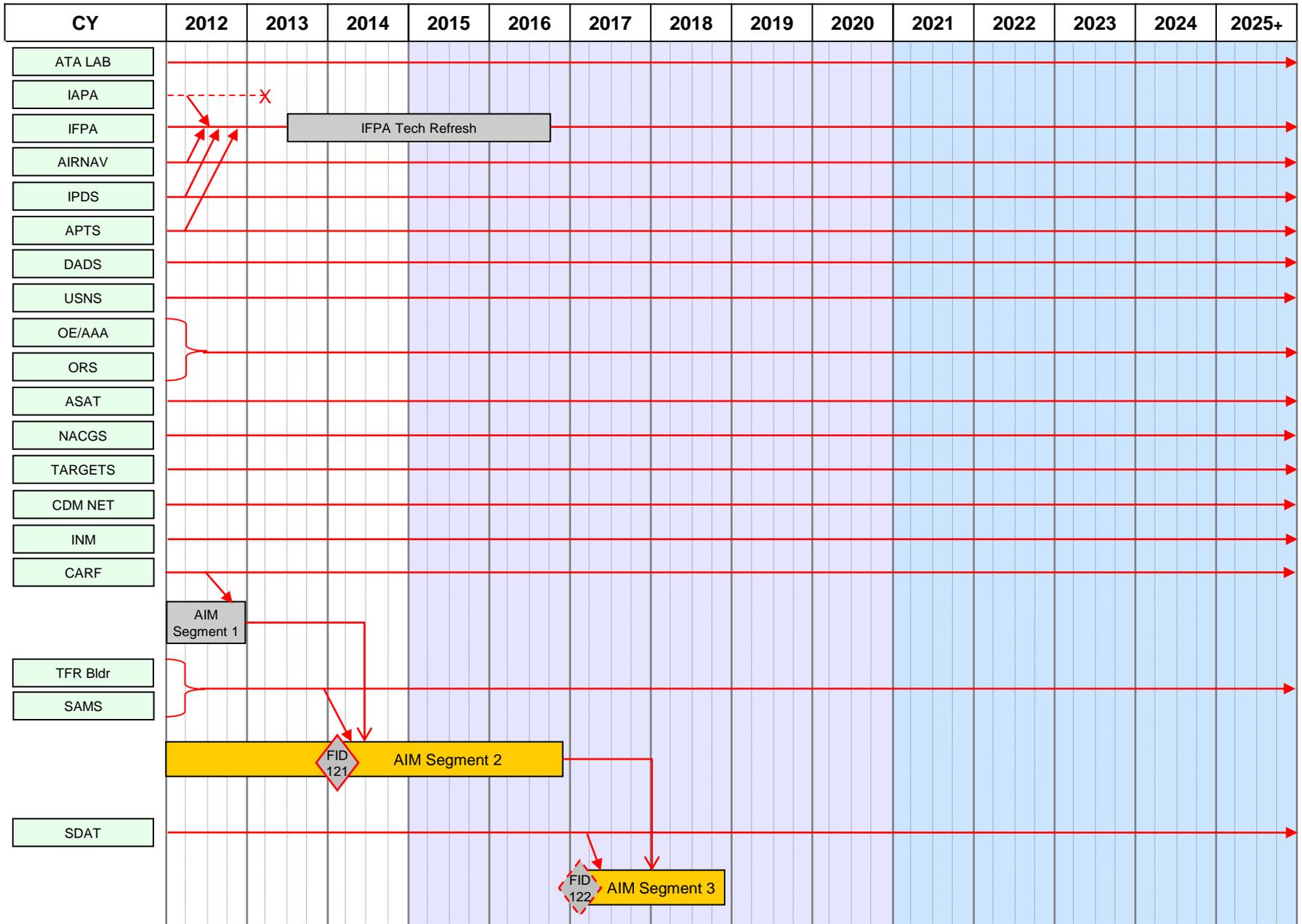
Objective: The Airspace and Procedures roadmap presents an Executive View (EV) of systems and procedures, including associated research projects, with an effect on the large-scale redesign and optimization of major airspace.

Airspace & Procedures Roadmap (1 of 3)



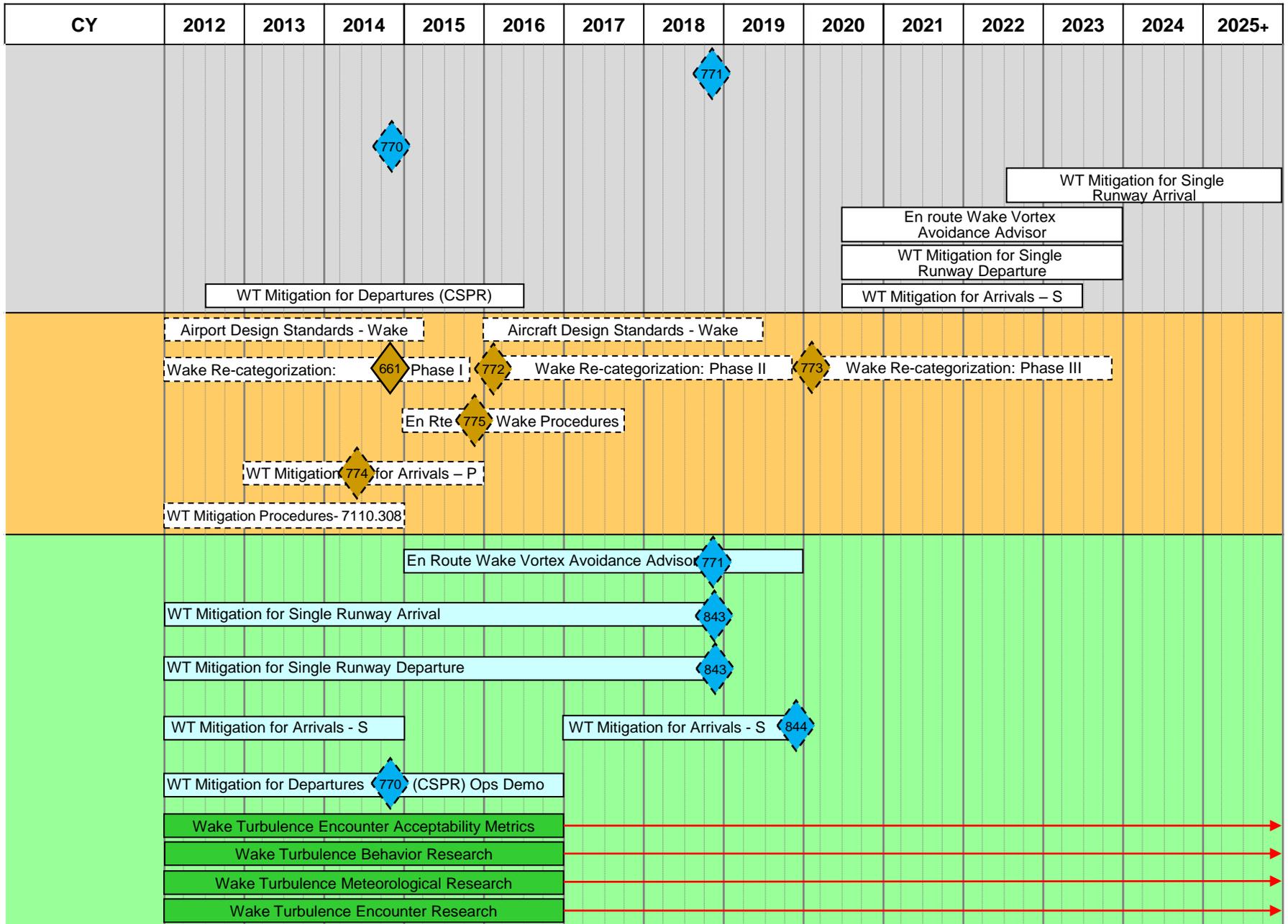
APPROVED

Airspace & Procedures Roadmap (2 of 3)



APPROVED

Airspace & Procedures Roadmap (3 of 3)



APPROVED

Airspace & Procedures Roadmap: Assumptions

Identifier	Description
A&P-01	<p>Airspace Modernization Assumptions</p> <ul style="list-style-type: none"> a) Flexibility into any of the agency's facility plans b) Future Airspace & NASA research funding is sufficient and provides favorable benefits c) System Dependencies <ul style="list-style-type: none"> 1. ADS-B 2. ERAM 3. TFMS WP2 4. DataComm
A&P-02	<p>Integrated Arrival/Departure Airspace (Big Airspace) Assumptions</p> <ul style="list-style-type: none"> a) Key Integrated Arrival/Departure Airspace enablers: <ul style="list-style-type: none"> 1. Extension of 3 Mile Separation & Terminal Procedures 2. Integrated arrival/departure airspace configurations 3. Flexible sector & bi-directional routes published 4. 5 mile lateral spacing for Required Navigation Performance (RNP) enables 5 mile lateral route spacing 5. New voice system (NAS Voice System), leased circuits, and Air-Ground communications channels to handle transition 6. Cost benefits are based on creating X Integrated Arrival/Departure (Big Airspace) facilities, covering X major metropolitan areas b) Cost analysis based on general assumptions about the concept, not on any detailed requirements or technical solutions c) Benefits analysis based on extrapolating results from FT simulations to other sites given traffic forecasts and historical weather patterns d) Sites identified where large TRACON facilities exist could accommodate additional BA operational positions with refurbishment. New buildings would be needed where no large TRACON exists.

Airspace & Procedures Roadmap: Decision Points (1 of 1)

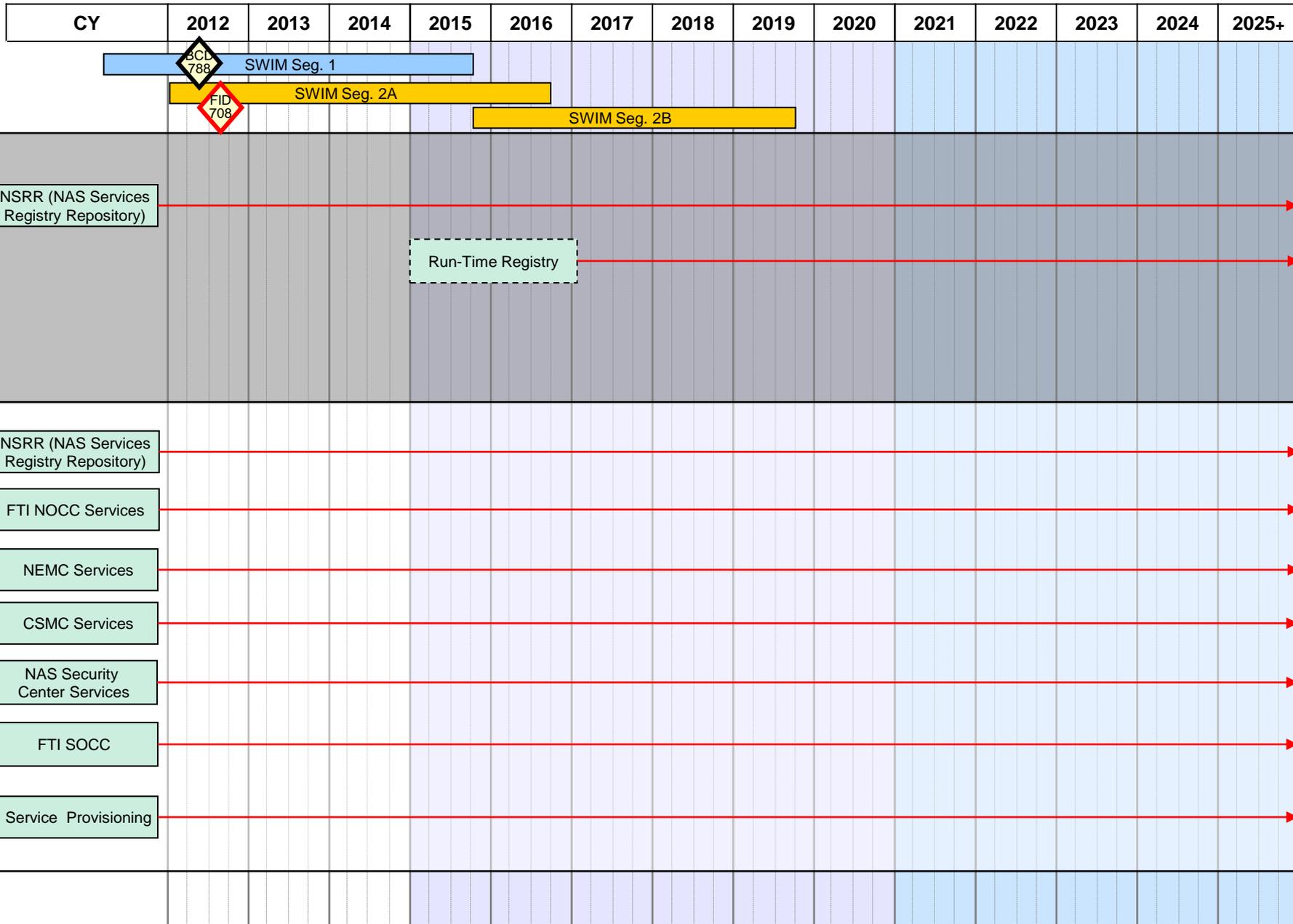
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
121	2014 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 2
122	2017 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 3
267	2017 Q2	N	Airspace & Procedures	Strategy (Other)	Decision to proceed with High Altitude Trajectory Based Airspace Concept Phase 1
661	2014 Q4	N	Airspace & Procedures	Policy	Decision to incorporate Wake Re-Categorization (Phase 1) into 7110.65
770	2014 Q4	N	Airspace & Procedures	Strategy (Other)	Strategy Decision to incorporate Wake Turbulence system functions & wake procedures into terminal automation programs
771	2018 Q4	N	Airspace & Procedures	Strategy (Other)	Strategy Decision to incorporate Wake Turbulence system functions & wake procedures into en route automation programs
772	2016 Q1	N	Airspace & Procedures	Policy	Decision to incorporate Wake Re-Categorization (Phase 2) into 7110.65
773	2020 Q1	N	Airspace & Procedures	Policy	Decision to incorporate Wake Re-Categorization (Phase 3) into 7110.65
774	2014 Q2	N	Airspace & Procedures	Policy	Decision to incorporate CSPR-specific Wake Turbulence Mitigation for Arrival Procedures into 7110.65 or other order prescribing air traffic control procedures.
775	2015 Q4	N	Airspace & Procedures	Policy	Decision to incorporate En Route Wake Avoidance procedures into 7110.65 or other order prescribing air traffic control procedures.
843	2018 Q4	N	Airspace & Procedures	Strategy (Other)	Decision to incorporate a single runway arrival/departure wake turbulence mitigation system requirements into Terminal and TRACON automation systems
844	2019 Q4	N	Airspace & Procedures	Strategy (Other)	Decision to incorporate a Closely Spaced Parallel Runways (CSPR) wake turbulence mitigation system requirements into Terminal and TRACON automation systems

APPROVED

Enterprise Services

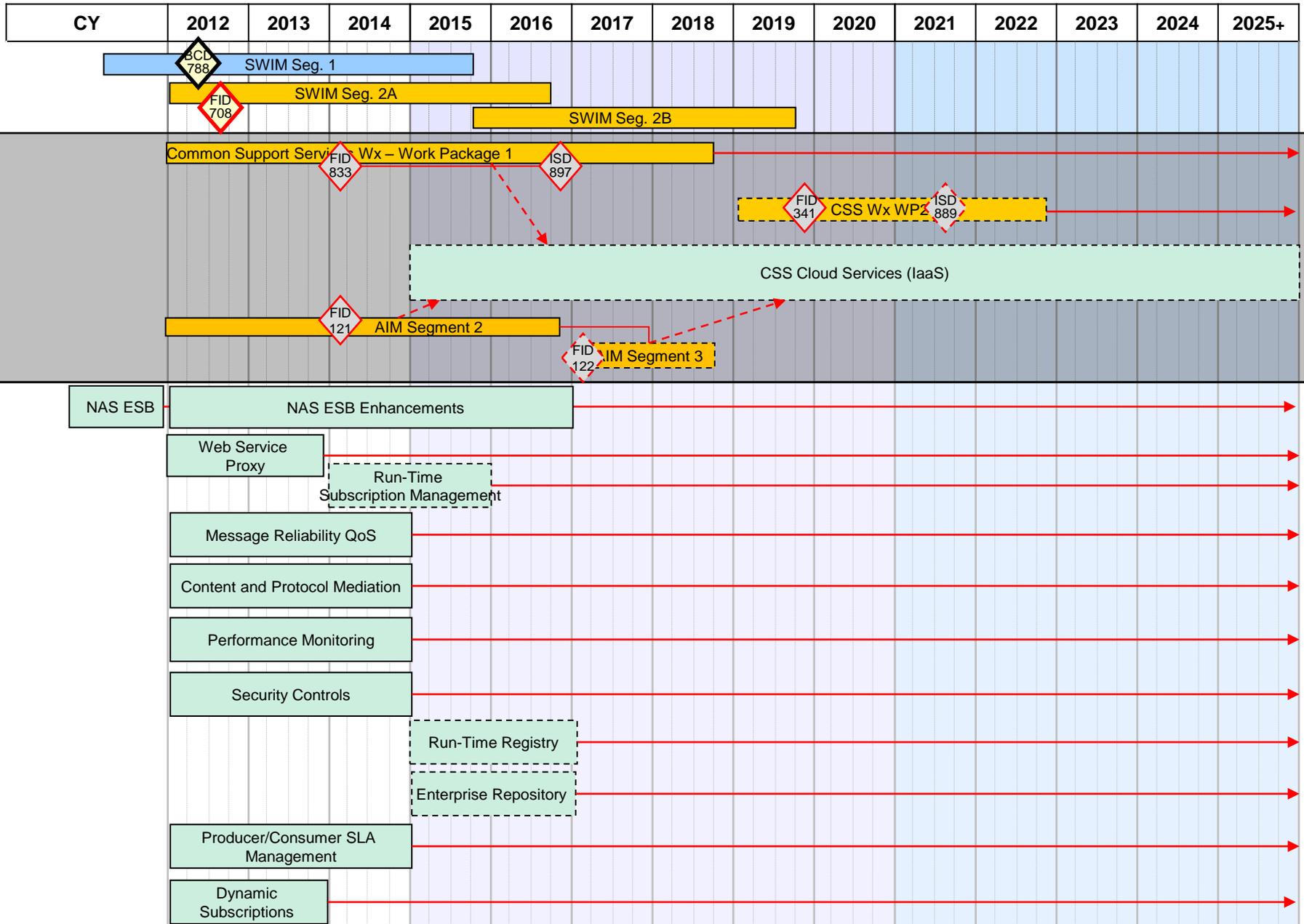
Objective : The Enterprise Services Roadmap presents an Executive View (EV) of the evolution of existing and planned enterprise services provided by NAS systems and programs and provides an outline of the major activities, decisions, and milestones. By definition, services are capabilities that exist as processes, applications, infrastructure, or any combination. They are implemented using design principles that support and promote enterprise-wide interoperability, sharing, standardization, federation, awareness, loose coupling, granularity, modularity, abstraction, reuse, and flexibility.

