NAS Enterprise Architecture

Business & Technology Roadmaps v8.0

BASELINE

February 2025

Content Summary

Business & Technology Roadmaps Overview

What are the Business & Technology Roadmaps?

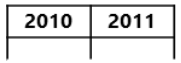
- The Business & Technology (B&T) Roadmaps are a collection of multi-year strategic roadmaps that depict enterprise-level changes to NAS internal operations, business processes, and functions that will lead to improved efficiencies, cost savings, and other benefits to the FAA. These NAS-focused improvements establish a life cycle approach that ensures the foundation of the NAS continues to modernize its technology and processes in support of future operational and technological improvements.
- The B&T Roadmaps are grouped by FAA Service and Capability and include the following elements that together show the evolution of the FAA Service:
  - **Current Business or Technology Environments (CBTEs)** describe the current state baseline of FAA service delivery
  - **B&T Improvements (BTIs)** are strategic or technological changes to the NAS intended to enhance FAA Service delivery through the realization of internal benefits (e.g. cost effectiveness)
  - **Current Business or Technology (CBTs)** are completed BTIs that show the capability solutions that are available and demonstrate evolution of the FAA service
  - **Support Activities (SAs)** are initiatives that inform the development or identification of new capabilities, policies, and procedures

Guidelines for Understanding the Roadmaps

- The Business & Technology Improvement (BTI) bars represent the date range for which an improvement is beginning implementation to when it is expected to be initially (e.g., at the first location) available to users. For BTIs that are expected to be made operationally available incrementally, the end date represents the first instance of the capability's operational availability. Expanded deployment of the capability beyond the first instance is captured on the Infrastructure Roadmaps.
- Each Business & Technology Roadmap diagram is segmented by Capabilities, which are depicted by alternating gray and white backgrounds as necessary.

Business & Technology Roadmaps Legend

Roadmap Shape Information



Timeline (calendar year)

Current Business & Technology Environment (CBTE) Arrow indicates sustainment

Current Business & Technology (CBT) Triangle indicates full operational availability

Date initial operational availability achieved

Business & Technology Improvement (BTI) Fill color indicates status

Business & Technology Improvements (BTIs) by Status

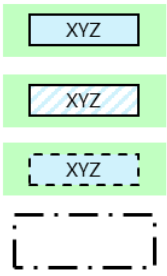
BTI with ***Initial Operational Availability*** status

BTI with ***Concept Exploration and Maturation*** status

BTI with ***Development*** status

BTI with ***Planned*** status

Support Activities (SAs)



Support Activity which is **primarily tracked on B&T Roadmaps**

Support Activity which is **primarily tracked on another NAS EA Roadmap**

Planned Support Activity

External Data Element being researched or developed by a NextGen partner agency/entity

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Business & Technology Roadmaps Overview

BTI Status Definitions

- BTI status is determined by the most mature capability solution, until the most mature solution achieves Initial Operational Availability (IOA) status.
- Once the most mature capability solution achieves IOA, the BTI will remain IOA until all capability solutions are complete, and then the BTI will transition to a Current Business & Technology (CBT).

BTI Status	Definition
Planned	No funding – either internally or externally (e.g. NASA or other partner agency) – has been allocated. The BTI represents a potential future concept; initial development may have begun and this is used as a placeholder to assist in further refining of solution on interdependency relationships.
Concept Exploration & Maturation	Work is underway and funded to define the concept, develop acquisition artifacts, mitigate risks, and determine the options for the implementation strategy. Solutions under development to deliver this operational change are currently in either concept and requirement definition or investment analysis up until a final investment decision is achieved (or a comparable agreement on the scope/implementation).
Development	The most mature solutions to deliver the operational change are under development. There may be additional solutions needed to fully deliver this BTI which are less mature.
Initial Operational Availability	At least one of the capability solutions needed to deliver the operational change has been achieved or approved for use at an initial site. IOA occurs after demonstration of initial operational capability at the key test site(s). A BTI remains in IOA until all capability solutions have achieved operational use.
Current Business & Technology Environment (CBTE)	The current operational state of FAA service delivery to NAS users.
Current Business & Technology (CBT)	All capability solutions needed to fully deliver the BTI are complete.

Service Group 3: Security

Security focuses on services provided that ensure the safeguard of civil aviation community, the FAA operating domains, and its facilities against acts of unlawful interference and cyber-attacks. Security services include the administrative and coordination aspects, as well as the technical security measures for the protection of the Federal Aviation Administration operating networks, infrastructures, and facilities. Security services also refers to the protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity and availability.

Standards, guidelines, models, frameworks, architecture, and other documents related to the protection of information that is stored, transferred, or processed in automated systems will guide how those services are protected and provided.

For access to the Security Roadmaps, please contact the Office of NextGen, Enterprise Planning and Analysis Division, (202) 267-2750.