Enterprise Services Roadmap (1 of 7)



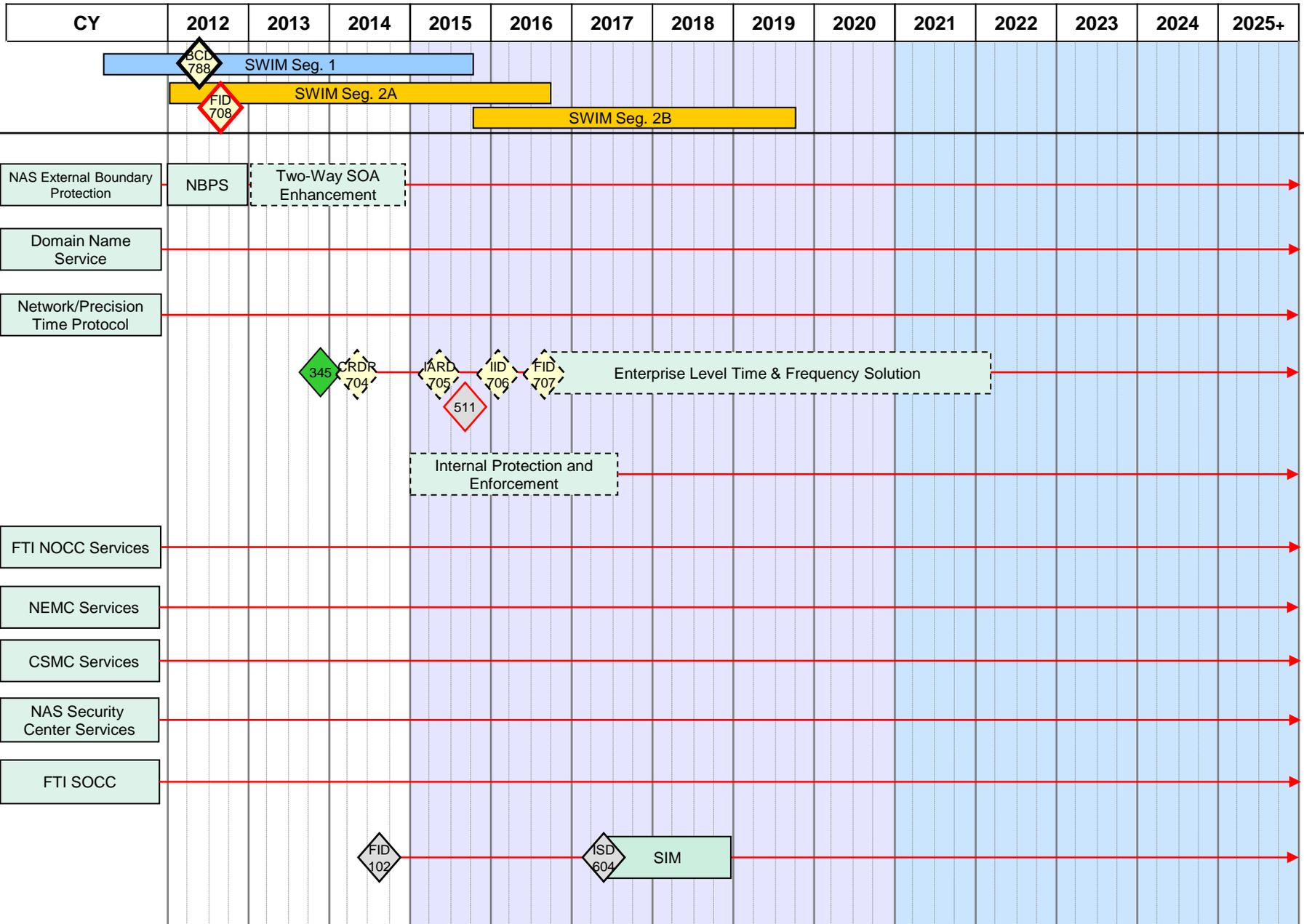
APPROVED

Enterprise Services Roadmap (2 of 7)



APPROVED

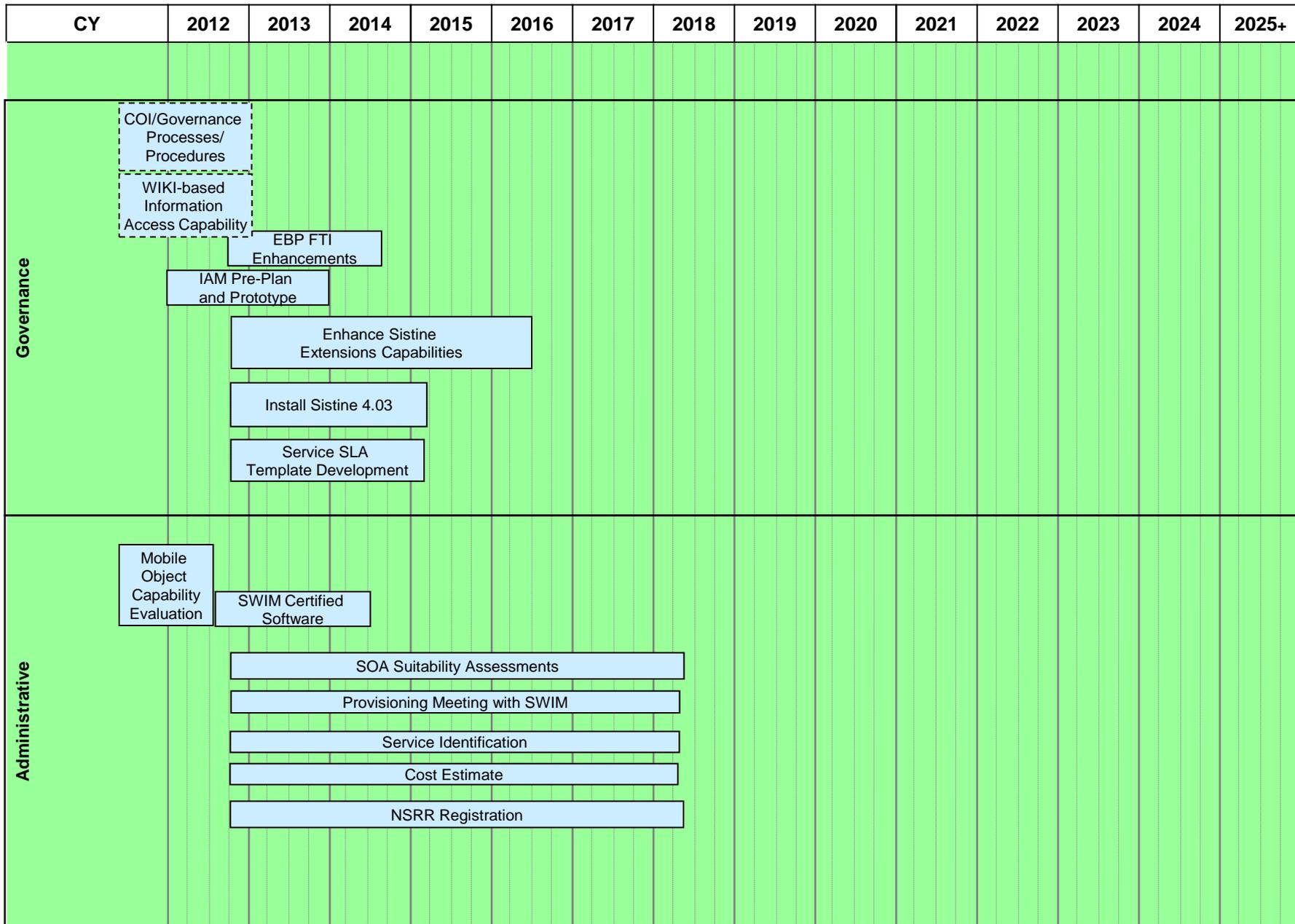
Enterprise Services Roadmap (3 of 7)



Technical Infrastructure Services

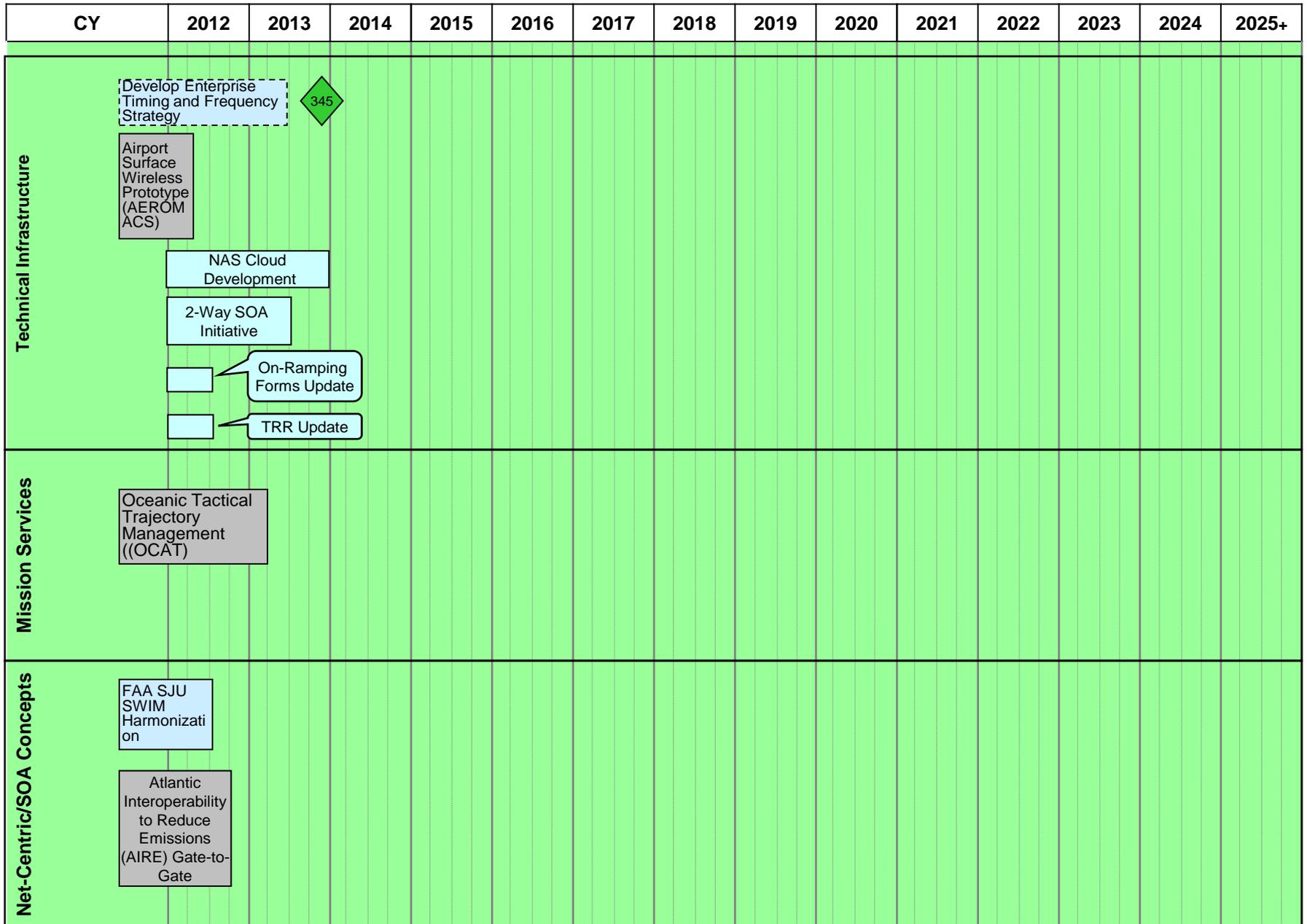
APPROVED

Enterprise Services Roadmap (5 of 7)



APPROVED

Enterprise Services Roadmap (6 of 7)



345

APPROVED

Enterprise Services Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
57	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for TBFM/WP3
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
121	2014 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 2
122	2017 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 3
341	2019 Q4	Y	Weather	FID	Final Investment Decision (FID) for CSS-Wx WP2 and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
345	2013 Q4	N	Enterprise Services	Strategy (JRC)	Strategy Decision for the implementation of a GPS timing backup
604	2017 Q2	N	Surveillance	ISD	Initial In-Service Decision (ISD) for SIM in Terminal and En Route Legacy Radar Systems for first platform
657	2014 Q1	N	Weather	FID	Final Investment Decision (FID) for ITWS Tech Refresh
660	2012 Q3	Y	Automation	FID	Final Investment Decision (FID) for TAMR P3S2 (Phase 3 Segment 2)
704	2014 Q2	N	Enterprise Services	CRDR	Concept and Requirements Definition Readiness (CRDR) for the Enterprise Level Time and Frequency Solution
705	2015 Q2	N	Enterprise Services	IARD	Investment Analysis Readiness Decision (IARD) for the Enterprise Level Time and Frequency Solution
706	2016 Q1	N	Enterprise Services	IID	Initial Investment Decision (IID) for the Enterprise Level Time and Frequency Solution
707	2016 Q3	N	Enterprise Services	FID	Final Investment Decision (FID) for the Enterprise Level Time and Frequency Solution

APPROVED

Enterprise Services Roadmap: Decision Points (2 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
708	2012 Q3	Y	Enterprise Services	FID	Final Investment Decision (FID) for SWIM Segment 2
758	2013 Q3	Y	Automation	FID	Final Investment Decision (FID) for ERAM D-Position and System Enhancements
787	2019 Q1	N	Enterprise Services	Strategy (JRC)	Strategy decision based on the Usage and Operation analysis to determine the long term Aircraft Access to SWIM (AAtS) strategy.
788	2012 Q2	N	Enterprise Services	BCD	Baseline Change Decision (BCD) for SWIM Segment 1
833	2014 Q1	Y	Weather	FID	Final Investment Decision (FID) for CSS-Wx WP1
853	2013 Q4	N	Automation	FID	Final Investment Decision (FID) for TFMS Remote Site TR
856	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for ERAM R7
889	2021 Q3	Y	Weather	ISD	In-Service Decision (ISD) for CSS-Wx WP2
897	2016 Q4	Y	Weather	ISD	In-Service Decision (ISD) for CSS-Wx WP1

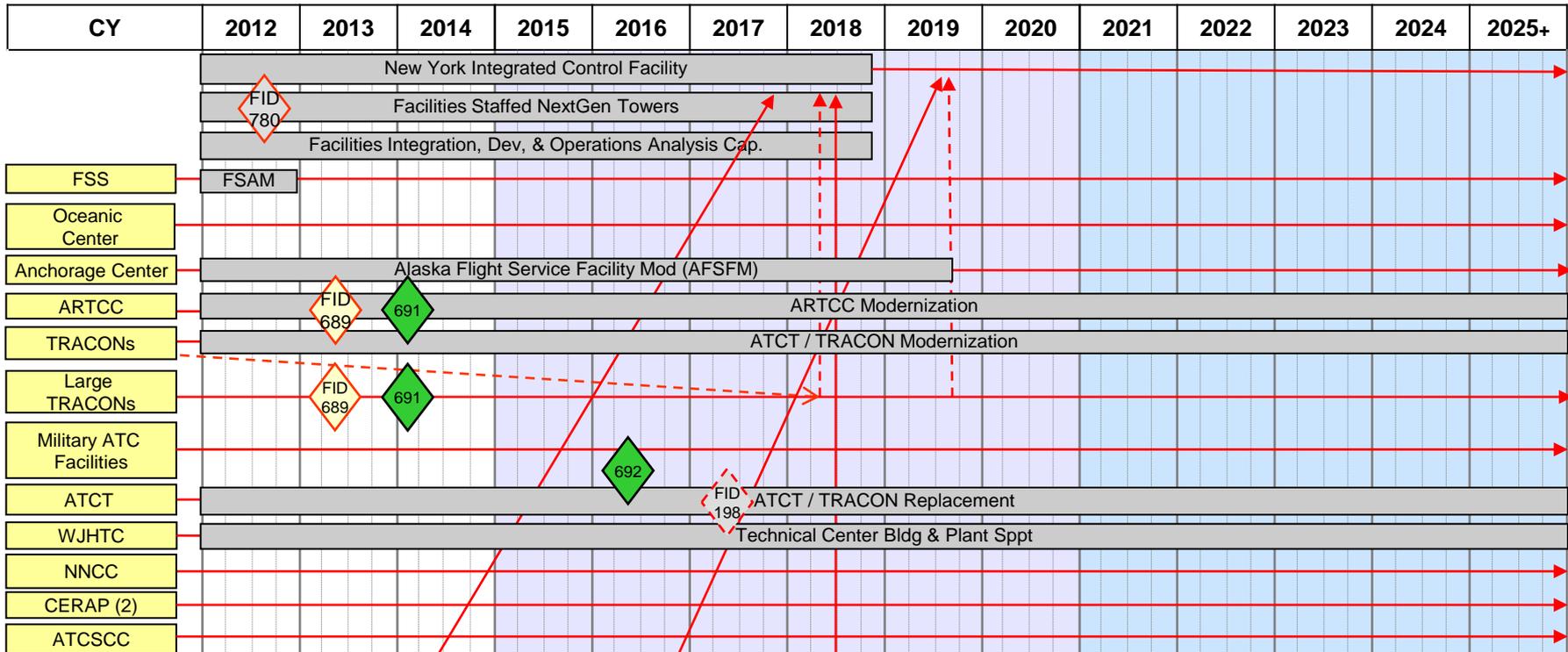
APPROVED

Facilities

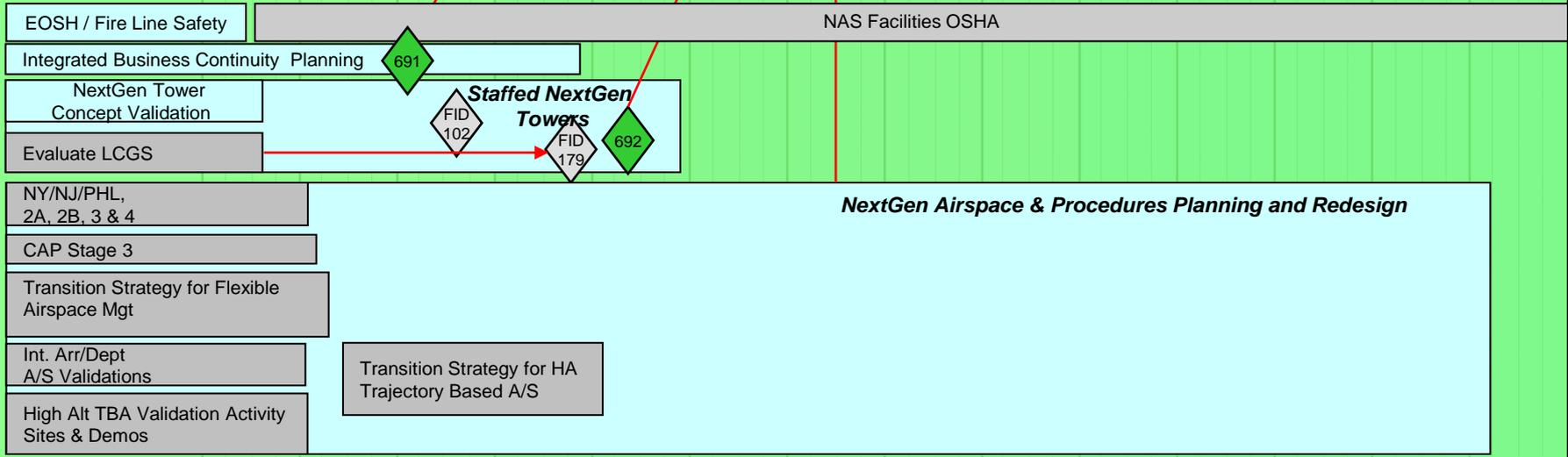
Objective : The Facilities roadmap depicts the legacy NAS facilities and the evolution towards the NextGen Future Facilities environment.

Facilities Roadmap (1 of 3)

Staffed



Supporting Activities

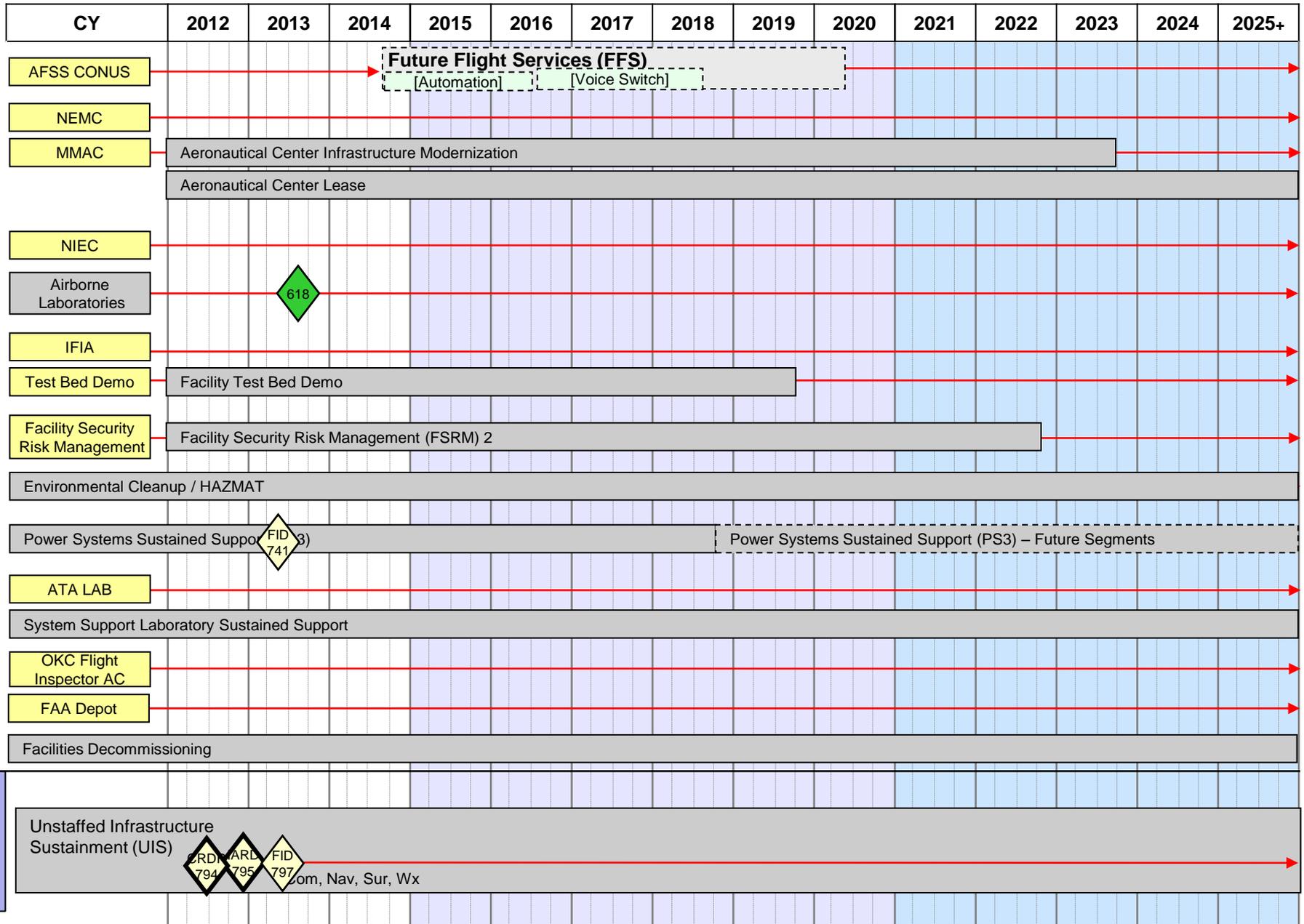


Staffed NextGen Towers

FID 102 → FID 179 → FID 692

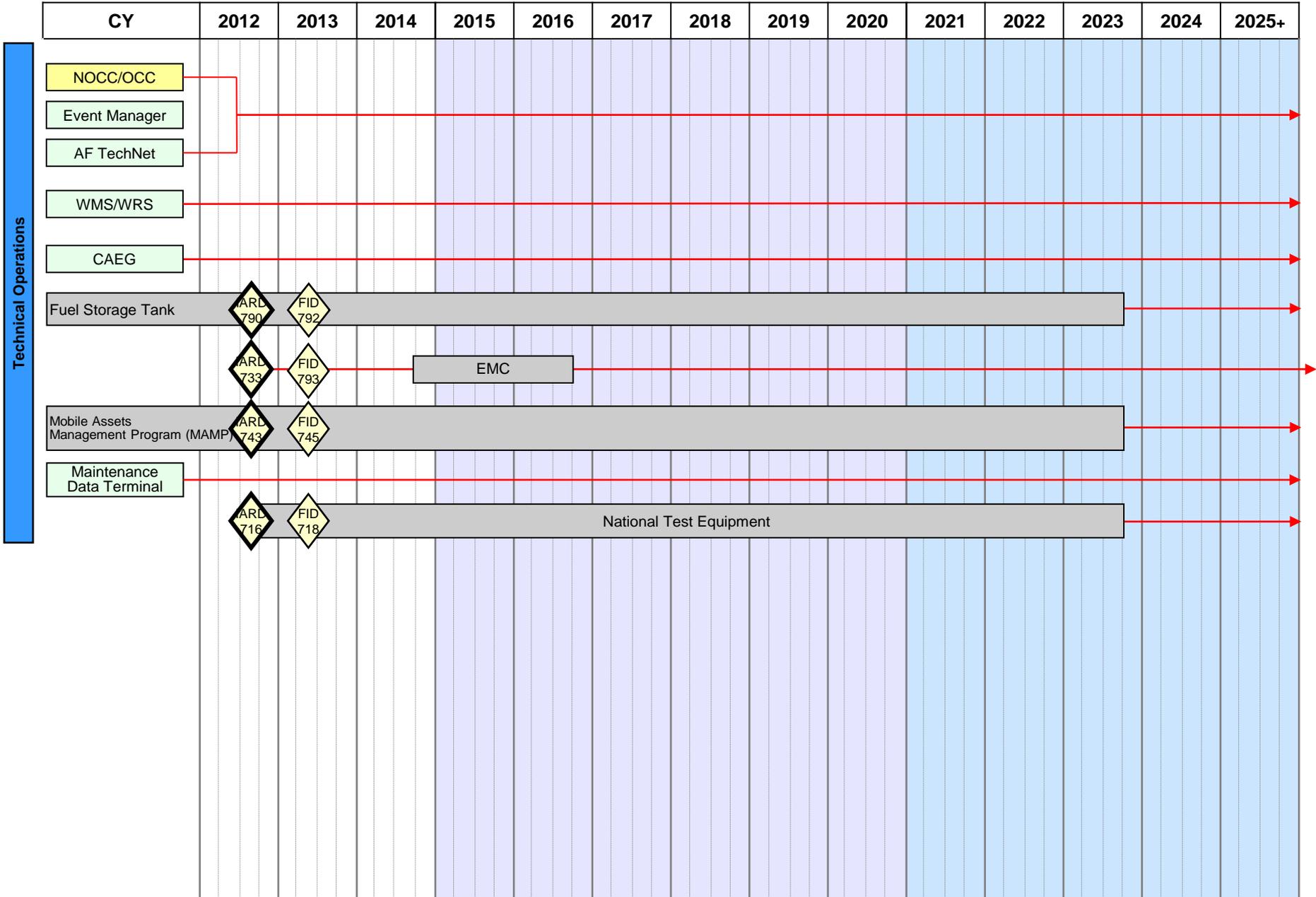
APPROVED

Facilities Roadmap (2 of 3)



APPROVED

Facilities Roadmap (3 of 3)



APPROVED

Facilities Roadmap: Assumptions

Identifier	Description
FAC-01	Business Continuity will be integrated into the design of the Future Facilities
FAC-02	Facilities will be built to mandated security and safety guidelines
FAC-03	The airspace will be restructured to accommodate transitional and NextGen airspace concepts (e.g. flexible airspace, classic en route airspace, mixed equipage airspace, special use airspace, super-density flexible airspace, etc.)
FAC-04	Future Facilities will use a new geo-independent model, where service delivery is best aligned to manage costs and increase efficiencies
FAC-05	Airspace planning projects and Future Facilities projects should be inter-dependently scheduled in accordance with national priorities
FAC-06	ATC tasks will evolve consistent with changes in the management of airspace
FAC-07	Future Facilities will accommodate NextGen automation and enterprise services enhancements
FAC-08	Site locations will be determined according to a number of factors that consider safety, security, and human resources

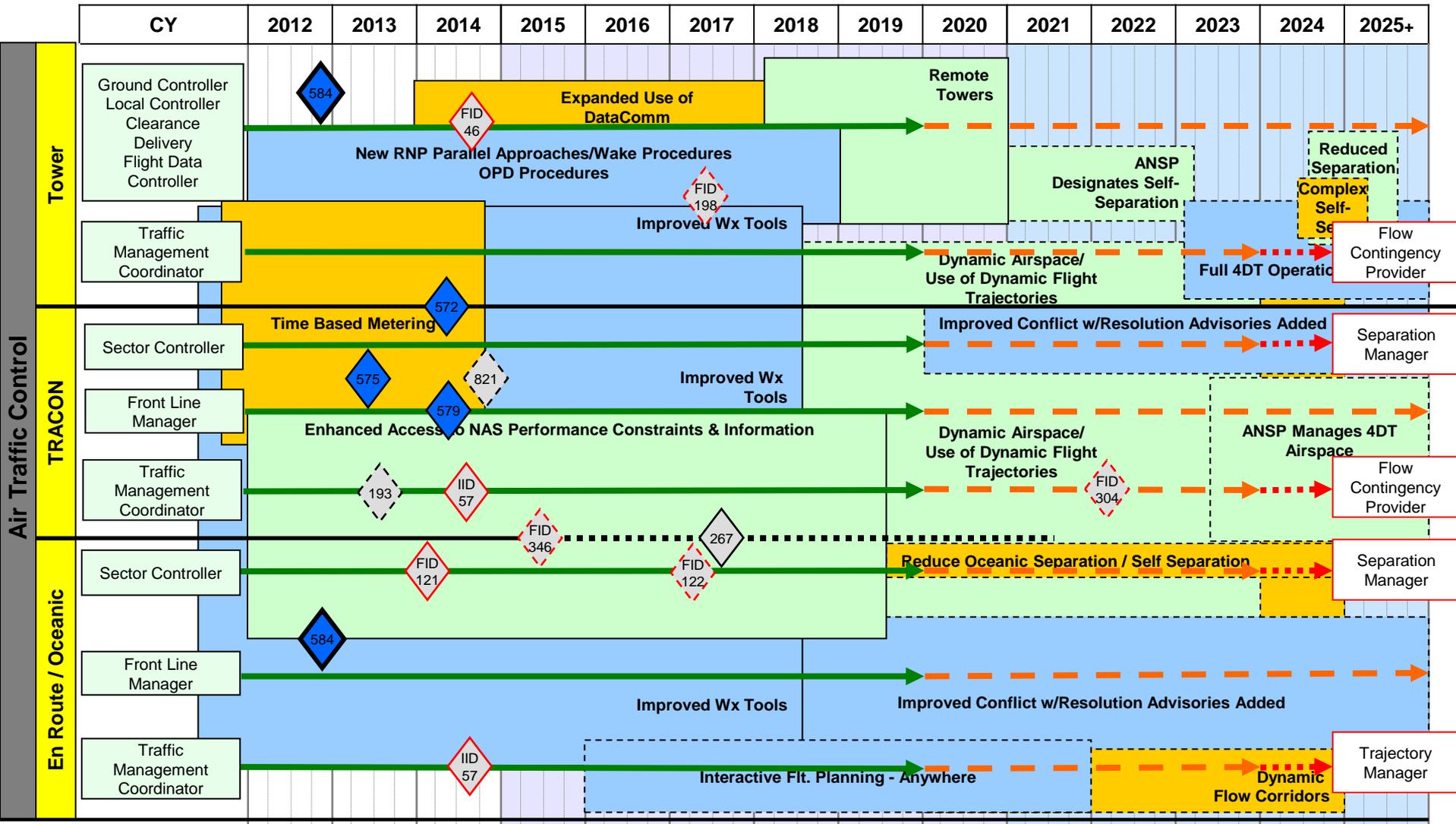
Facilities Roadmap: Decision Points (1 of 1)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
179	2015 Q4	N	Surveillance	FID	Final Investment Decision (FID) for LCGS
198	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for TFDN Future
618	2013 Q3	N	Facilities	Strategy (JRC)	Strategy Decision for Airborne Labs all fleet replacement
689	2013 Q2	Y	Facilities	FID	Final Investment Decision (FID) for NextGen Future Facilities
691	2014 Q1	N	Facilities	Strategy (JRC)	Strategy Decision for Developing Integrated Business Continuity Services Concepts & Infrastructure
692	2016 Q2	N	Facilities	Strategy (JRC)	Strategy Decision for Integration of Certain ATCT Functions into NextGen Facilities
716	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for National Test Equipment
718	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for National Test Equipment
733	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for EMC
741	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Power Cable Replacement Program
743	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for MAMP
745	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for MAMP
780	2012 Q3	Y	Communication	FID	Final Investment Decision (FID) for NVS Segment 1
790	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for Fuel Storage Tank
792	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Fuel Storage Tank
793	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Energy Management Compliance Program (EMCP)
794	2012 Q1	N	Facilities	CRDR	Concept and Requirements Definition Readiness Decision (CRDR) for Unstaffed Infrastructure Sustainment (UIS)
795	2012 Q4	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for Unstaffed Infrastructure Sustainment (UIS)
797	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Unstaffed Infrastructure Sustainment (UIS)

Human Systems Integration

Objective: The Human System Integration (HSI) Roadmap presents an Executive View (EV) of the changes in the workforce and work environment, and provides an outline of the major HSI activities, decisions, and milestones required to achieve the intended NextGen human-in-the-loop performance objectives and capabilities of the future NAS Enterprise Architecture. As a perspective of the changes in the NAS workforce and the workforce environment, the HSI Roadmap reflects major HSI impacts and opportunities (e.g., related to roles, responsibilities, procedures; safety, productivity, human-system performance; personnel selection, training, staffing; cross-domain automation and decision support tools; and workstation integration and information/display requirements).

Human Systems Integration Roadmap (1 of 6)



Notes:
 (1) The shaded boxes above are intended to reflect changes to the NAS workforce and work environment.
 (2) The shaded boxes above are intended to represent an earliest potential "implementation" of a capability.
 (3) Far Term representations on the HSI Roadmap (2018 – 2025) depicted in dotted-line boxes are included for planning purposes.
 (4) The actors represented in this roadmap are selected from NAS EA "actors".

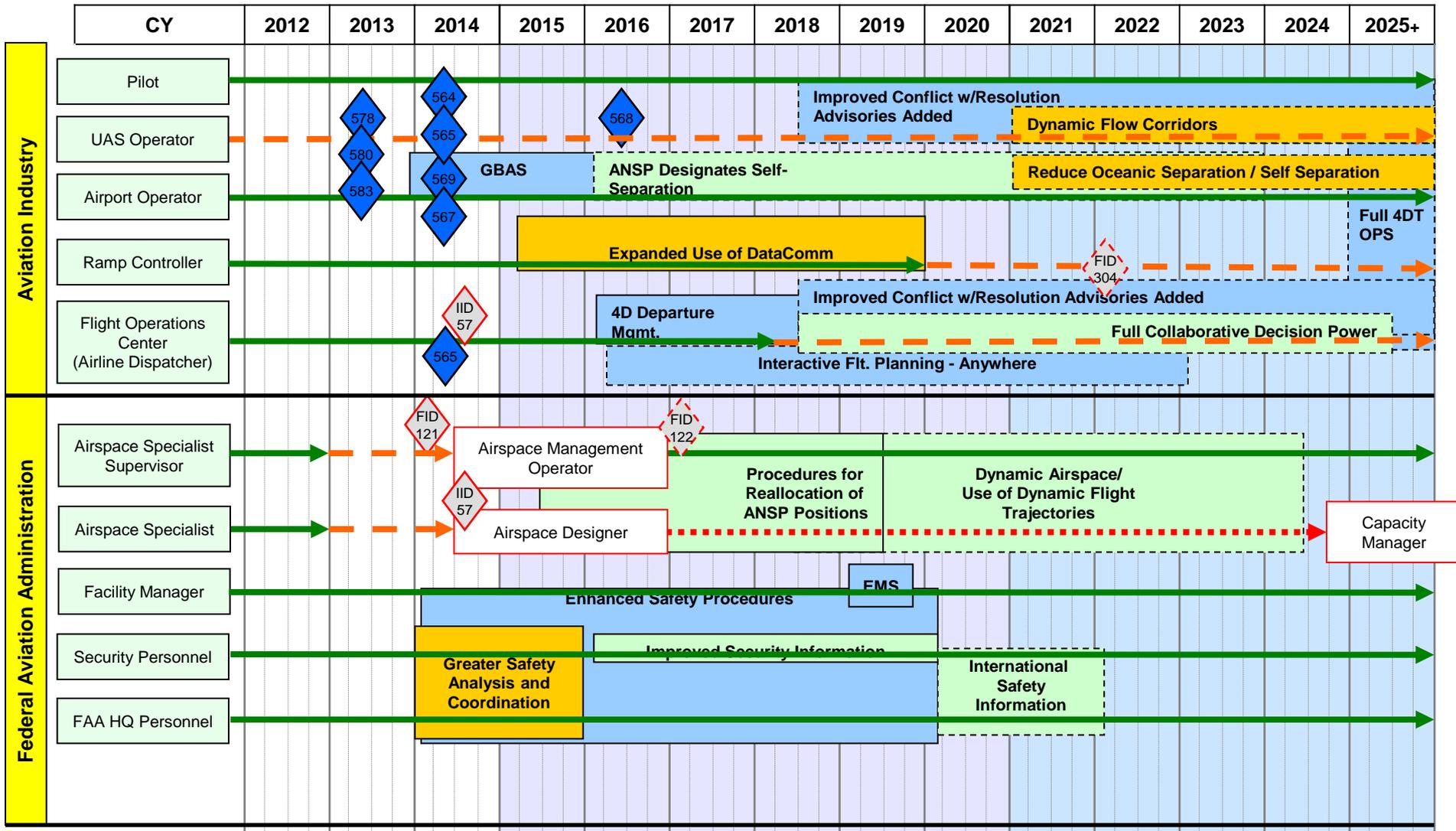
Change in Actor Role or Job:

- Major: ⋯⋯⋯
- Moderate: - - - - -
- Minor: —————

Work Environment Change in Automation
 Mixed Workforce/Work Environment Change
 Workforce Change in Role/Responsibility

APPROVED

Human Systems Integration Roadmap (2 of 6)



Notes:

- (1) The shaded boxes above are intended to reflect changes to the NAS workforce and work environment.
- (2) The shaded boxes above are intended to represent an earliest potential "implementation" of a capability.
- (3) Far Term representations on the HSI Roadmap (2018 – 2025) depicted in dotted-line boxes are included for planning purposes.
- (4) The actors represented in this roadmap are selected from NAS EA "actors".