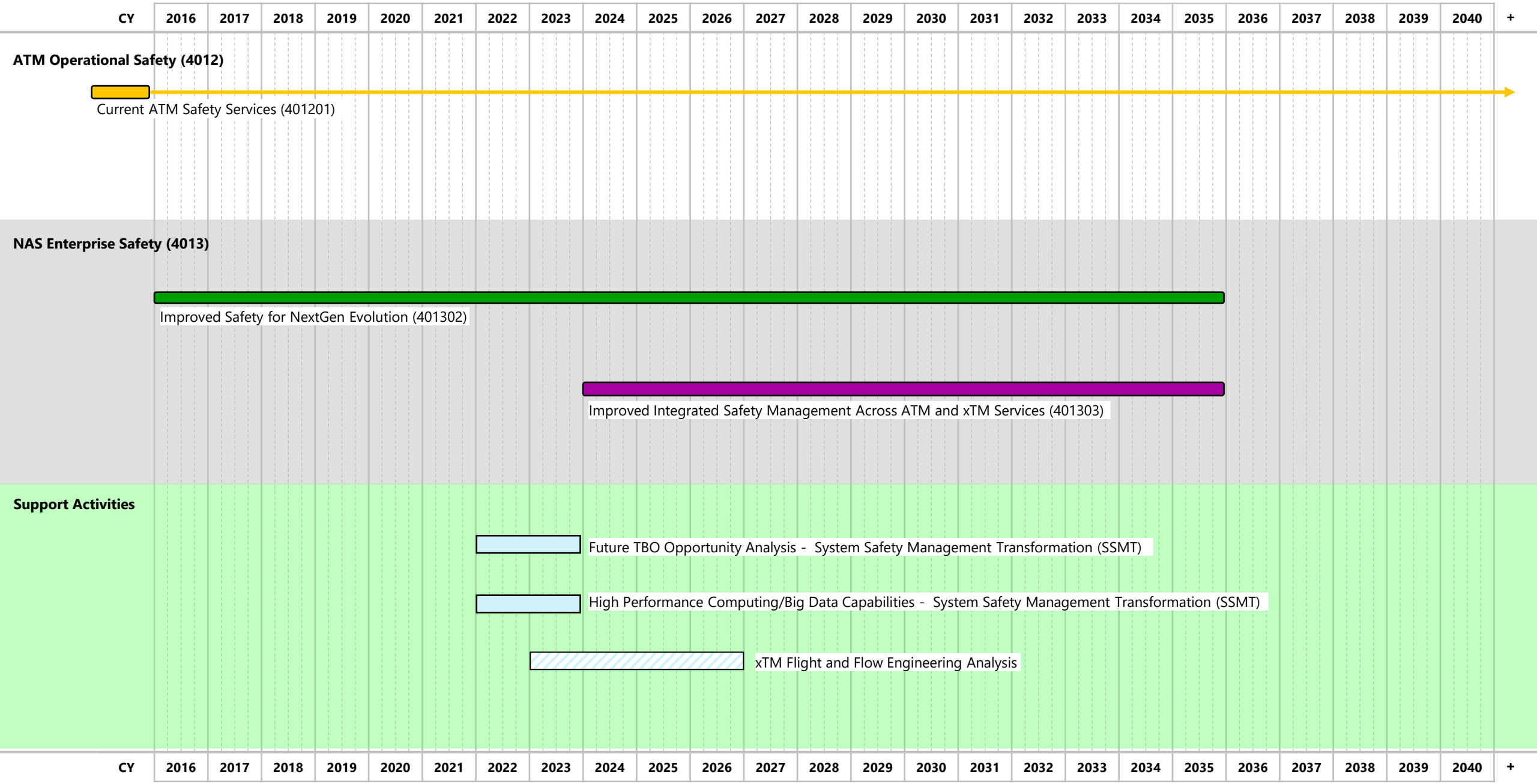
Service Group 4: Safety

Safety provides for the sum total of resources and activities (people, organizations, policies, procedures, time spans, milestones, etc.) devoted to the management of safety at any point during a system's life cycle (i.e. from concept through, design, implementation and operation) and ensures the safety, effectiveness and quality of Aviation System Standards programs through the development and oversight of organizational safety and quality assurance policies and procedures and implementation of a Safety Management System. Key components of the Aviation System Standards integrated safety system include Flight Safety, Environmental, Occupational Safety and Health, Safety Management System, and Internal Evaluation Programs. [ATMCP-WG/WHL/8-SD/8, para 3.1.17]

Service 401:
Aviation Safety

Aviation Safety is conducted to ensure the safe and efficient operation of the NAS. Aviation Safety involved both ATO system assessments and broader enterprise level system of system assessments. Safety Services for Air Traffic Management apply Safety Risk Management (SRM) for new or revised systems or services and Safety Assurance (SA) on implemented air traffic management operations. SRM determines the need for, and adequacy of, new or revised mitigations based on the assessment of acceptable risk. Validation and Verification ensures that requirements, including those designed to mitigate risk, are met. Safety assurance evaluates the continued effectiveness of implemented risk control strategies such as the identification of new hazards. Enterprise Safety applies SRM to the NAS as a whole and endeavors to provide a broader context of NextGen changes, ensuring no unmanaged risk exists in the NAS.

Aviation Safety (1 of 1)



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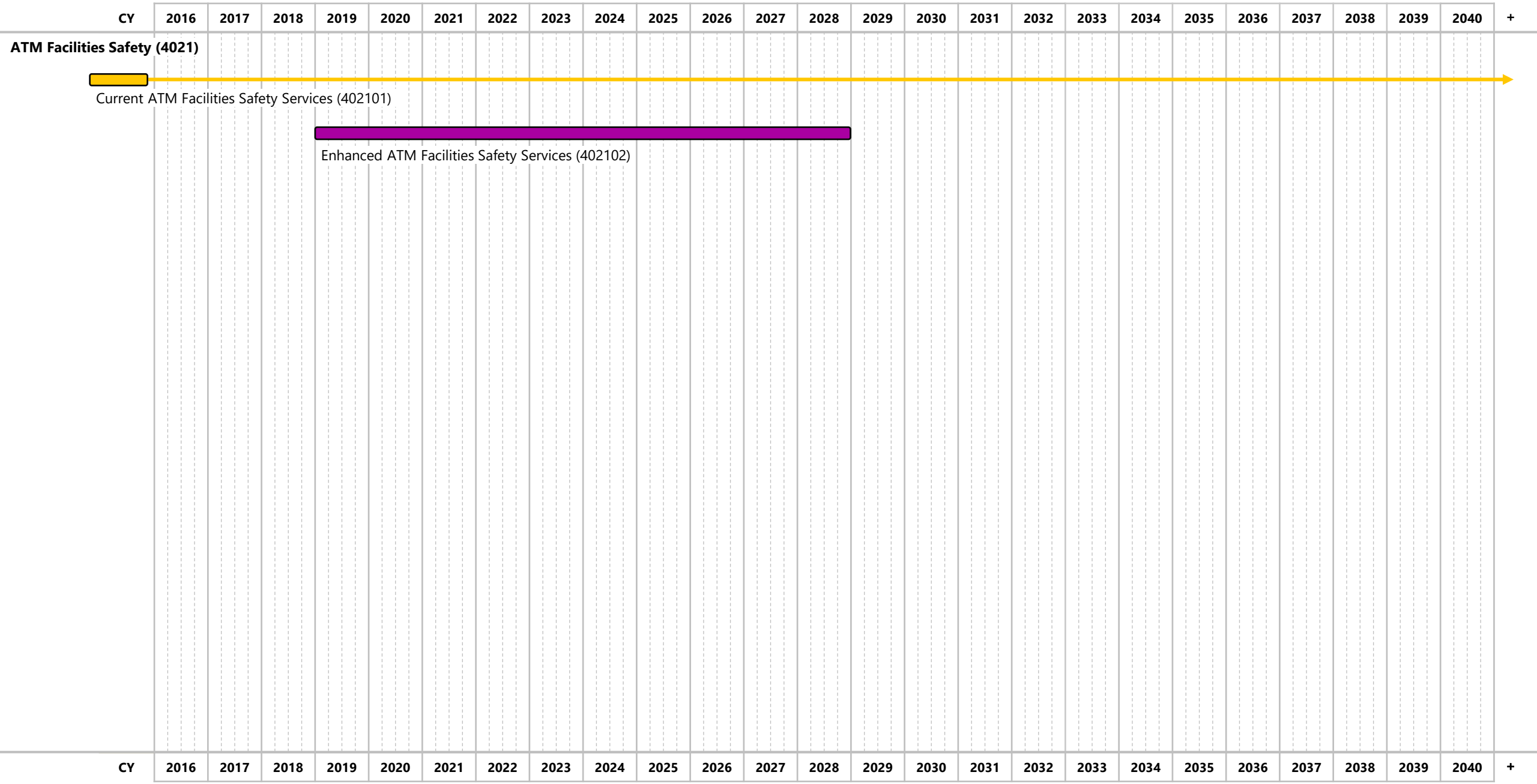
Service 402:
Facilities Safety