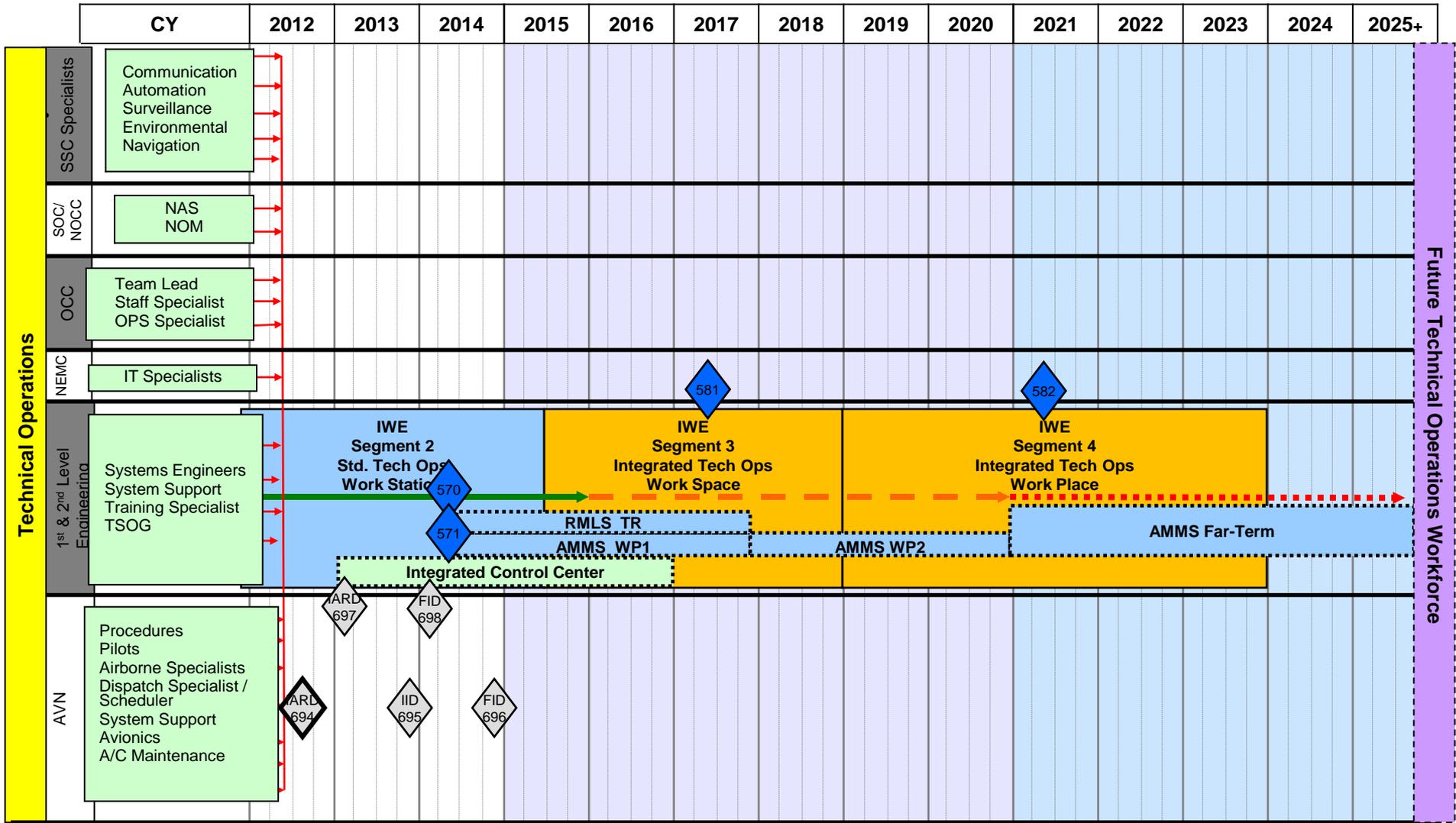
Change in Actor Role or Job:

- Major: ----->
- Moderate: ----->
- Minor: ----->

- Work Environment Change in Automation
- Mixed Workforce/Work Environment Change
- Workforce Change in Role/Responsibility

APPROVED

Human Systems Integration Roadmap (3 of 6)



Notes:

- (1) The shaded boxes above are intended to reflect changes to the NAS workforce and work environment.
- (2) The shaded boxes above are intended to represent an earliest potential "implementation" of a capability.
- (3) Far Term representations on the HSI Roadmap (2018 – 2025) depicted in dotted-line boxes are included for planning purposes.
- (4) The actors represented in this roadmap are selected from NAS EA "actors".

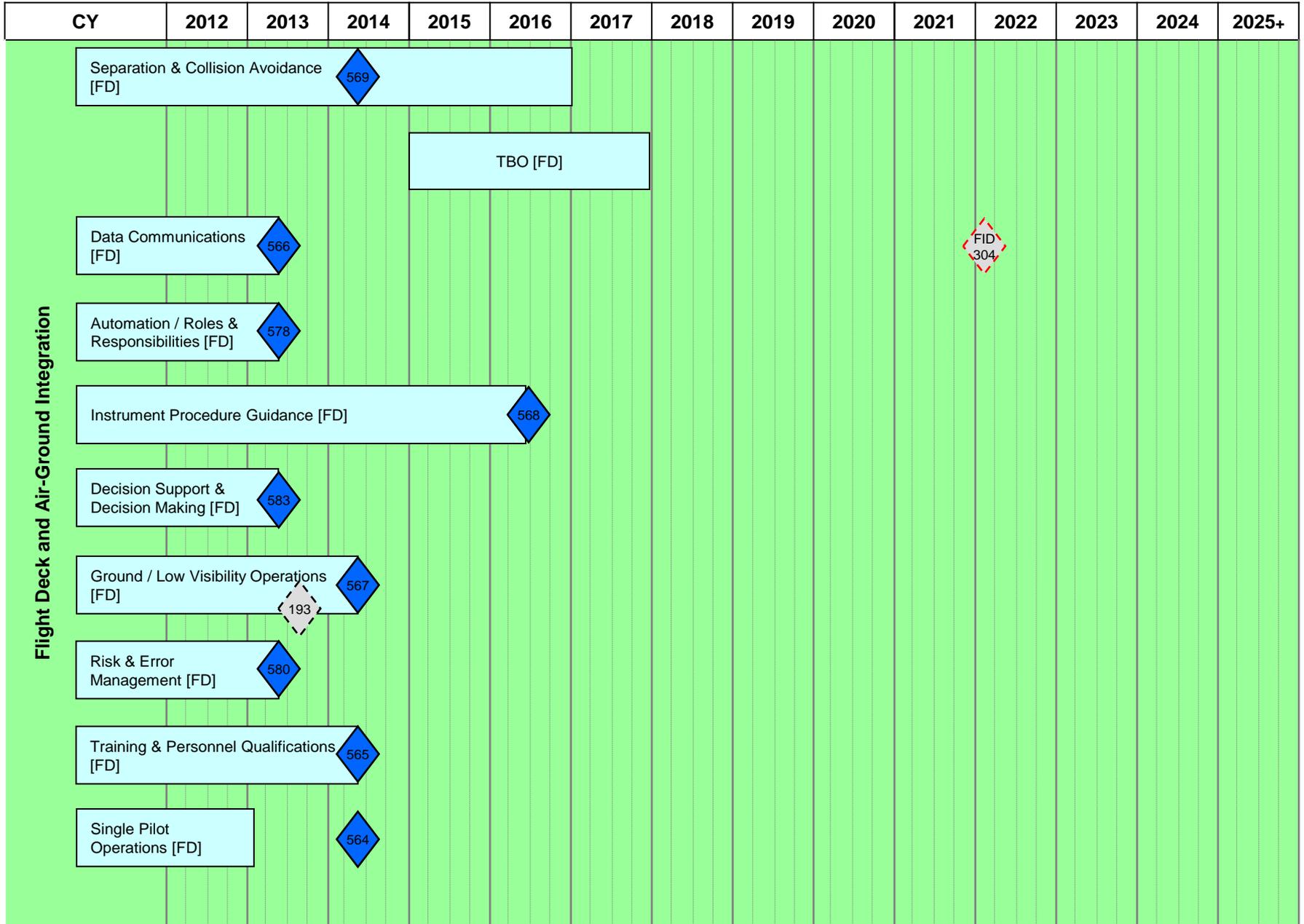
Change in Actor Role or Job:

- Major: ⋯→
- Moderate: - - - →
- Minor: —→

- Work Environment Change in Automation
- Mixed Workforce/Work Environment Change
- Workforce Change in Role/Responsibility

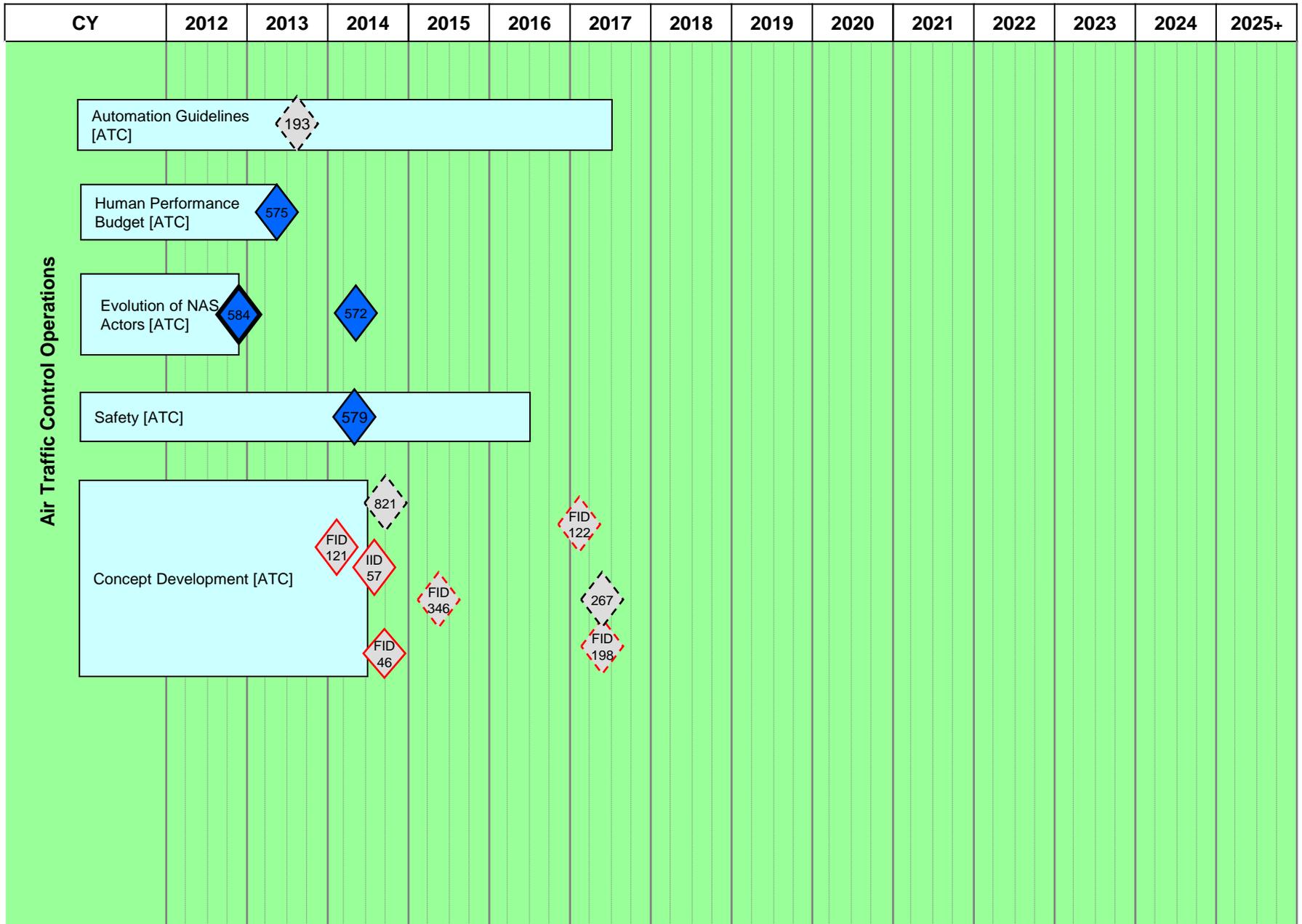
APPROVED

Human Systems Integration Roadmap (4 of 6)



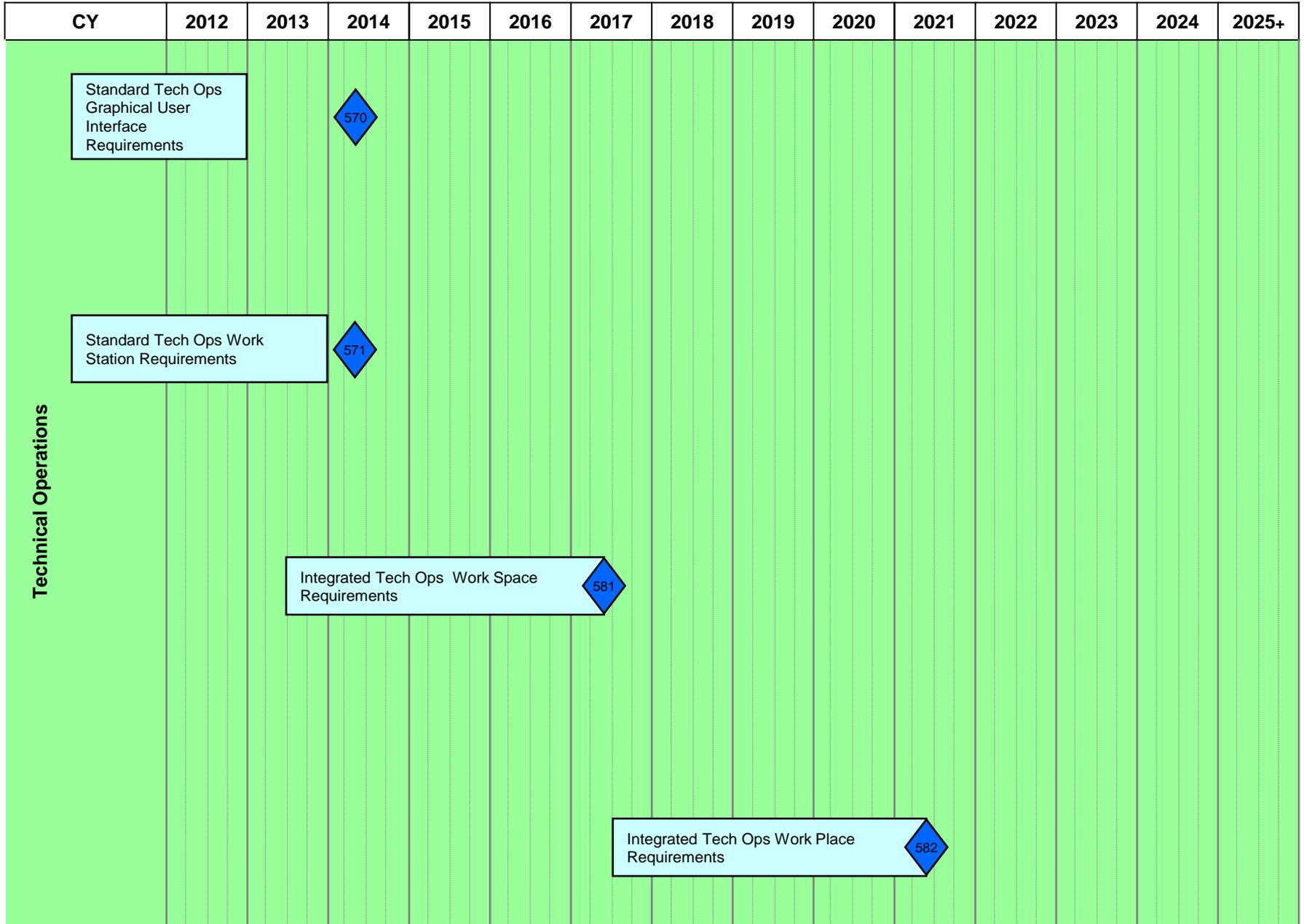
APPROVED

Human Systems Integration Roadmap (5 of 6)



APPROVED

Human Systems Integration Roadmap (6 of 6)



APPROVED

Human Systems Integration Roadmap: Assumptions

Identifier	Description
HSI-01	The definition and descriptions of NAS Actors will continue to mature. (ANG-C1)
HSI-02	The HSI Roadmap relates to the NextGen job changes (e.g., roles and responsibilities) and work environment changes, and therefore includes procedures and training, safety (human reliability), human-system performance and productivity, information and display requirements, personnel selection, and staffing impacts. (ANG-C1)
HSI-03	Human Factors analysis, design, development, and testing are to be accomplished within program/project detailed system engineering activities and not necessarily represented in the HSI Roadmap. (AJN, AJA)
HSI-04	Additional HSI impacts and dependencies are to be continually and fully analyzed as needed in terms of: a) Convergent or divergent roles (e.g., new actors, obsolete roles) b) Implied role/function changes not apparent in the OI description c) More comprehensive assessment of Far-term OI impacts on the workforce and work environments (ANG-C1)
HSI-05	“Gaps” in concepts of operations (such as off-nominal scenarios) will be filled to identify and resolve other potential changes in roles and responsibilities. (ANG-C1)
HSI-06	NextGen HSI Roadmap products represent information systems, information requirements, guidelines, standards, design requirements, specifications, methods, and tools for incorporating human factors in the NextGen NAS Enterprise Architecture. (Core human factors program requirements may not be fully represented.) (ANG-C1)
HSI-07	Notional “Operational Improvements” devised for the purposes of constructing the Tech Ops HSI Roadmap will be validated as future Tech Ops concepts of operations develop. (AJW)
HSI-08	NAS infrastructure and capabilities are not constrained by limitations in personnel staffing, selection, and training unless otherwise identified. (AHR)

Human Systems Integration Roadmap: Decision Points (1 of 2)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
46	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for Terminal Flight Data Manager (TFDM) Core
57	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for TBFM/WP3
121	2014 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 2
122	2017 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 3
193	2013 Q3	N	Air-Ground	Policy	Define Human/Automation design principles to support NextGen infrastructure
198	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for TFDM Future
267	2017 Q2	N	Airspace & Procedures	Strategy (Other)	Decision to proceed with High Altitude Trajectory Based Airspace Concept Phase 1
304	2022 Q1	Y	Communication	FID	Final Investment Decision (FID) for Data Comm Segment 2
346	2015 Q2	Y	Automation	FID	Final Investment Decision (FID) for CATMT Work Package 4
564	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Safety Requirements for NextGen Single Pilot Operations
565	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Requirements for New and Recurrent Pilot/AOC Training and Certification
566	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Air Crew DataComm Requirements for Displays & Procedures
567	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Procedures and Training Requirements for Low Visibility Ground Operations
568	2016 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Human Factors Guidelines for NextGen Instrument Procedures
569	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Requirements for Enhanced Flight Deck Displays for Separation and Collision Avoidance
570	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use HF Tech Ops Segment 1 Integrated Work Environment requirements
571	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use HF Tech Ops Segment 2 Integrated Work Environment requirements

APPROVED

Human Systems Integration Roadmap: Decision Points (2 of 2)