Facilities Safety applies system safety techniques to a facility from its initial design through its demolition. Facilities are major subsystems providing safety risks to operational and maintenance staff. By implementing processes similar to those used in airborne and ground systems, control of these risks can be maintained. Some aspects that this Service addresses include structural systems, Heating, Ventilation, and Air-Conditioning (HVAC) system, electrical systems, hydraulic systems, pressure and pneumatic systems, fire protection systems, water treatment systems, equipment and material handling, and normal operations (e.g., parking garage) and unique operational activities (e.g., chemical laboratories).

Facilities Safety (1 of 1)



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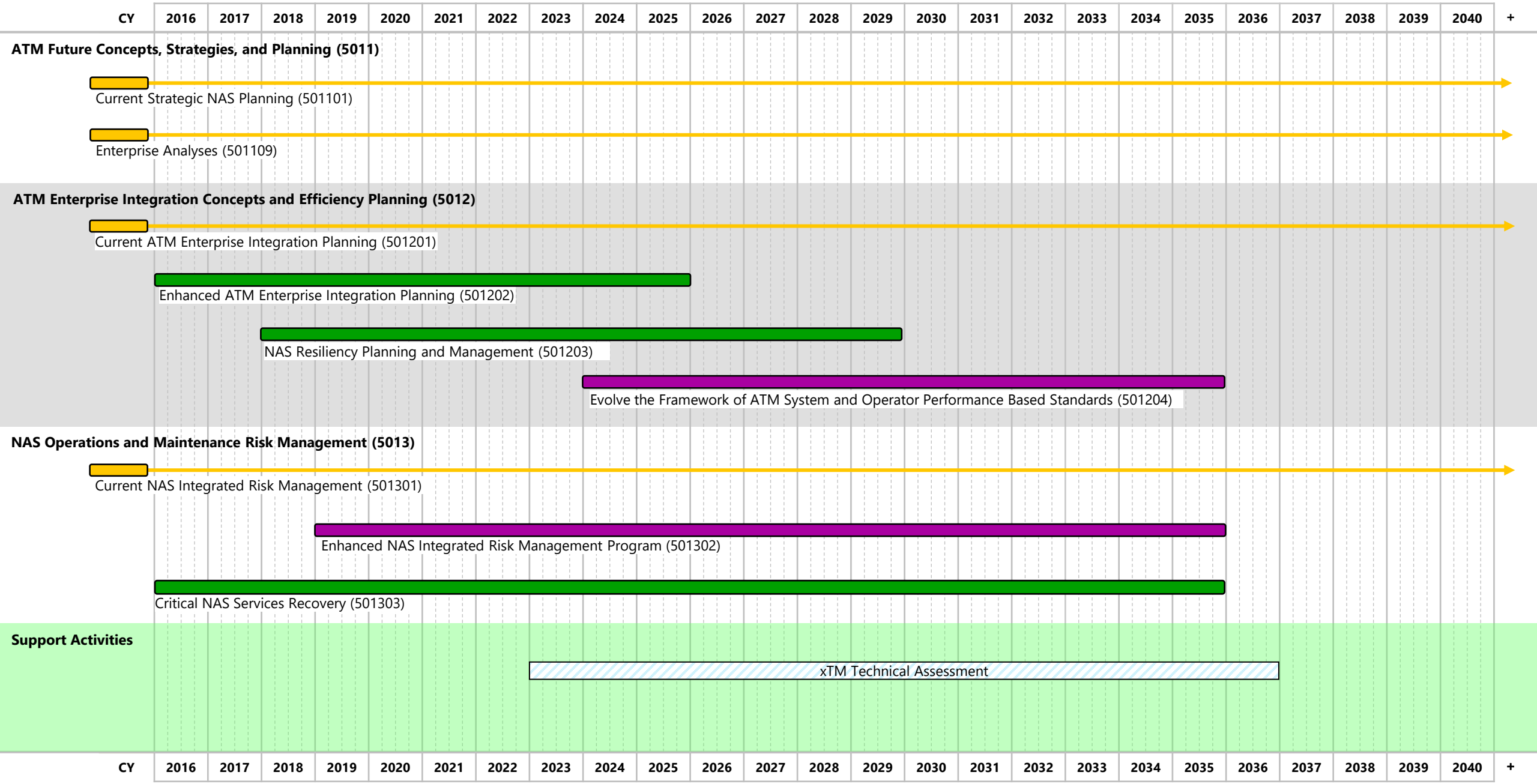
Service Group 5:
Enterprise Management

Enterprise Management embodies the Services provided by an organization that support a defined business scope and mission. An enterprise is comprised of interdependent resources (people, organizations, and technology) that must coordinate their functions and share information in support of a common mission (or set of related missions). The FAA Enterprise Management Services provides an explicit description of the current and desired relationships among business and management processes within the FAA. The Services consist of business process models, technical reference models, and systems models.

Service 501:
FAA Strategies Planning and Concepts

The Planning, Strategies and Concepts Service identifies potential future concepts that may either develop into a new Capability or Service for improved operations creating a more effective and efficient operating environment. The FAA is a continually evolving operation that requires constant planning of potential improvements or capabilities to maintain operational effectiveness and efficiencies. Concepts to improve methods of how the FAA operates or provides its services or concepts that may develop into new capabilities to the FAA mission and aviation community take time to develop.

FAA Strategies Planning and Concepts (1 of 1)



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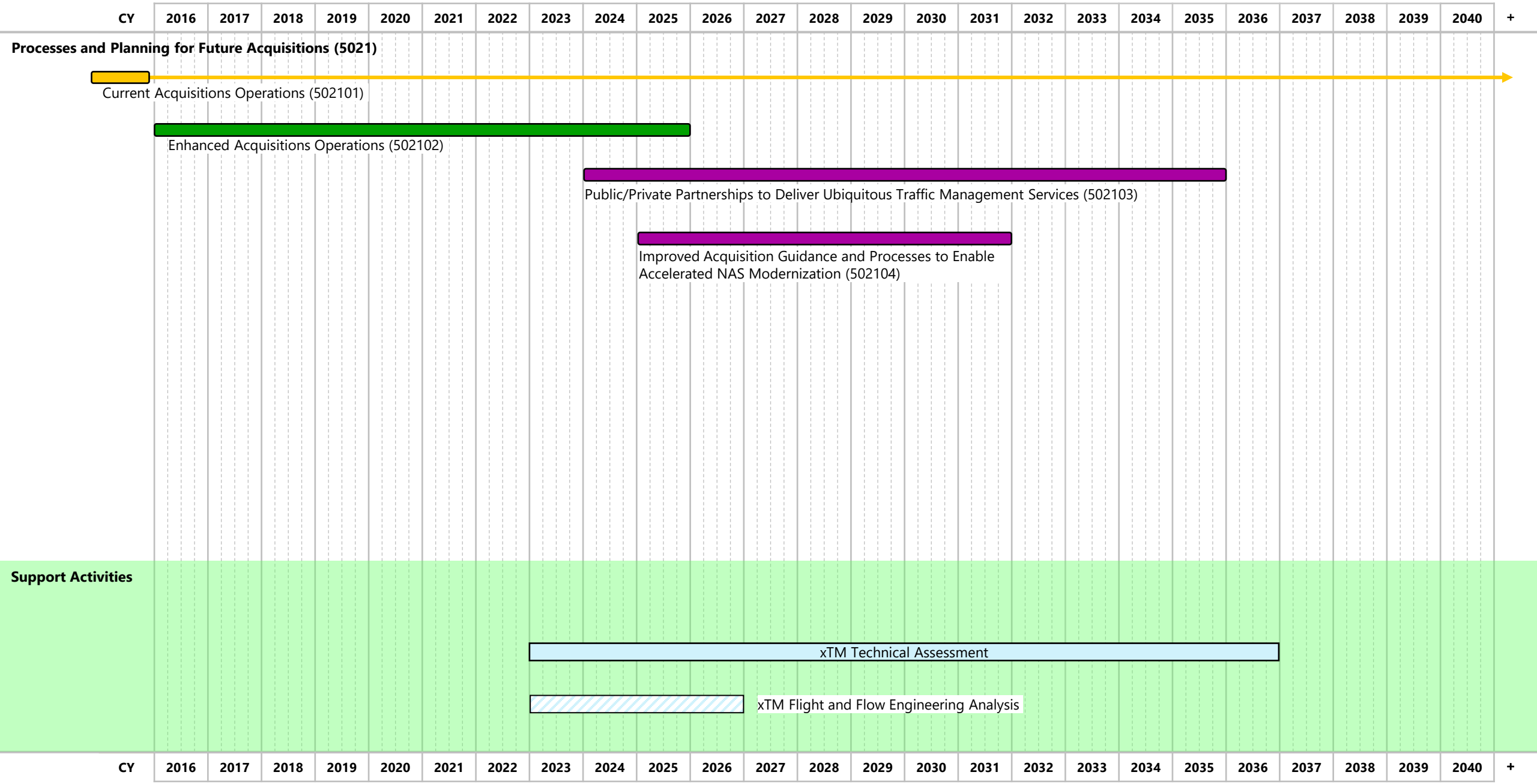
Service 502: Acquisitions

Acquisitions provides the Acquisition Management System (AMS) which establishes agency-wide policy and guidance for all areas of lifecycle acquisition management.

Acquisitions (1 of 1)