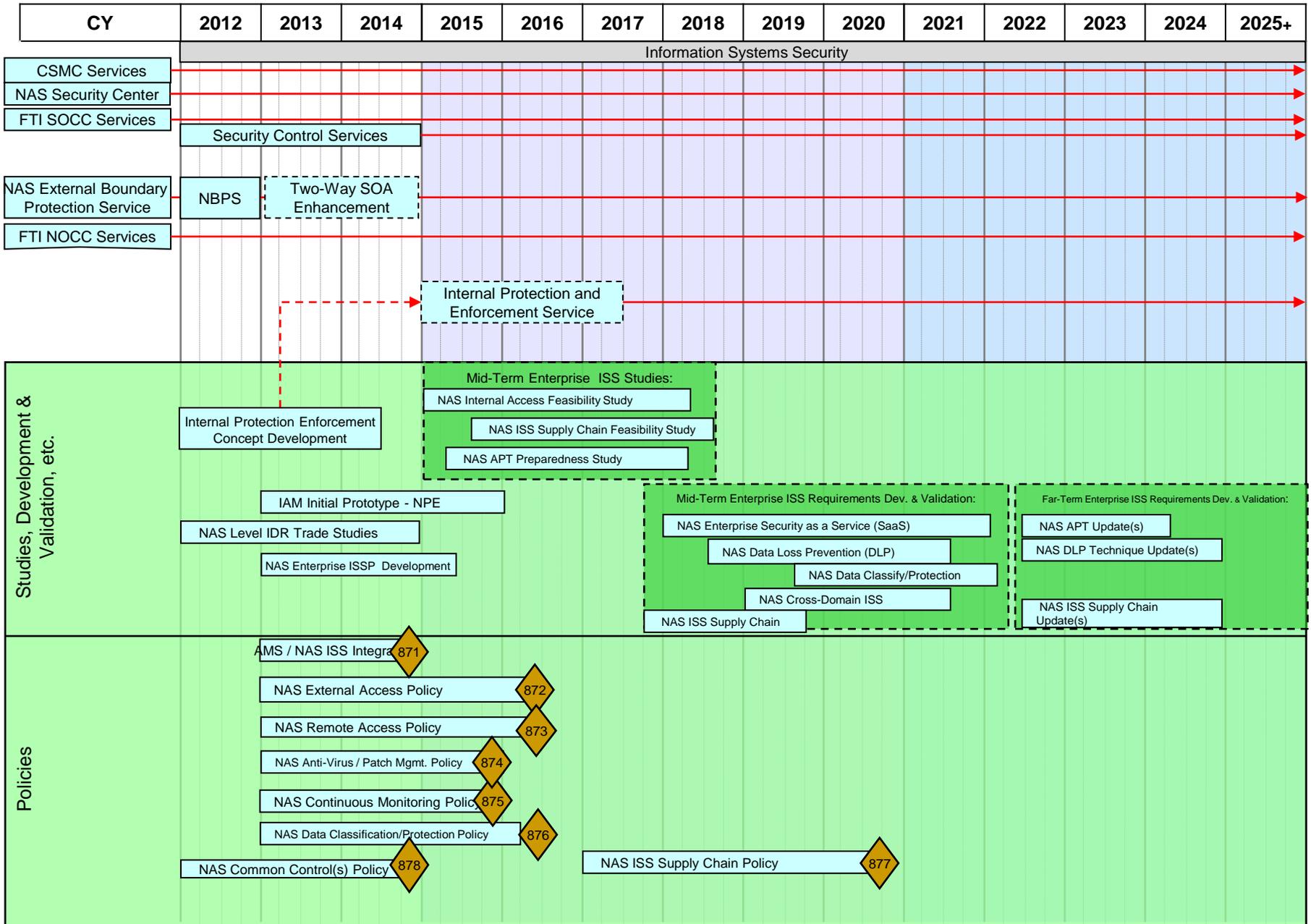
DP #	Target Date CY	High Priority	Primary Domain	Type	Name
572	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Requirements and Standards for Personnel Selection, Training, and Staffing
575	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use HSI Requirements to Support ATC Efficiency and Effectiveness Objectives
578	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Guidelines for Flight Deck Functional Allocation and Roles for New Automated Systems
579	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Guidelines for Human Reliability and Safety Enhancements
580	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Recommended Methods and Training for Managing Error with Flight Deck User Interfaces
581	2017 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use HF Tech Ops Segment 3 Integrated Work Environment requirements
582	2021 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use HF Tech Ops Segment 4 Integrated Work Environment requirements
583	2013 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Flight Deck Operational Guidelines for NextGen Applications
584	2012 Q4	N	Human Systems Integration	Strategy (Other)	Decision to use NextGen Strategic Job Selection Requirements
694	2012 Q3	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AMMS Work Package 1 and Work Package 2
695	2014 Q1	N	Automation	IID	Initial Investment Decision (IID) for AMMS Work Package 1 and Work Package 2
696	2014 Q4	N	Automation	FID	Final Investment Decision (FID) for AMMS Work Package 1 and Work Package 2
697	2013 Q1	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for RMLS Technology Refresh
698	2014 Q1	N	Automation	FID	Final Investment Decision (FID) for RMLS Technology Refresh
821	2014 Q3	N	Air-Ground	Policy	Decision execute NextGen Enabler Plan (Evolving Equipage Plan) (was 188)

APPROVED

Information Systems Security

Objective : The Information Systems Security roadmap represents the evolution of existing or planned information security services and capabilities to protect NAS systems and data from the continuous cyber threat. The roadmap depicts the information security-related services from the Enterprise Services Roadmap and the supporting policy development activities, feasibility studies, and prototypes to enable the ISS capabilities.

Information Systems Security Roadmap (1 of 1)



APPROVED

Information Systems Security Roadmap: Assumptions (1 of 3)

Identifier	Description
	General Assumptions
ISS-00	The identification, development and introduction of NAS ISS controls, policies and procedures associated with the NAS EA ISS Roadmap will in no way impinge upon the successful completion of the FAA's Operational Mission needs and functions.
ISS-01	The NAS EA ISS Roadmap is predicated upon the identification, formulation, initiation and monitoring of Information System Security policies to maintain a secure posture for the enterprise level, consistent with "Information Systems Security Authorization Handbook and Templates".
ISS-02	The NAS ISS Roadmap is specific to the NAS environment and consistent with FAA Order 1370.82, "Information Systems Security Program", and per OMB Circular A-130, Appendix III, Management of Federal Information Resources, all NAS ISS policies, standards, requirements, and procedures will be developed and implemented in a manner consistent with standards and guidance issued by National Institute of Science and Technology (NIST).
ISS-03	The ISS Roadmap will identify, plan and coordinate the implementation of the enterprise-level ISS capabilities within the framework of the system's lifecycle.
ISS-04	<p>The NAS ISS Roadmap will concentrate on identifying, developing and updating, as appropriate, NAS level ISS Policies, including but not limited to the following areas:</p> <ul style="list-style-type: none"> • FAA AMS/ISS Policy & Requirement Integration • NAS External Management Policies • NAS Remote Access Management Policies • NAS A/V & Patch Management Policy & Practices • NAS Continuous Monitoring Policies & Practices
ISS-05	ISS policies will be reviewed and updated annually, or as required.

Information Systems Security Roadmap: Assumptions (2 of 3)

Identifier	Description
	NAS Cyber Operations (NCO) Assumptions
ISS-06	The NAS Cyber Operations (NCO) is responsible for facilitating centralized, real-time incident management coordination for NAS Cyber Events through monitoring, detection, analysis, intelligence fusion, trend analysis, response, and policy enforcement.
ISS-07	NCO synthesizes and distributes cyber event information internally via established NAS Cyber Incident Response Team (NCIRT) procedures.
ISS-08	NAS systems connected to NAS Operations IP (OPIP) networking infrastructure will integrate the generation of system security audit records with the NCO enterprise cyber event monitoring, detection, analysis, and response capability.
ISS-09	NCO will implement required infrastructure at the WJHTC, FAA Command Center, and FTI SOCC to collect and monitor NAS system security audit records and respond to detected security events.
ISS-10	NCO will perform 24x7 monitoring of NAS system security audit records to detect anomalous behavior that is indicative of a cyber security event and perform applicable response actions.
ISS-11	NCO will provide the storage capabilities for NAS system generated security audit records for on-line review and for 3-year archive and will provide geographically segregated backup storage that is at least 50 miles from the primary storage site.
ISS-12	<p>NAS functionality will be implemented at all Air Route Traffic Control Centers (ARTCC) and Network Enterprise Management Centers (NEMC) to capture full data packets for:</p> <ul style="list-style-type: none"> • All Intra-facility IP data flows between NAS systems • All NAS OPIP data flows, and • All NAS to Authorized Gateway (e.g. NAS Enterprise Security Gateway (NESG)) data flows <p>Summary information for these data flows will be periodically sent to a centralized enterprise system for NCO data flow monitoring and anomalous behavior detection.</p>

Information Systems Security Roadmap: Assumptions (3 of 3)

Identifier	Description
	NAS Cyber Operations (NCO) Assumptions
ISS-13	NCO will implement required infrastructure at the WJHTC, FAA Command Center, and FTI SOCC to collect, baseline, and monitor NAS system data flow information and respond to detected security events.
ISS-14	NCO will perform 24 x 7 monitor of captured NAS data flow information to detect anomalous behavior that is indicative of a cyber security event and perform applicable response actions.
ISS-15	All funding required to implement the infrastructure and provide the staffing to meet the NCO mission and perform defined functions will be allocated to ATO.

APPROVED

Information Systems Security Roadmap: Decision Points (1 of 1)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
871	2014 Q4	N	ISS	Policy	AMS/ISS Policy Integration Decision
872	2016 Q2	N	ISS	Policy	NAS External Access Policy Decision
873	2016 Q2	N	ISS	Policy	NAS Remote Access Policy Decision
874	2015 Q4	N	ISS	Policy	NAS Anti-Virus / Patch Management Policy Decision
875	2015 Q4	N	ISS	Policy	NAS Continuous Monitoring Policy Decision
876	2016 Q2	N	ISS	Policy	NAS Data Classification / Protection Policy
877	2020 Q3	N	ISS	Policy	NAS ISS Supply Chain Policy
878	2014 Q4	N	ISS	Policy	NAS Common Control(s) Policy

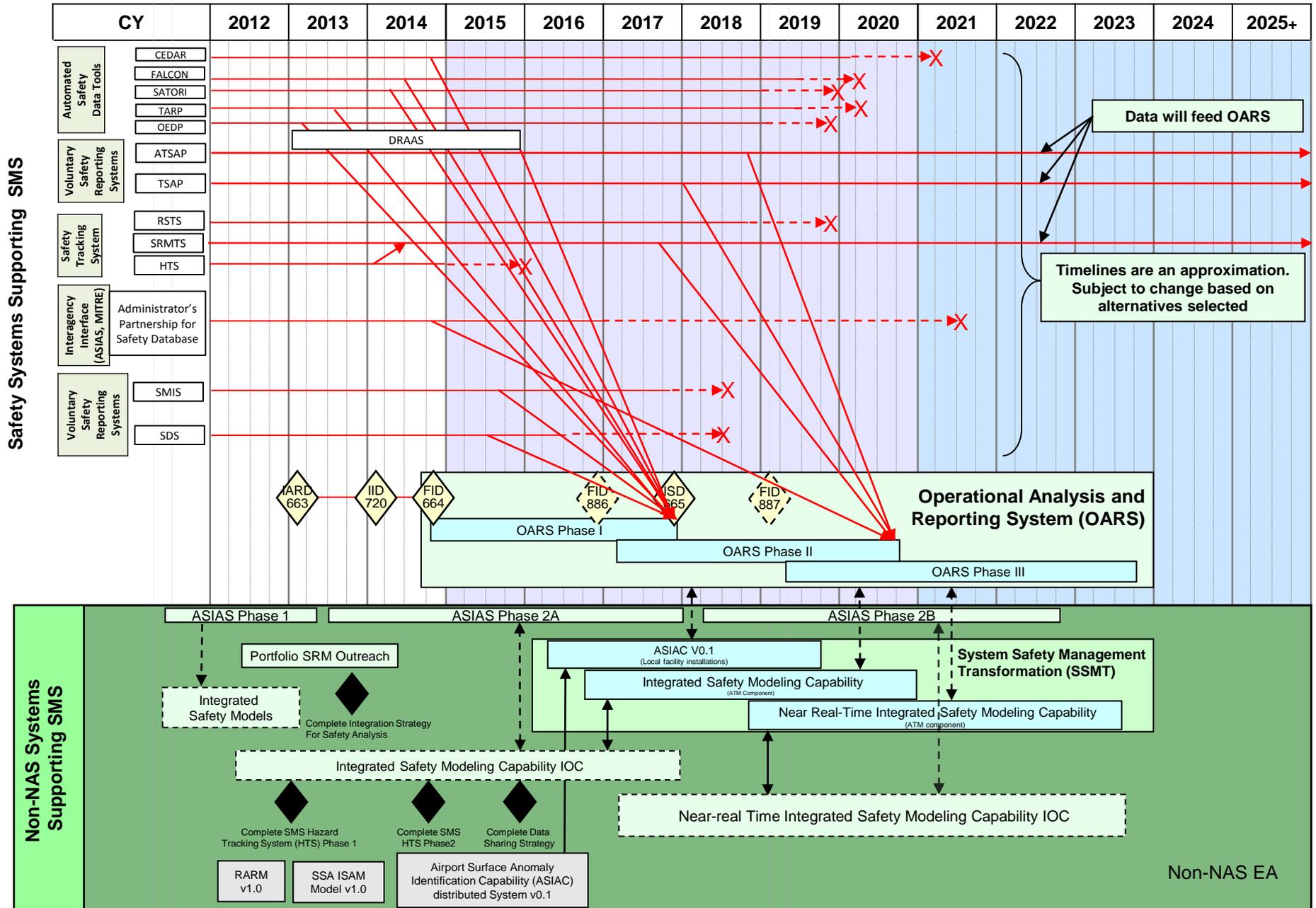
APPROVED

Safety

Objective : The Safety Roadmap represents an executive level view of Acquisition Management System (AMS) milestones, decision points, system activities and system interactions made by Enterprise Safety in preparation of fulfilling Destination 2025 safety metrics. It embodies the cohesive coordination and collaboration of efforts between NextGen Safety stakeholders (ATO, AVS, PMO and ANG) to maximize available resources, increase communication, achieve essential safety goals and minimize costs by averting duplication of work and working together. The NAS Safety Roadmap depicts current NAS Safety systems and the proposed transformation of those systems into the Operational Analysis and Reporting System (OARS). It also depicts NextGen Aviation Safety Information Analysis and Sharing (ASIAS) and System Safety Management Transformation (SSMT) capabilities/activities that are being developed as Non-NAS components. The Safety Roadmap reflects components of the Safety Risk Management (SRM) process at the program level, concept/capability level and system level to support integrated safety analysis. It also portrays the application of System Safety to the NAS through development of key safety assessments, procedures, guidance, policy and requirements in support of the ANG Enterprise System. The Safety Roadmap tracks all safety assessments including the OSAs, CSAs, PHAs, SHAs/SSHAs/O&SHAs, SSARs and SRMDs that are required for all NAS programs undergoing the AMS and seeking a decision milestone. NextGen Safety is currently assisting in the development of the OARS program to transform ATO safety processes, including the use of available safety initiatives i.e. ASIAS, to develop a more robust safety infrastructure able to handle future possible safety issues in the NAS.

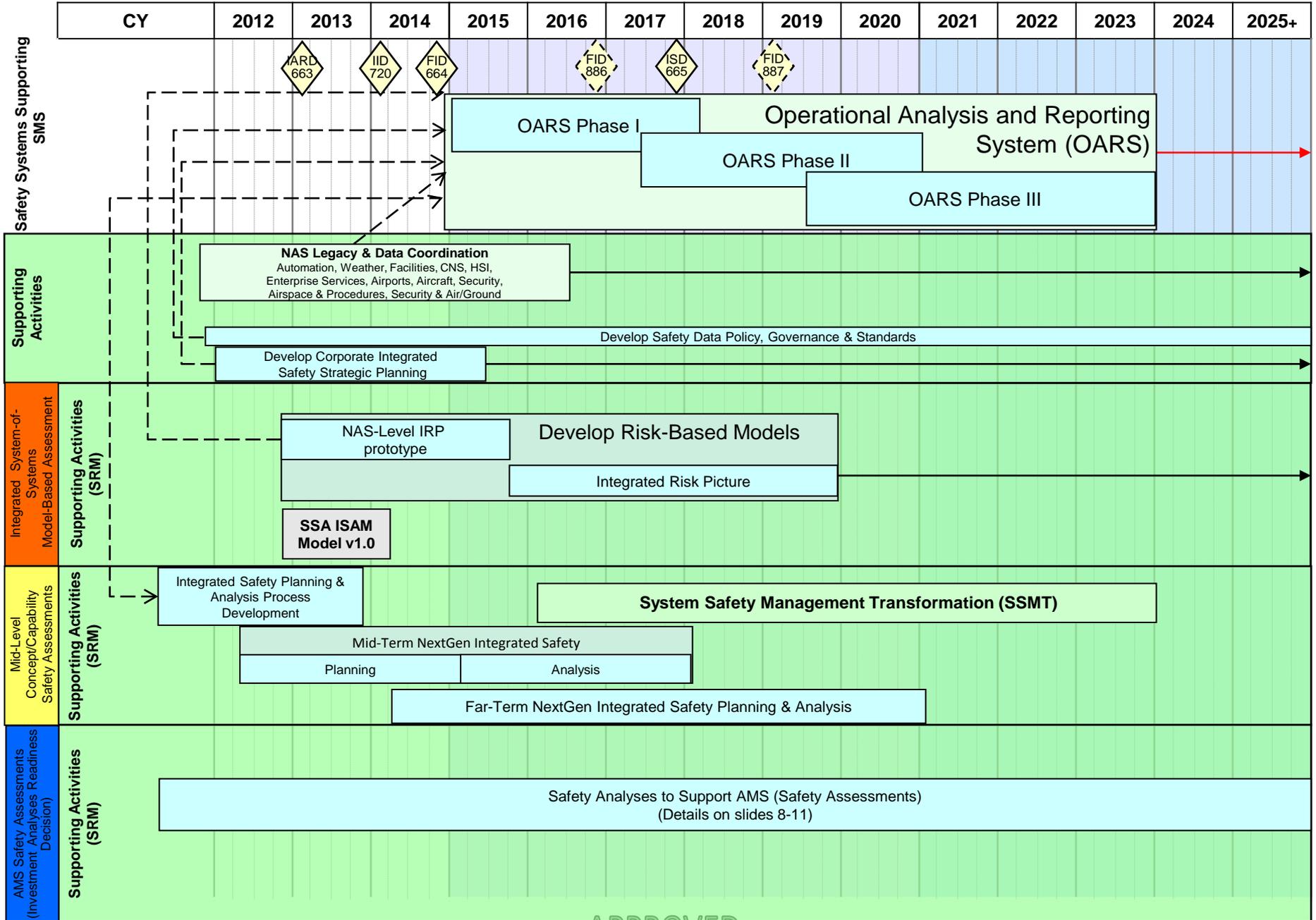
APPROVED

Safety Roadmap (1 of 11)



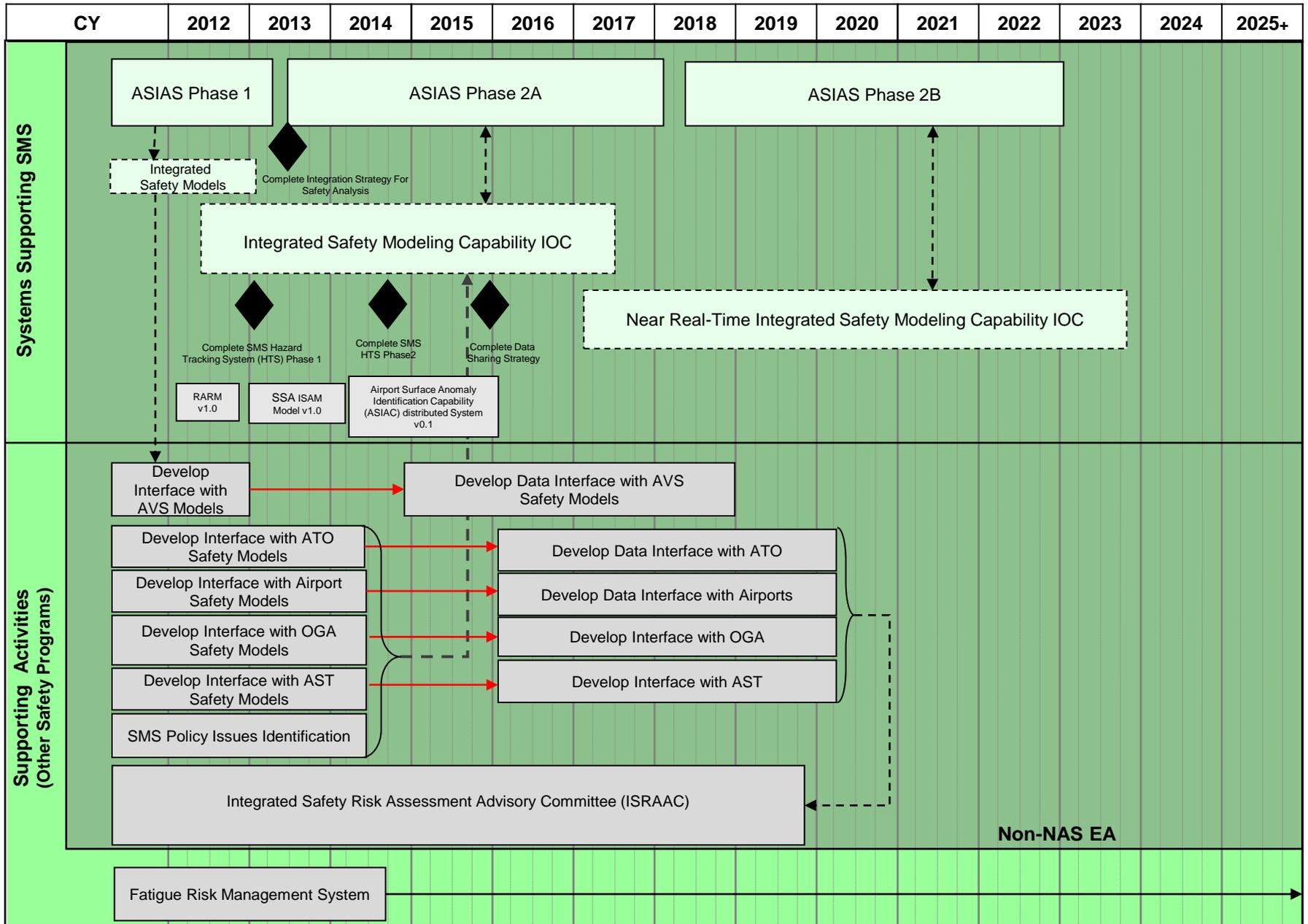
APPROVED

Safety Roadmap (2 of 11)