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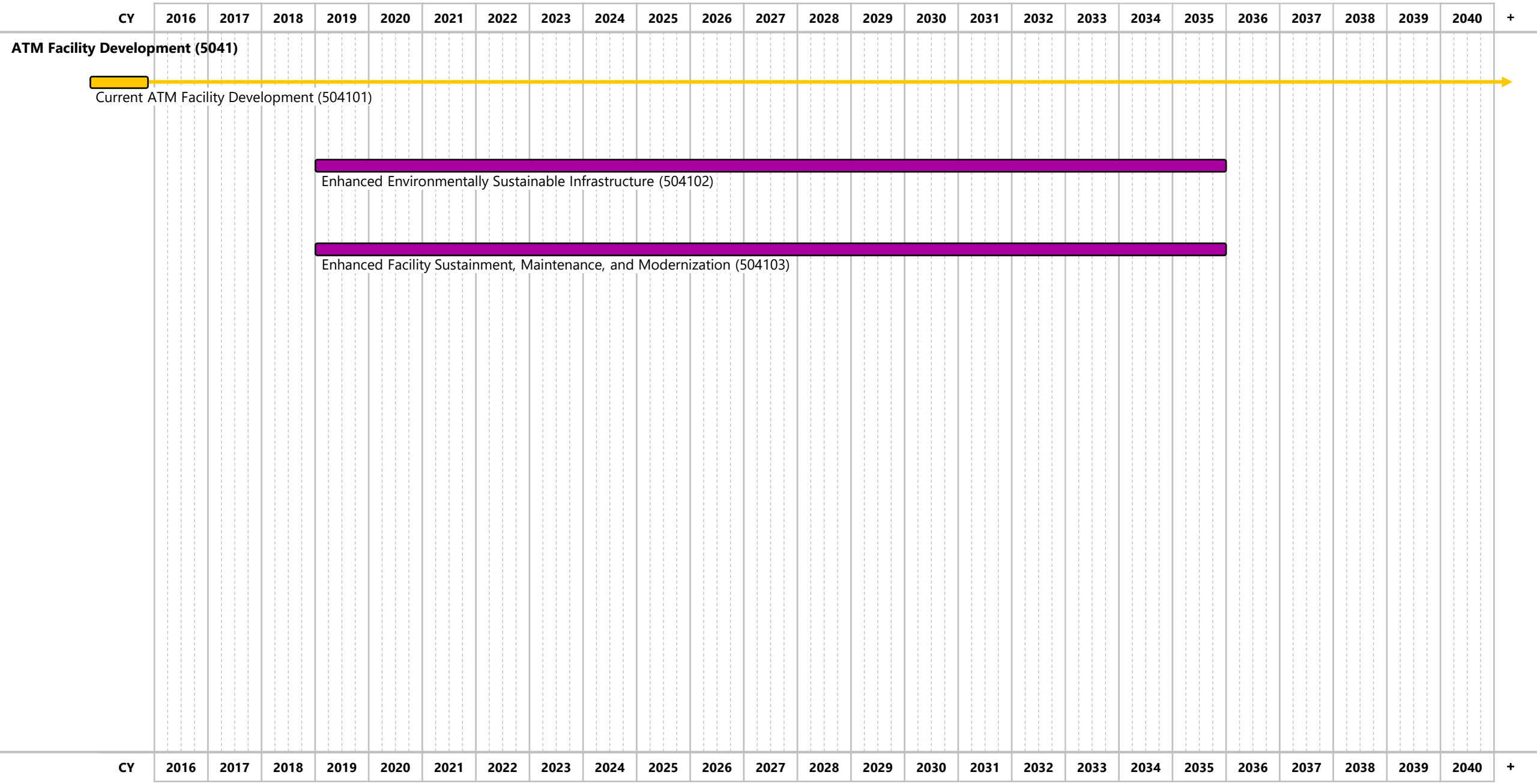
Service 504:
FAA Facilities

FAA Facilities consists of land that houses communications, surveillance and navigation systems and facilities that house operational personnel and their automation systems. ATM facilities procure, operate, and maintain these facilities to ensure continuous operations.

FAA Facilities (1 of 1)



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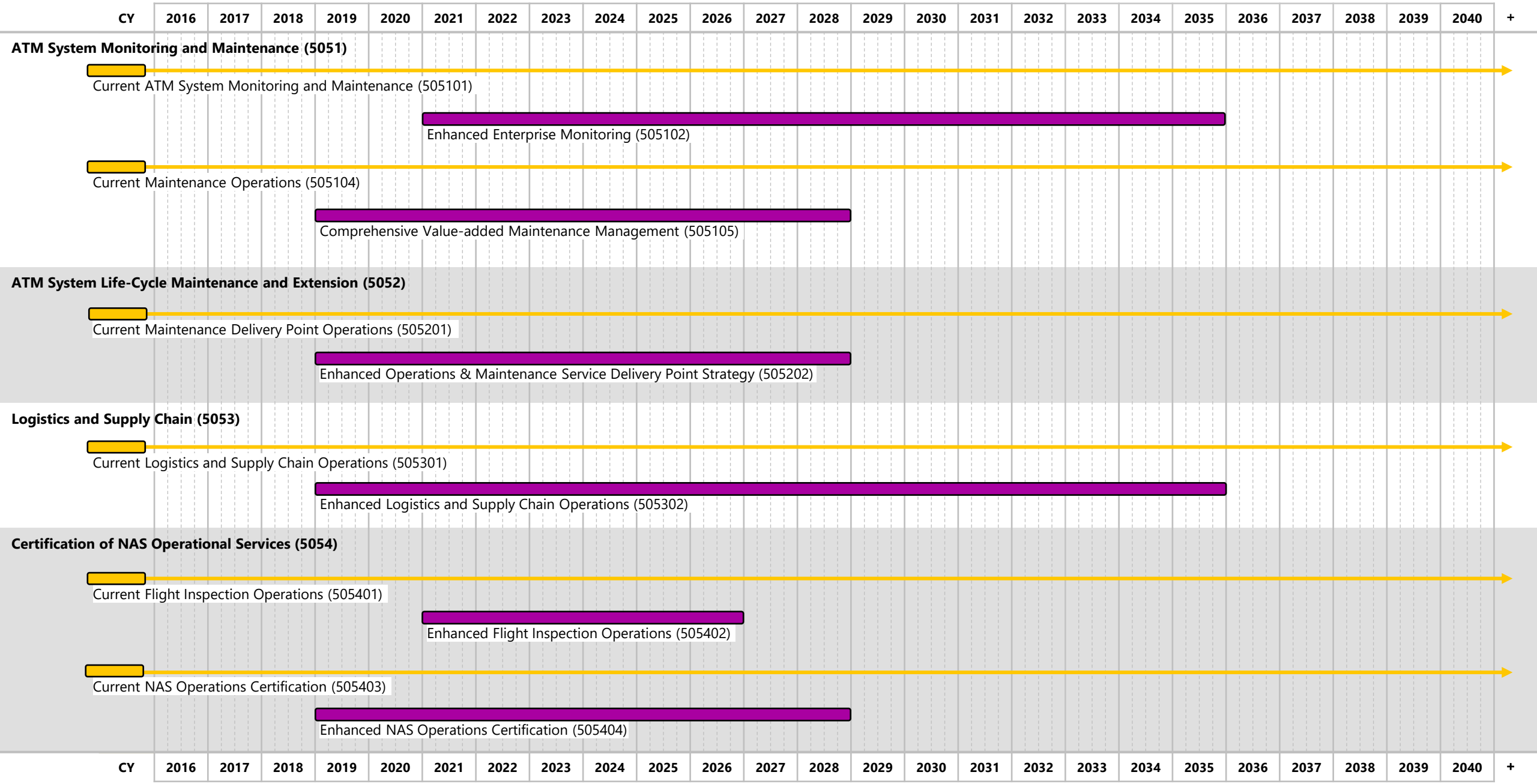
Service 505:
FAA Technical Operations

FAA Technical Operations describes the general lifecycle management of systems and capabilities. This Service ensures air traffic services are safe, available, and reliable.

FAA Technical Operations (1 of 1)



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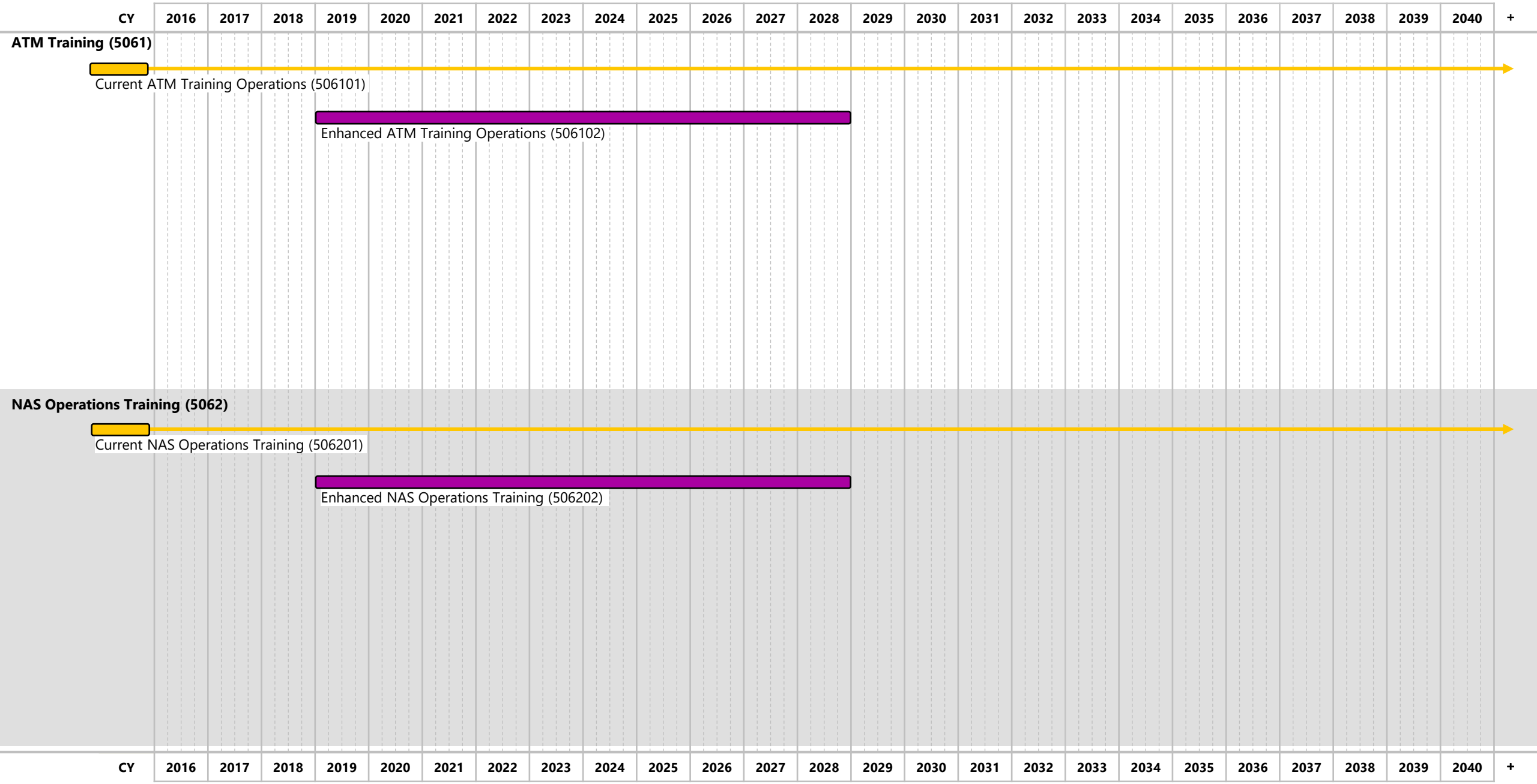
Service 506: Training

Training provides training and develops standards that comply with the flexibility of the current rules and regulations and creates training products and guidelines that account for the current and future ATM and aviation technologies.

Training (1 of 1)