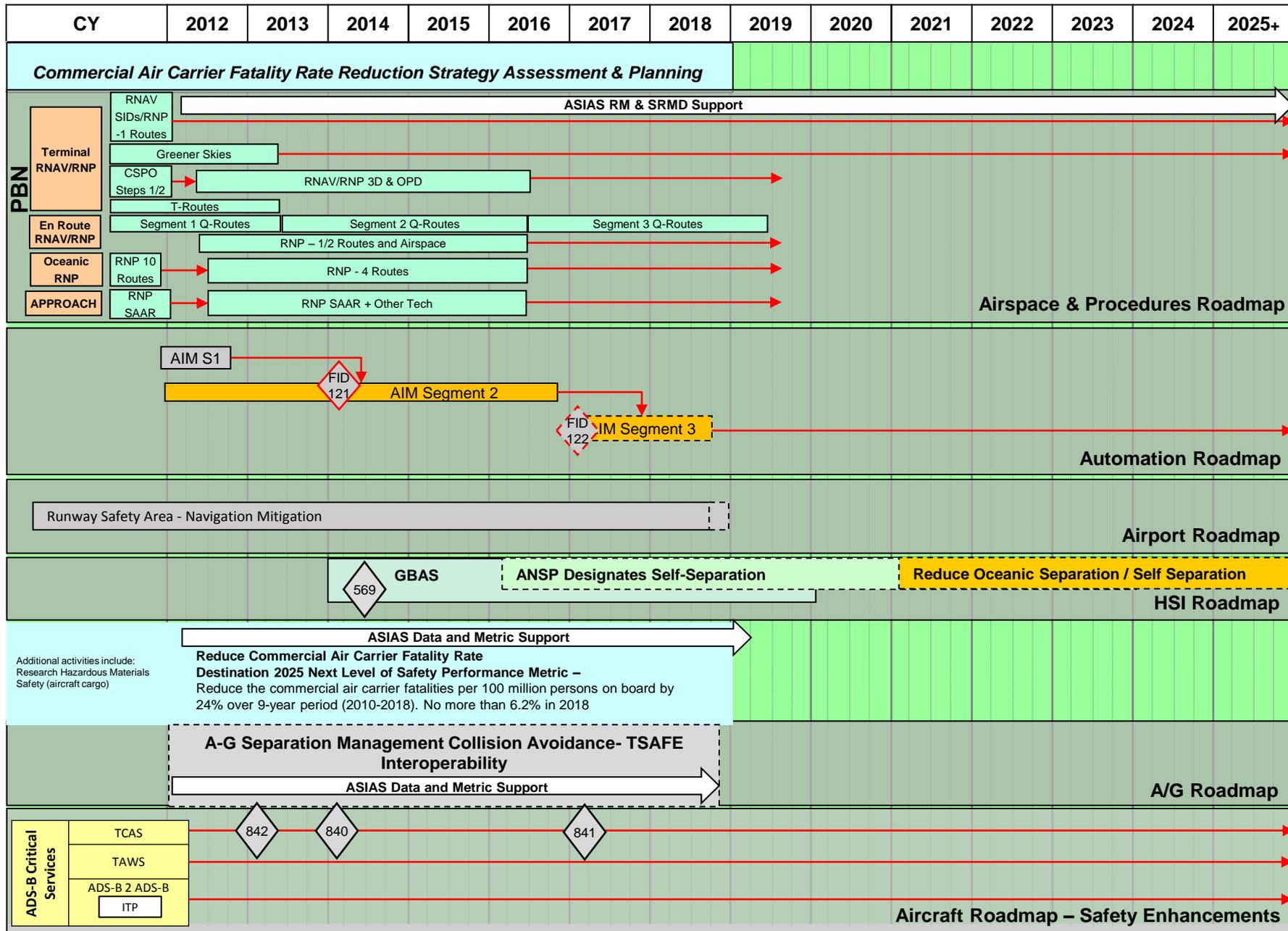
APPROVED

Safety Roadmap (3 of 11)



APPROVED

Safety Roadmap (4 of 11)



Airspace & Procedures Roadmap

Automation Roadmap

Airport Roadmap

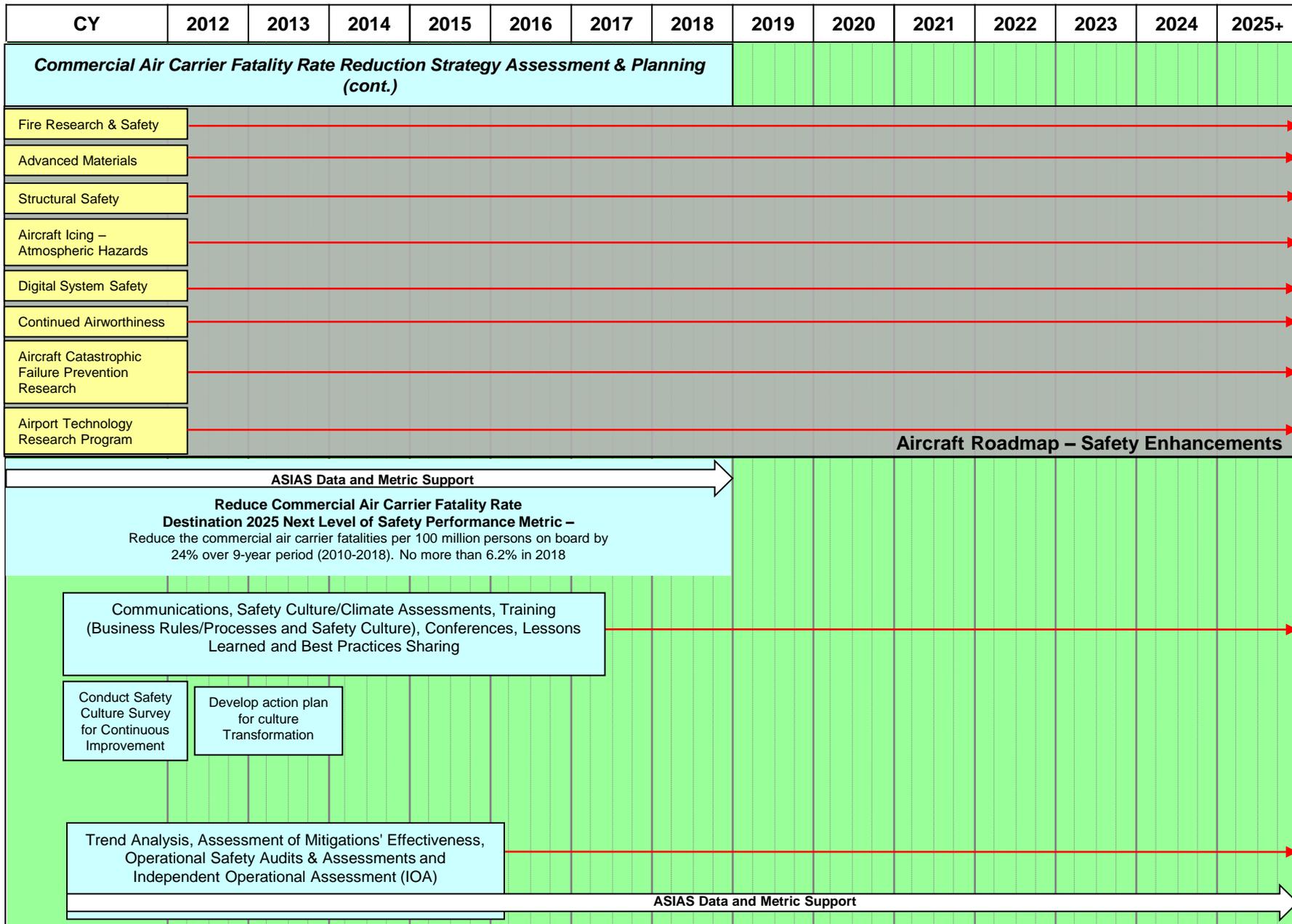
HSI Roadmap

A/G Roadmap

Aircraft Roadmap – Safety Enhancements

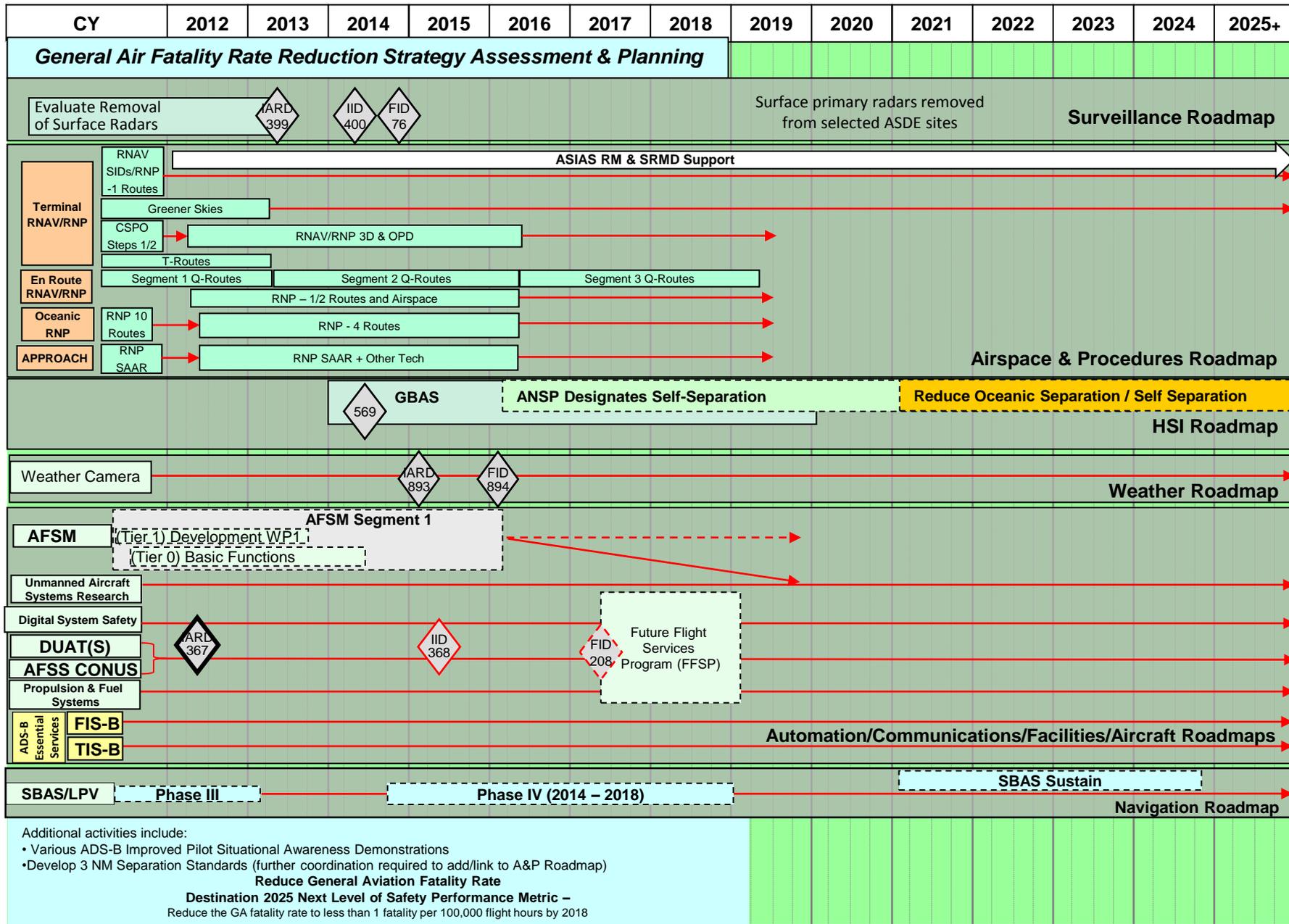
APPROVED

Safety Roadmap (5 of 11)



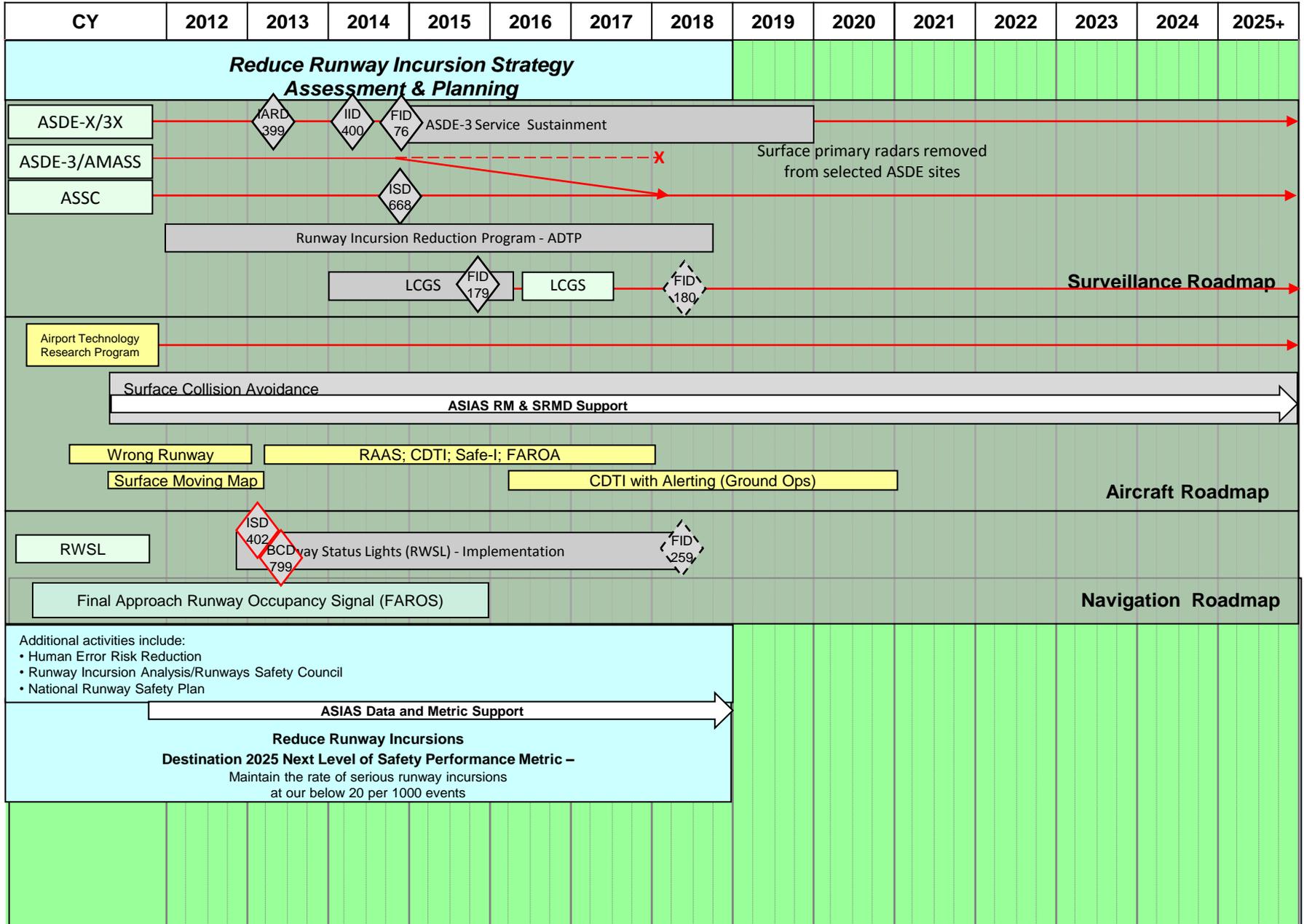
APPROVED

Safety Roadmap (6 of 11)



APPROVED

Safety Roadmap (7 of 11)



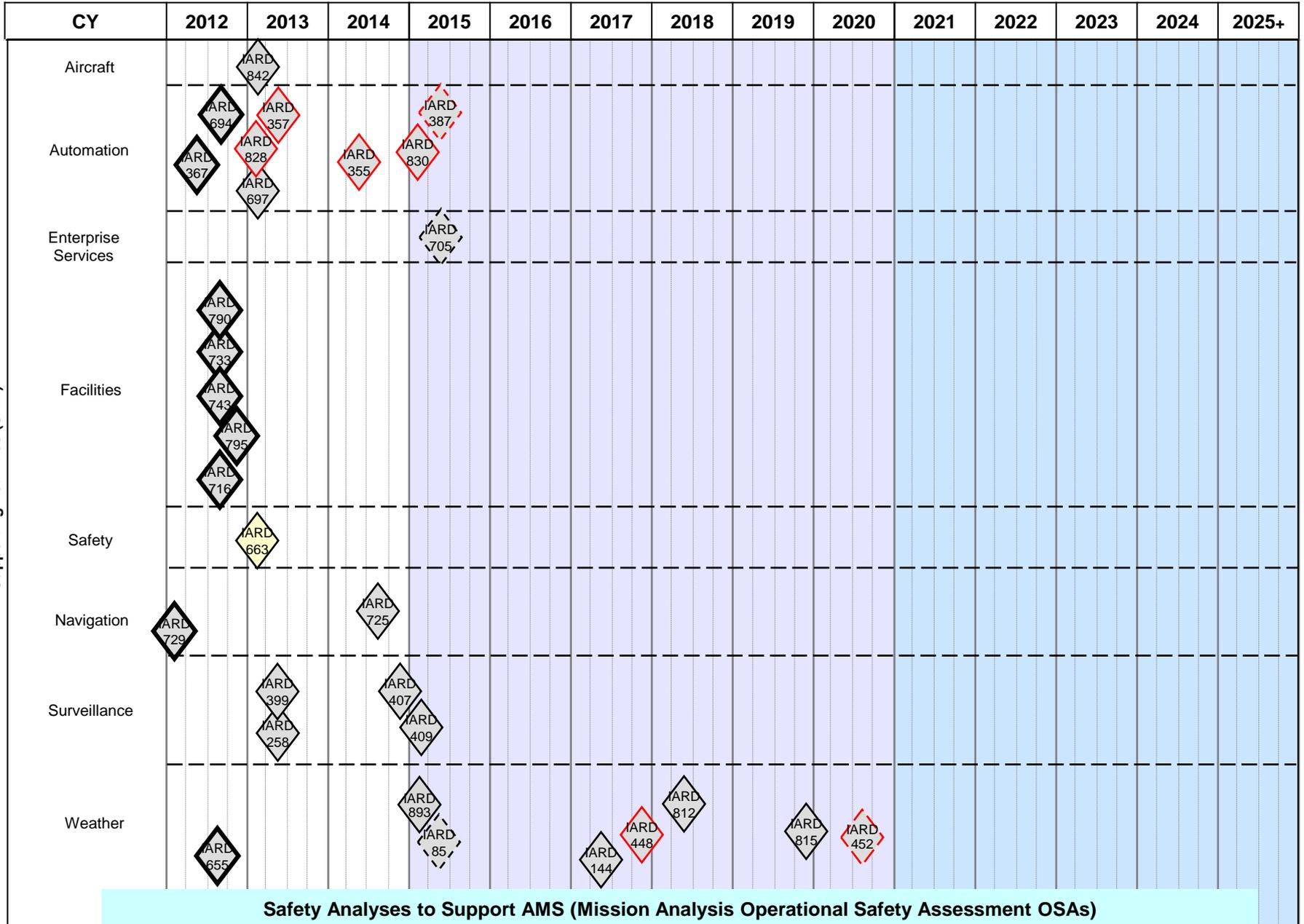
Supporting Activities (Increased Safety)

APPROVED

Safety Roadmap (8 of 11)

AMS Safety Assessment (Investment Analysis Readiness Decision (IARD))

Supporting Activities (SRM)

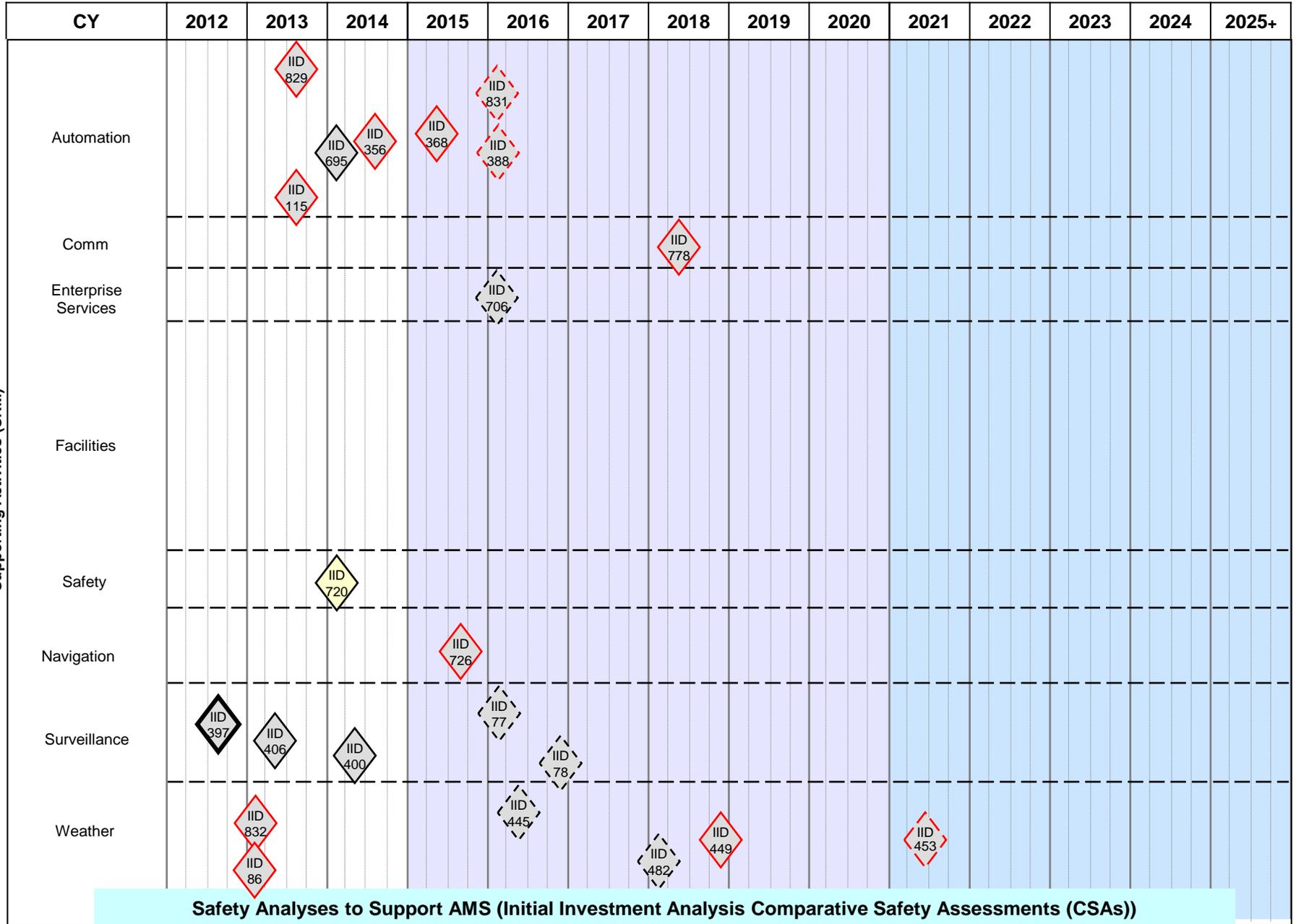


Safety Analyses to Support AMS (Mission Analysis Operational Safety Assessment OSAs)

APPROVED

Safety Roadmap (9 of 11)

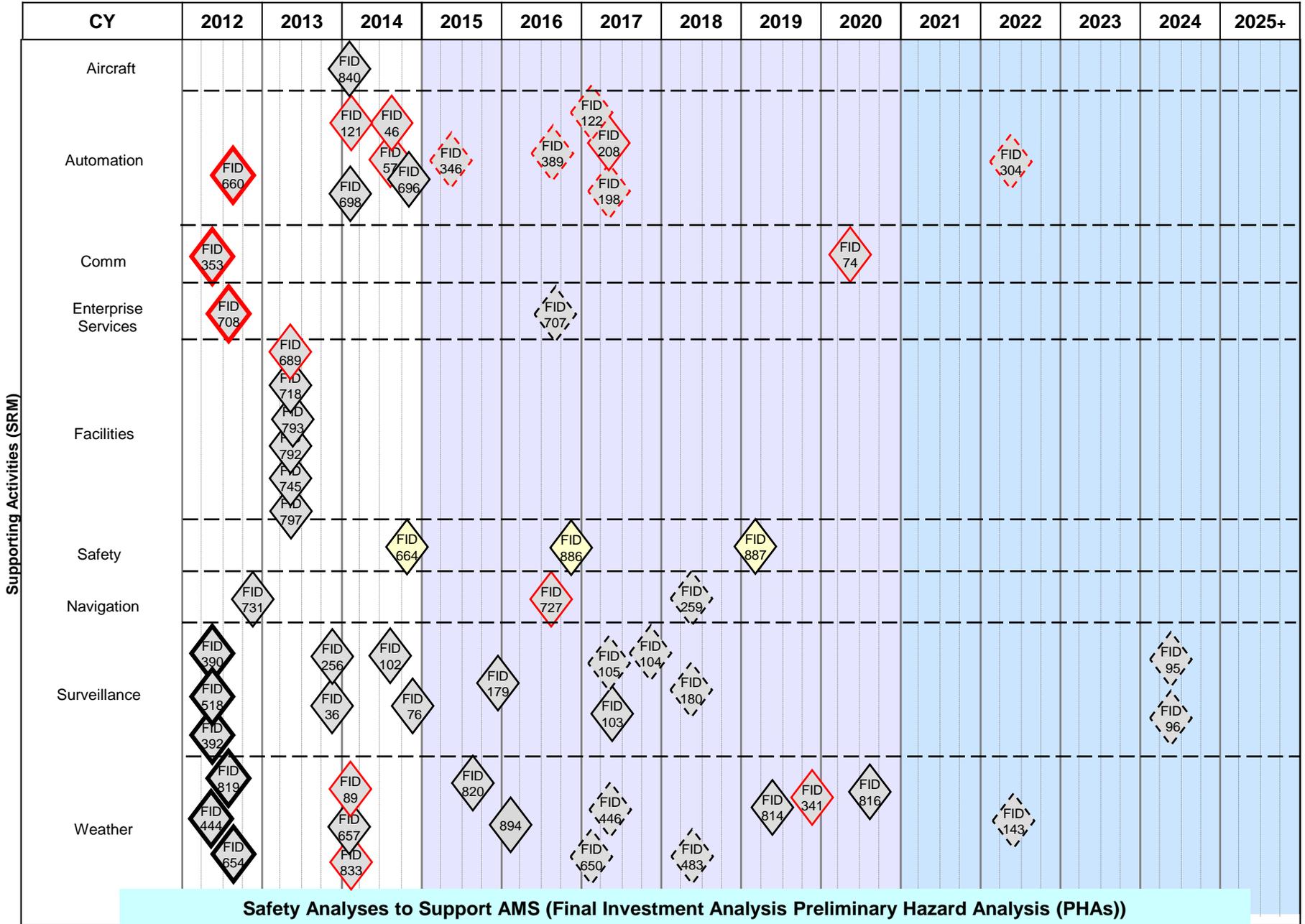
AMS Safety Assessments (Initial Investment Decision (IID))



APPROVED

Safety Roadmap (10 of 11)

AMS Safety Assessments (Final Investment Decision (FID))



Safety Analyses to Support AMS (Final Investment Analysis Preliminary Hazard Analysis (PHAs))

APPROVED

Safety Roadmap (11 of 11)

AMS Safety Assessments (In-Service Decision (ISD))

Supporting Activities (SRM)

CY	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025+
Air - Ground														
Aircraft														
Automation														
Comm														
Enterprise Services														
Facilities														
ISS														
Safety														
Navigation														
Surveillance														
Weather														

ISD 402

ISD 668

ISD 401

ISD 674

ISD 519

ISD 398

ISD 665

ISD 675

ISD 447

ISD 651

ISD 408

ISD 410

ISD 454

Safety Analyses to Support AMS (Solution Implementation Subsystem Hazard Analysis/System Hazard Analysis/Operating and Support Hazard Analysis (SHA/SSHA/O&SHAs), System Safety Assessment Report (SSAR) & Safety Risk Management Documents (SRMDs)

APPROVED

Safety Roadmap: Assumptions

Identifier	Description
SAFE-01	ASIAs is part of the non-NAS EA. It is depicted on the Safety Infrastructure Roadmap for coordination purposes since: a) It will require NAS data. b) It will provide safety data and tools for the NAS
SAFE-02	SMS Implementations for other LOBs are part of the non-NAS EAs. These activities are depicted on the Safety Infrastructure Roadmap for coordination purposes.
SAFE-03	Safety Modeling Advisory Committee (SMAC). SSMT (ASIAs, SSA, SRM & SMS) representatives of FAA LOBs and other integrated system safety assessment stakeholders will meet annually (at least) to coordinate requirements and resources where appropriate. SMAC business requirements and process will be dependent and potentially represented in the NAS EA.

Air Traffic Organization (ATO) Top 5 Hazards Contributing to Risk in the NAS

1. ARRIVAL SEQUENCING: SPEED AND ANGLE

The hazard: Aircraft being vectored at a speed and/or angle that results in an overshoot of final approach.

2. ARRIVAL SEQUENCING: SAME ALTITUDE AND ON PARALLEL RUNWAY OPERATIONS

The hazard: An aircraft overshoots the turn to final at the same altitude as arrival traffic to a parallel runway.

3. CLEARANCE COMPLIANCE - ALTITUDE

The hazard: Aircraft at other than expected altitude, for example, incorrect hearback/readback.

4. GO-AROUNDS

The hazard: Arrival aircraft executes an unexpected go-around resulting in conflict with departing traffic.

5. COORDINATION

The hazard: Lack of appropriate, or incomplete coordination among operational employees.

Safety Roadmap: Decision Points (1 of 5)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
36	2013 Q4	N	Surveillance	FID	Final Investment Decision (FID) for migration of PRM to PRM-R
46	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for Terminal Flight Data Manager (TFDM) Core
57	2014 Q3	Y	Automation	FID	Final Investment Decision (FID) for TBFM/WP3
74	2020 Q2	Y	Communication	FID	Final Investment Decision (FID) for FTI 2
76	2014 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ASDE-3 Service Sustainment
77	2016 Q1	N	Surveillance	IID	Initial Investment Decision (IID) to implement a NextGen Surveillance and Weather Radar Capability for ATC
78	2016 Q4	N	Surveillance	IID	Initial Investment Decision (IID) for NextGen Backup Surveillance Capability
85	2015 Q2	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for NSOC
86	2013 Q1	Y	Weather	IID	Initial Investment Decision (IID) for NWP WP1
89	2014 Q1	Y	Weather	FID	Final Investment Decision (FID) for NWP WP1
95	2024 Q2	N	Surveillance	FID	Final Investment Decision (FID) for replacement of terminal primary radars (ASR-11 PSR) and removal of terminal beacons (ASR-11 MSSR)
96	2024 Q2	N	Surveillance	FID	Final Investment Decision (FID) for replacement of en route beacons (ATCBI-6)
102	2014 Q3	N	Surveillance	FID	Final Investment Decision (FID) to implement SIM in terminal and en route legacy radar systems
103	2017 Q2	N	Surveillance	FID	Final Investment Decision (FID) for technology refresh of beacons (ATCBI-6)
104	2017 Q4	N	Surveillance	FID	Final Investment Decision (FID) to implement a NextGen Surveillance and Weather Radar Capability for ATC
105	2017 Q2	N	Surveillance	FID	Final Investment Decision (FID) for NextGen Backup Surveillance Capability
115	2013 Q3	Y	Automation	IID	Initial Investment Decision (IID) for Terminal Flight Data Manager Core
121	2014 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 2
122	2017 Q1	Y	Automation	FID	Final Investment Decision (FID) for AIM Segment 3
143	2022 Q2	N	Weather	FID	Final Investment Decision (FID) for NWP WP3
144	2017 Q2	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for NWP WP2
179	2015 Q4	N	Surveillance	FID	Final Investment Decision (FID) for LCGS
180	2018 Q2	N	Surveillance	FID	Final Investment Decision (FID) for ADS-B to assume LCGS function, or approve a Technology Refresh for LCGS
198	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for TFDM Future
208	2017 Q2	Y	Automation	FID	Final Investment Decision (FID) for Future Flight Services Program (FFSP)
256	2013 Q4	N	Surveillance	FID	Final Investment Decision (FID) for ASR-11 Technology Refresh Segment 2 (through 2025)
258	2013 Q2	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for Low Cost Ground Surveillance (LCGS)

Safety Roadmap: Decision Points (2 of 5)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
259	2018 Q2	N	Navigation	FID	Final Investment Decision (FID) for RWSL Technology Refresh
304	2022 Q2	Y	Communication	FID	Final Investment Decision (FID) for Data Comm Segment 2
341	2019 Q4	Y	Enterprise Services	FID	Final Investment Decision (FID) for CSS-Wx WP2 and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
346	2015 Q2	Y	Automation	FID	Final Investment Decision (FID) for CATMT Work Package 4
353	2012 Q2	Y	Communication	FID	Final Investment Decision (FID) for Data Communications Segment 1 Phase 1: Tower Services, DCIS Contract and ERAM PGW and Logon.
355	2014 Q2	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for CATMT Work Package 4
356	2014 Q3	Y	Automation	IID	Initial Investment Decision (IID) for CATMT Work Package 4
357	2013 Q2	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for TBFM/WP3
367	2012 Q2	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for Future Flight Services Program (FFSP)
368	2015 Q2	Y	Automation	IID	Initial Investment Decision (IID) for Future Flight Services Program (FFSP)
387	2015 Q2	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for Offshore Automation Systems Consolidation
388	2016 Q1	Y	Automation	IID	Initial Investment Decision (IID) for Offshore Automation Systems Consolidation
389	2016 Q3	Y	Automation	FID	Final Investment Decision (FID) for Offshore Automation Systems Consolidation
390	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for legacy beacon (Mode S) Phase 2 SLEP through 2028
392	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for legacy radar (ASR-9) SLEP through 2027
397	2012 Q3	N	Surveillance	IID	Initial Investment Decision (IID) for migration of PRM to PRM-R
398	2017 Q3	N	Surveillance	ISD	In-Service Decision (ISD) for PRM-R
399	2013 Q2	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for ASDE-3 Service Sustainment
400	2014 Q2	N	Surveillance	IID	Initial Investment Decision (IID) for ASDE-3 Service Sustainment
401	2016 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for Low Cost Ground Surveillance system
402	2013 Q1	Y	Navigation	ISD	In-Service Decision (ISD) for Runway Status Light System
406	2013 Q2	N	Surveillance	IID	Initial Investment Decision (IID) for SIM in terminal and en route legacy radar systems
407	2014 Q4	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for NextGen Surveillance and Weather Radar Capability
408	2023 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for NextGen Surveillance and Weather Radar Capability
409	2015 Q1	N	Surveillance	IARD	Investment Analysis Readiness Decision (IARD) for NextGen Backup Surveillance Capability
410	2023 Q2	N	Surveillance	ISD	In-Service Decision (ISD) for NextGen Backup Surveillance Capability
444	2012 Q2	N	Weather	FID	Final Investment Decision (FID) for WSDS WP1 "Sustain"
445	2016 Q2	N	Weather	IID	Initial Investment Decision (IID) for NSOC
446	2017 Q2	N	Weather	FID	Final Investment Decision (FID) for NSOC
447	2022 Q2	N	Weather	ISD	In-Service Decision (ISD) for NSOC

APPROVED

Safety Roadmap: Decision Points (3 of 5)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
448	2017 Q4	Y	Enterprise Services	IARD	Investment Analysis Readiness Decision (IARD) for CSS-Wx WP2 and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
449	2018 Q4	Y	Enterprise Services	IID	Initial Investment Decision (IID) for CSS-Wx and transition of ADAS communications (and WMSCR Comms if not completed in CSS-Wx WP1) to CSS-Wx WP2
452	2020 Q3	Y	Weather	IARD	Investment Analysis Readiness Decision (IARD) for NWP WP3
453	2021 Q2	Y	Weather	IID	Initial Investment Decision (IID) for NWP WP3
454	2024 Q2	Y	Weather	ISD	In-Service Decision (ISD) for NWP WP3
482	2018 Q1	N	Weather	IID	Initial Investment Decision (IID) for NWP WP2
483	2018 Q2	N	Weather	FID	Final Investment Decision (FID) for NWP WP2
518	2012 Q2	N	Surveillance	FID	Final Investment Decision (FID) for a Mobile/Transportable Airport Surveillance Radar (MASR)
519	2016 Q4	N	Surveillance	ISD	In-Service Decision (ISD) for a Mobile/Transportable Airport Surveillance Radar (MASR)
569	2014 Q2	N	Human Systems Integration	Strategy (Other)	Decision to use Requirements for Enhanced Flight Deck Displays for Separation and Collision Avoidance
650	2017 Q1	N	Weather	FID	Final Investment Decision (FID) for WSDS Work Pkg 2
651	2022 Q3	N	Weather	ISD	In-Service Decision (ISD) for WSDS Work Pkg 2
654	2012 Q3	N	Weather	FID	Final Investment Decision (FID) for ASWON Tech Refresh
655	2012 Q3	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for ITWS Tech Refresh
657	2014 Q1	N	Weather	FID	Final Investment Decision (FID) for ITWS Tech Refresh
660	2012 Q3	Y	Automation	FID	Final Investment Decision (FID) for TAMR P3S2 (Phase 3 Segment 2)