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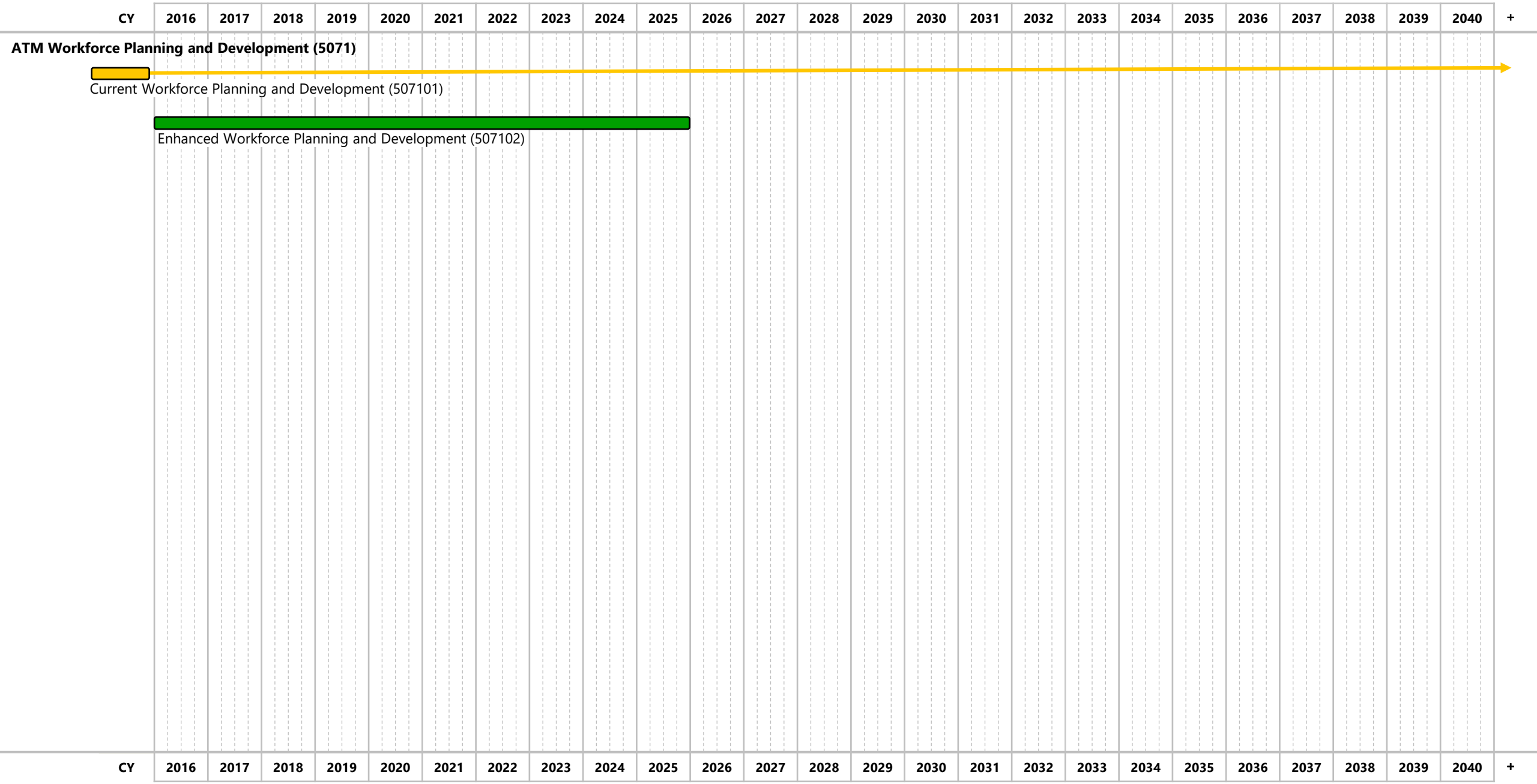
Service 507:
Workforce Planning and Development (Human Resources)

Workforce Planning and Development (Human Resources) focuses on ensuring the FAA has a stable cadre of federal employees and maintains core in-house capabilities necessary to successfully manage ATM and FAA operations. It lays out the blueprint for sustaining a high-performing workforce capable of successfully meeting objectives set by the agency. It includes the processes and assets related to the management of Agency personnel, including recruitment, performance appraisals, benefits management, payroll, skills development, and other related activities.

Workforce Planning and Development (Human Resources) (1 of 1)



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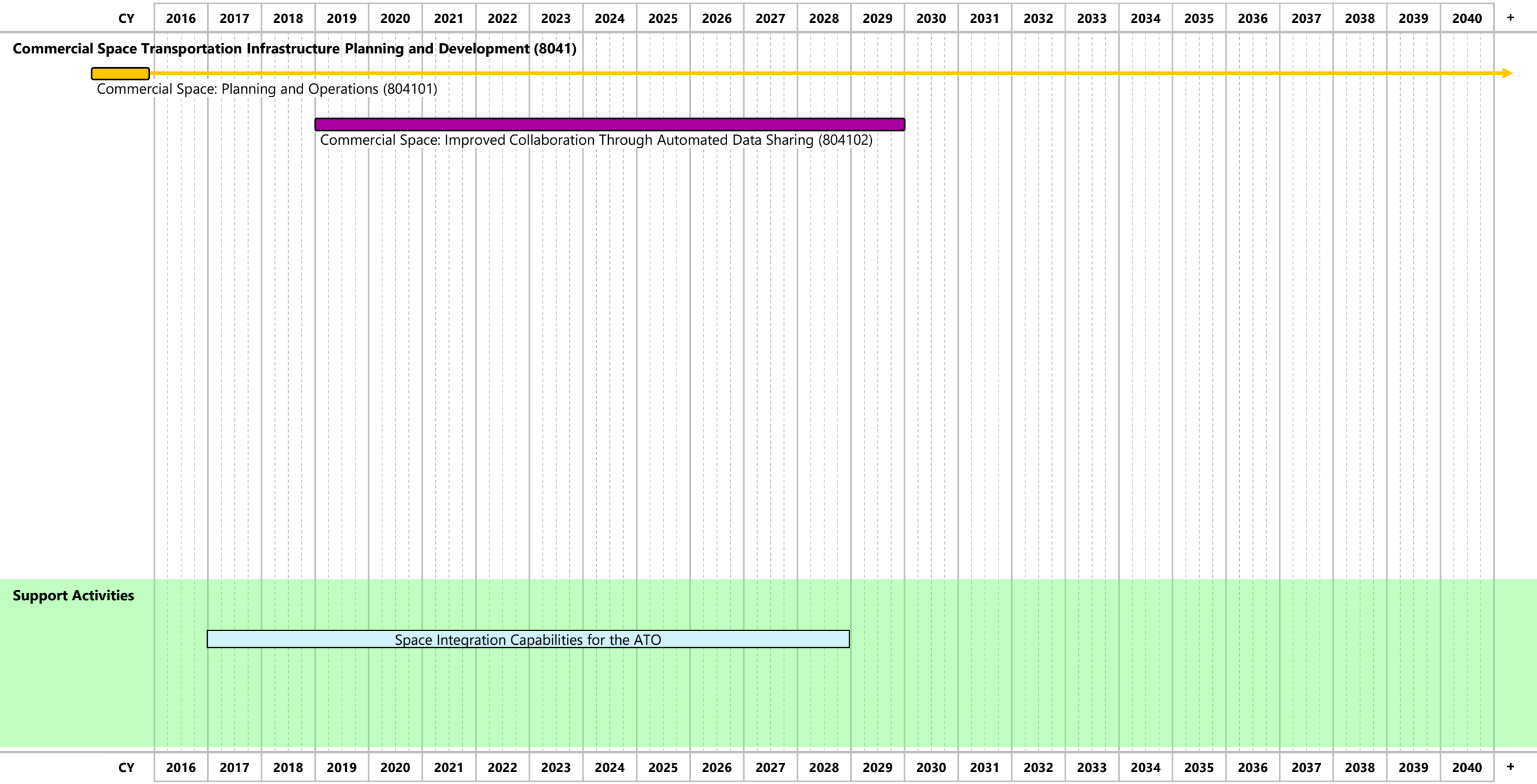
Service Group 8:
Commercial Space Transportation