APPROVED

Safety Roadmap: Decision Points (4 of 5)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
663	2013 Q1	N	Safety	IARD	Investment Analysis Readiness Decision (IARD) for Operational Analysis and Reporting System (OARS) Phase 1
664	2014 Q4	N	Safety	FID	Final Investment Decision (FID) for Operational Analysis and Reporting System (OARS) Phase 1
665	2017 Q4	N	Safety	ISD	In-Service Decision for Operational Analysis and Reporting System (OARS) Phase 1
668	2014 Q4	N	Surveillance	ISD	In Service Decision (ISD) for Airport Surface Surveillance Capability
674	2016 Q4	Y	Weather	ISD	In Service Decision (ISD) for NWP WP1
675	2021 Q3	N	Weather	ISD	In Service Decision (ISD) for NWP WP2
689	2013 Q2	Y	Facilities	FID	Final Investment Decision (FID) for NextGen Future Facilities
694	2012 Q3	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AMMS Work Package 1 and Work Package 2
695	2014 Q1	N	Automation	IID	Initial Investment Decision (IID) for AMMS Work Package 1 and Work Package 2
696	2014 Q4	N	Automation	FID	Final Investment Decision (FID) for AMMS Work Package 1 and Work Package 2
697	2013 Q1	N	Automation	IARD	Investment Analysis Readiness Decision (IARD) for RMLS Technology Refresh
698	2014 Q1	N	Automation	FID	Final Investment Decision (FID) for RMLS Technology Refresh
705	2015 Q2	N	Enterprise Services	IARD	Investment Analysis Readiness Decision (IARD) for the Enterprise Level Time and Frequency Solution
706	2016 Q1	N	Enterprise Services	IID	Initial Investment Decision (IID) for the Enterprise Level Time and Frequency Solution
707	2016 Q3	N	Enterprise Services	FID	Final Investment Decision (FID) for the Enterprise Level Time and Frequency Solution
708	2012 Q3	Y	Enterprise Services	FID	Final Investment Decision for SWIM Segment 2
716	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for National Test Equipment
718	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for National Test Equipment
720	2014 Q1	N	Safety	IID	Initial Investment Decision (IID) for Operational Analysis and Reporting System (OARS) Phase 1
725	2014 Q3	N	Navigation	IARD	Investment Analysis Readiness Decision (IARD) for Alternate Positioning, Navigation and Timing (APNT)
726	2015 Q3	Y	Navigation	IID	Initial Investment Decision (IID) for Alternate Positioning, Navigation and Timing (APNT)
727	2016 Q3	Y	Navigation	FID	Final Investment Decision (FID) for Alternate Positioning, Navigation and Timing (APNT)
729	2012 Q1	N	Navigation	IARD	Investment Analysis Readiness Decision (IARD) for Enhanced Low Visibility Operations (ELVO)
731	2012 Q4	N	Navigation	FID	Final Investment Decision (FID) for Enhanced Low Visibility Operations (ELVO)
733	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for EMC
743	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for MAMP

Safety Roadmap: Decision Points (5 of 5)

DP #	Target Date CY	High Priority	Primary Domain	Type	Name
745	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for MAMP
778	2018 Q2	Y	Communication	IID	Initial Investment Decision (IID) for FTI-2 program
790	2012 Q3	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for Fuel Storage Tank
792	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Fuel Storage Tank
793	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Energy Management Compliance Program (EMCP)
795	2012 Q4	N	Facilities	IARD	Investment Analysis Readiness Decision (IARD) for Unstaffed Infrastructure Sustainment (UIS)
797	2013 Q2	N	Facilities	FID	Final Investment Decision (FID) for Unstaffed Infrastructure Sustainment (UIS)
799	2013 Q2	Y	Navigation	BCD	Baseline Change Decision (BCD) for Runway Status Light Program
812	2018 Q2	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for TDWR SLEP 3
814	2019 Q2	N	Weather	FID	Final Investment Decision (FID) for TDWR SLEP 3
815	2019 Q4	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for JAWS SLEP
816	2020 Q3	N	Weather	FID	Final Investment Decision (FID) for JAWS SLEP
819	2012 Q3	N	Weather	FID	Final Investment Decision (FID) for NEXRAD (12 FAA Radars) SLEP
820	2015 Q3	N	Weather	FID	Final Investment Decision (FID) for TDWR SLEP 2
828	2013 Q1	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AIM Segment 2
829	2013 Q3	Y	Automation	IID	Initial Investment Decision (IID) for AIM Segment 2
830	2015 Q1	Y	Automation	IARD	Investment Analysis Readiness Decision (IARD) for AIM Segment 3
831	2016 Q1	Y	Automation	IID	Initial Investment Decision (IID) for AIM Segment 3
832	2013 Q1	Y	Enterprise Services	IID	Initial Investment Decision (IID) for CSS-Wx WP1
833	2014 Q1	Y	Weather	FID	Final Investment Decision (FID) for CSS-Wx WP1
840	2014 Q1	N	Aircraft	FID	Final Investment Decision (FID) for WP1 TCAS-2 Tech Refresh
841	2017 Q1	N	Aircraft	Strategy (Other)	Strategy Decision to move forward on WP2 for UAS GA Collision Avoidance Approving Authority AJM-O
842	2013 Q1	N	Aircraft	IARD	Investment Analysis Readiness Decision (IARD) for WP1 TCAS-2 Tech Refresh
886	2016 Q4	N	Safety	FID	Final Investment Decision (FID) for Operational Analysis and Reporting System (OARS) Phase 2
887	2019 Q1	N	Safety	FID	Final Investment Decision (FID) for Operational Analysis and Reporting System (OARS) Phase 3
893	2015 Q1	N	Weather	IARD	Investment Analysis Readiness Decision (IARD) for the Weather Camera Program - Future Segments
894	2016 Q1	N	Weather	FID	Final Investment Decision (FID) for the Weather Camera Program - Future Segments

APPROVED

Appendix A

Acronym List

APPROVED

Appendix A, Acronym List (1 of 6)

Acronym	Definition	Acronym	Definition
3D	Three dimensional (x, y, z)	ARTS 1E	Automated Radar Terminal System Model 1E
4D	Four dimensional (x, y, z, t)	ARTS IIE	Automated Radar Terminal System Model IIE
4DT	4D Trajectory	ARTS IIIE	Automated Radar Terminal System Model IIIE
AC	Advisory Circular or Aircraft	ASDE	Airport Surface Detection Equipment
ACAS	Airborne Collision Avoidance System	ASDE-3	Airport Surface Detection Equipment - Model 3
ACE IDS	ASOS Controller Equipment-Information Display System	ASDE-3/X	Airport Surface Detection Equipment - Model 3 and ASDE-Model X
ACL	Airport Cable Loop	ASOS	Automated Surface Observing System
ADAM	Advanced Dynamic Airspace Management	ASPIRE	Asia and South Pacific Initiative to Reduce Emissions
ADAS	AWOS Data Acquisition System	ASR	Airport Surveillance Radar
ADS-B	Automatic Dependent Surveillance-Broadcast	ASTI	Alaska Satellite Telecommunications Infrastructure
ADS-C	Automatic Dependent Surveillance-Contract	ATC	Air Traffic Control
AEFS	Advanced Electronic Flight Strip	ATCBI	Air Traffic Control Beacon Interrogator
AFSM	Alaska Flight Service Modernization	ATCSCC	David J. Hurley Air Traffic Control System Command Center
AFSS	Automated Flight Service Station	ATCT	Airport Traffic Control Tower
A/G	Air-to-Ground	ATIS	Automated Terminal Information System
AGIS	Airports Geographic Information System	ATM	Air Traffic Management
AIM	Aeronautical Information Management	ATO	Air Traffic Organization (FAA)
AIRE	Atlantic Interoperability Initiative to Reduce Emissions	ATOP	Advanced Technologies and Oceanic Procedures
AISR	Aeronautical Information System Replacement	ATRP	Airport Technology Research Program
ALDARS	Automated Lightning Detection and Reporting System	AWCS	Airport Wireless Communications Systems
ALS	Automatic Landing System	AWOS	Automated Weather Observing System
AMASS	Airport Movement Area Safety System	AWSS	Automated Weather Sensor System
AMMS	Automated Maintenance Management System	AVS	Office of Aviation Safety
ANICS	Alaska National Airspace System Interfacility Communication System	BCD	Baseline Change Decision
ANSP	Air Navigation Service Provider	BUEC	Backup Emergency Communications (VSCS)
APNT	Alternate Position, Navigation, and Timing	BWM	Bandwidth Manager
ARFF	Aircraft Rescue and Fire Fighting	C&V	Ceiling & Visibility
ARMS	Airspace Resource Management System	CAEG	Computer-Aided Engineering Graphics
ARMT	Airport Resource Management Tool	CAP	Chicago Airspace Project
ARSR	Air Route Surveillance Radar	CARF	Central Altitude Reservation Function

Appendix A, Acronym List (2 of 6)

Acronym	Definition	Acronym	Definition
CAT III	Category III (precision landing)	DSR	Display System Replacement
CATM	Collaborative Air Traffic Management	DST	Decision Support Tool
CATMT	Collaborative Air Traffic Management Technologies	DUATS	Direct User Access Terminal Service
CCS	Conference Control System	DVRS	Digital Voice Recorder System
CCS-W	Conference Control System – Warrenton	EA	Enterprise Architecture
CDTI	Cockpit Display of Traffic Information	EARTS	En Route Automated Radar Tracking System
CERAP	Combined Center and Radar Approach Control	EBP	External Boundary Protection
CIP	Current Icing Product	EC	ATO Executive Council
CIWS	Corridor Integrated Weather System	ECG	En Route Communications Gateway
CHI	computer-human interface	ED	EUROCAE document
CSM	Certified Software Management	ED-X	Enhanced Data Services (ED-X)
ConOps	Concept of Operations	E M C	Emergency Management Compliance
CONUS	Conterminous United States	EFSTS	Electronic Flight Strip Transfer System
CRDR	Concepts and Requirements Definition Readiness	EFVS	Enhanced Flight Vision System
CSPO	closely spaced parallel operations	ELVO	Enhanced Low Visibility Operations
CSPR	Closely Spaced Parallel Runways	EMAS	Engineered Material Arresting System
CTS	Coded Time Source	ERAM	En Route Automation Modernization
CY	Calendar Year	ERIDS	En Route Information Display System
DAB	Daytona Beach International Airport	ETR	Emergency Transceiver
DALR	Digital Audio Legal Recorder	ETVS	Enhanced Terminal Voice Switch
DASI	Digital Altimeter Setting Indicator	FAA	Federal Aviation Administration
DBRITE	Digital Bright Radar Indicator Tower Equipment	FANS	Future Air Navigation System
DC	Data Communications or DataComm	FAROS	Final Approach Runway Occupancy Signal
DCS	Data Communication System	FBWTG	FAA Bulk Weather Telecommunications Gateway
DF	Direction Finder	FCST	Forecast
DME	Distance Measuring Equipment	FDIO	Flight Data Input/Output
DMN	Data Multiplexing Network	FDP2K	Flight Data Processing 2000
DOTS+	Dynamic Ocean Track System Plus	FFS	Future Flight Services
DP	Decision Point	FID	Final Investment Decision
DSP	Departure Spacing Program	FIP	Forecast Icing Product

Appendix A, Acronym List (3 of 6)

Acronym	Definition	Acronym	Definition
FIS-B	Flight Information Service-Broadcast	IES	Integrated Enterprise Solution
FMS	Flight Management System	IFIA	International Flight Inspection Aircraft
FNS	Federal NOTAM System	IFPA	Instrument Flight Procedure Automation
FOC	Full Operational Capability	IID	Initial Investment Decision
FOD	Foreign Object Debris Detection	IKM	Identity & Key Management
FSRM	Facility Security Risk Management	ILS	Instrument Landing System
FSS	Flight Service Station	IPE	Internal Protection Enforcement
FST	Fuel Storage Tank	IOC	Initial Operational Capability
FT	Far Term	IRU	Inertial reference unit
FTI	FAA Telecommunications Infrastructure	ISD	In-Service Decision
FY	Fiscal Year	ITWS	Integrated Terminal Weather System
GA	General Aviation	IVSR	Interim Voice Switch Replacement
GBAS	Ground-Based Augmentation System	JAWS	Juneau Airport Wind System
GIS	Geographic Information System	JPDO	Joint Planning and Development Office
GNSS	Global Navigation Satellite System	JRC	Joint Resources Council
GPS	Global Positioning System	L5	A third civil signal on Navstar GPS (1176.45 MHz)
GPS RAIM	Global Positioning System Receiver Autonomous Integrity Monitor	LCGS	Low Cost Ground Surveillance
GS	Glide Slope Indicator	LDIN	Lead In Light System
GTG	Graphical Turbulence Guidance	LDRCL	Low-Density Radio Communications Link
HADDS	Host ATM Data Distribution System	LED	Light-emitting diode
HOST	Host Computer System	LIDAR	Laser Identification Detection and Ranging
HRRR	High Resolution Rapid Refresh (weather model)	LLWAS	Low-Level Windshear Alert System
H/W	Hardware	LOC	Localizer
IAPA	Instrument Approach Procedures Automation	LRR	long range radar
IARD	Investment Analysis Readiness Decision	M/LAT	Multilateration
ICAO	International Civil Aviation Organization	MALSR	Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights
ICMS	Integrated Control and Monitoring System	MAMP	Mobile Asset Management Program
ICSS	Integrated Communications Switching System	MASPS	Minimum Aviation System Performance Standards (RTCA)
IDR	Incident Detection & Response	MB	Microburst
IDS	Information Display System	MB	Marker Beacon

Appendix A, Acronym List (4 of 6)

Acronym	Definition	Acronym	Definition
MDR	Multi-Mode Digital Radios	NOTAM	Notice to Airmen
MMAC	Mike Monroney Aeronautical Center	NRCS	National Radio Communications Systems
MDCRS	Meteorological Data Collection and Reporting System	NSIP	NextGen Segment Implementation Plan
MEARTS	Micro EARTS	NSRR	NAS Service Registry/Repository
MLS	Microwave Landing System	NTE	National Test Equipment
MODE S	Mode Select	NVS	National Airspace System Voice Switch
MOPS	Minimum Operational Performance Standards (RTCA)	NWP	NextGen Wx Processor
MPAR	Multifunction Phased-Array Radar	NWS	National Weather Service
MSSR	Monopulse Secondary Surveillance Radar	OARS	Operational Analysis and Reporting System
NADIN PSN	National Airspace Data Interchange Network Packet Switched Network	OASIS	Operational and Supportability Implementation System
NAS	National Airspace System	Obs	Observation
NASA	National Aeronautics and Space Administration	OCC	Operations Control Center
NASE	NAS Adaptation Services Environment	ODALS	Omnidirectional Approach Lighting System
NASR	National Airspace System Resource	OEAAA	Obstruction Evaluation/Airport Airspace Analysis
NAVAID	Navigational Aid	OEP	Operational Evolution Plan
NCIME	NAVAID Control, Interlock, and Monitoring Equipment	OFDPS	Offshore Flight Data Processing System
NCV	National Ceiling & Visibility	OI	Operational Improvement
NDB	Non-directional Beacon	Ops	Operations
NDS	NOTAM Distribution Service	OWS	OGC Web Services
NEO	Network Enabled Operations	PAM	Path Arrival Management
NEXCOM	Next-Generation VHF A/G Communication System	PAPI	Precision Approach Path Indicator
NextGen	Next Generation Air Transportation System	PDARS	Performance Data Analysis and Reporting System
NEXRAD	Next Generation Weather Radar	PIREPS	Pilot Reports
NG	NextGen	POET	Post-Operation Evaluation Tool
nm	Nautical Mile	PRM-R	Precision Runway Monitor Replacement
NMR	NADIN MSN Rehost	PRM-E-Scan	Precision Runway Monitor Electronic Scan
NNCC	National Network Control Center	Qn	Calendar Quarter n (n = 1-4)
NNEW	NextGen Network-Enabled Weather	R&D	Research & Development
NOCC	National Operations Control Center	RAPT	Route Availability Planning Tool
NOP	National Offload Program	RCAG	Remote Communications Air/Ground

Appendix A, Acronym List (5 of 6)

Acronym	Definition	Acronym	Definition
RCE	Radio Control Equipment	SBS	Surveillance and Broadcast Services
RCL	Radio Communications Link	SDAT	Sector Design and Analysis Tool
RCLR	RCL Repeater	SDS	Safety Data System
RCLT	RCL Terminal	SE	System Engineering
RCO	Remote Communications Outlet	Segmt.	Segment
RCOM	NAS Recovery Communications	SITS	Security Integrated Tool Set
RDVS	Rapid Deployment Voice Switch	SL	STARS LITE
REIL	Runway End Identifier Lights	SLEP	Service Life Extension Program
RFI	Radio Frequency Interference	SMA	Surface Movement Advisor
RFI ELIM	Radio Frequency Interference (RFI) Elimination Program	SMGCS	Surface Movement Guidance and Control System
RID	Runway Incursion Device	SNT	Staffed NextGen Tower
RMLS	Remote Maintenance and Logging System	SOA	Service Oriented Architecture
RMMS	Remote Maintenance and Monitoring System	SSO	Self-Sustained Outlet
Rn	Release n (n = 1, 2,...N)	STARS	Standard Terminal Automation Replacement System
RNAV	Area Navigation	STVS	Small Tower Voice Switch
RNP	Required Navigation Performance	SVS	Synthetic Vision System
ROWS	Runway Obstruction Warning System	S/W	software
RSA	Runway Safety Area	SWIM	System-Wide Information Management
RTA	Required Time of Arrival	TACAN	Tactical Air Navigation
RTCA	Previously known as Radio Technical Committee for Aeronautics	TAMR	Terminal Automation Modernization and Replacement
RTR	Remote Transmitter/Receiver	TAWS	Terrain Awareness and Warning System
RVR	Runway Visual Range	TBFM	Time-Based Flow Management
RWI	Reduced Weather Impact	TBM	Time-Based Management
RWSL	Runway Status Lights	TBO	Trajectory-Based Operations
SACOM	Satellite Communication Network	TCAS	Traffic Alert and Collision Avoidance System
SAIDS	Systems Atlanta Information Display System	TDDS	Terminal Data Distribution System
SAMS	Special Use Airspace Management System	TDLS	Tower Data Link Services
SAS	Single Authoritative Source	TDWR	Terminal Doppler Weather Radar
SAWS	Standalone Weather Sensor	TFDM	Tower Flight Data Manager
SBAS	Satellite-Based Augmentation System	TFM	Traffic Flow Management

Appendix A, Acronym List (6 of 6)

Acronym	Definition	Acronym	Definition
TFMS	Traffic Flow Management System	VSBP	Voice Switch Bypass
TFR Bldr	Temporary Flight Restriction Builder	VSCS	Voice Switching and Control System (ARTCC)
TIS-B	Traffic Information Service-Broadcast	VTABS	Voice Switching and Control System : Training and Backup System
TMA	Traffic Management Advisor	WAAS	Wide-Area Augmentation System
TR	Technology Refresh	WAM	Wide Area Multilateration
TRACON	Terminal Radar Approach Control	WARP	Weather and Radar Processor
TSAFE	Tactical Separation-Assisted Flight Environment (NASA)	WINS	Weather Information Network Server
TWINDS	Terminal Winds	WJHTC	William J. Hughes Technical Center (FAA)
TWIP	Terminal Weather Information for Pilots	WME	Wind Measurement Equipment
UAS	Unmanned Aircraft System	WMSCR	Weather Message Switching Center Replacement
UIS	Unstaffed Infrastructure Sustainment	WP	Work Package
URET	User Request Evaluation Tool	WPn	Work Package n (n = 1, 2, ...N)
USNS	United States NOTAM Service	WSP	Weather System Processor
VASI	Visual Approach Slope Indicator	WT	Wake Turbulence
VHF/UHF/HF	Very High Frequency/Ultra High Frequency/High Frequency	WTMA	Wake Turbulence Mitigation for Arrival
VNAV	Vertical Navigation	WTMD	Wake Turbulence Mitigation for Departure
VOR	VHF Omnidirectional Range	Wx	Weather
VOT	VHF Omnidirectional range Test		