Commercial Space Transportation ensures the protection of the public, property, and national security and foreign policy interests of the United States during commercial launch or reentry activities, and to encourage, facilitate, and promote U.S. commercial space transportation.

Service 804:
Commercial Space Transportation Infrastructure

Commercial Space Transportation Infrastructure is composed of capabilities and assets related to providing safe, environmentally appropriate, and affordable commercial space system launch, landing and navigation facilities.

Commercial Space Transportation Infrastructure (1 of 1)



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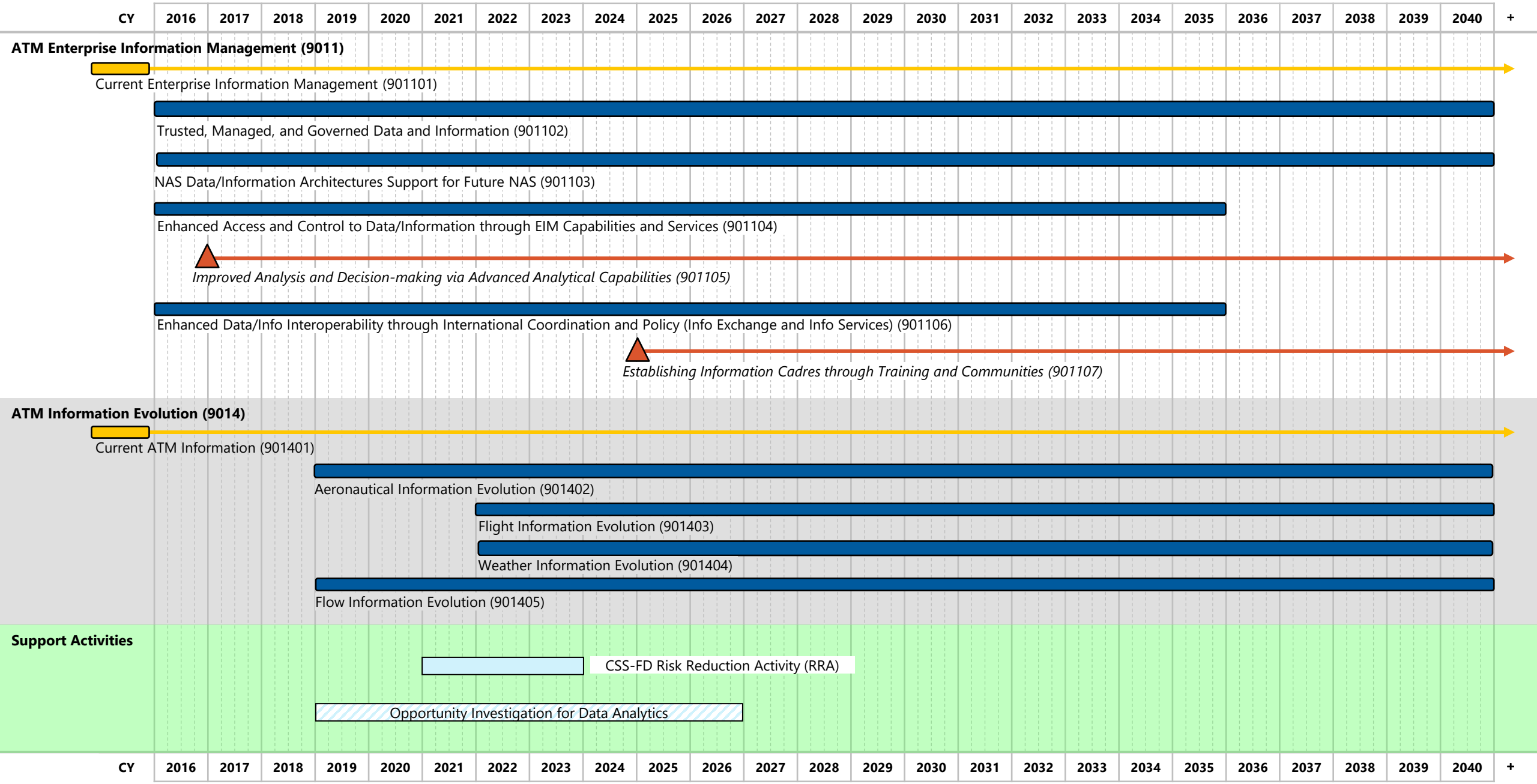
Service Group 9:
ATM Infrastructure Management

ATM Infrastructure Management encompasses capabilities required to enhance and promote sustainable maintenance and development of FAA ATM infrastructure required to support ATM Services. The FAA ATM Infrastructure is the set of telecommunications, radios, radars, hardware, software, and other electronics that supports the FAA's ability to meet its mission. Specifically, the ATM Infrastructure is comprised of the surveillance, communications, automation, navigation, weather and other support systems needed to provide air traffic management services that are safe and efficient.

Service 901:
FAA Data and Information Management

FAA Data and Information Management provides services to organize, disseminate, exchange, and govern data and information used in the safe and efficient provision data and information management services.

FAA Data and Information Management (1 of 2)



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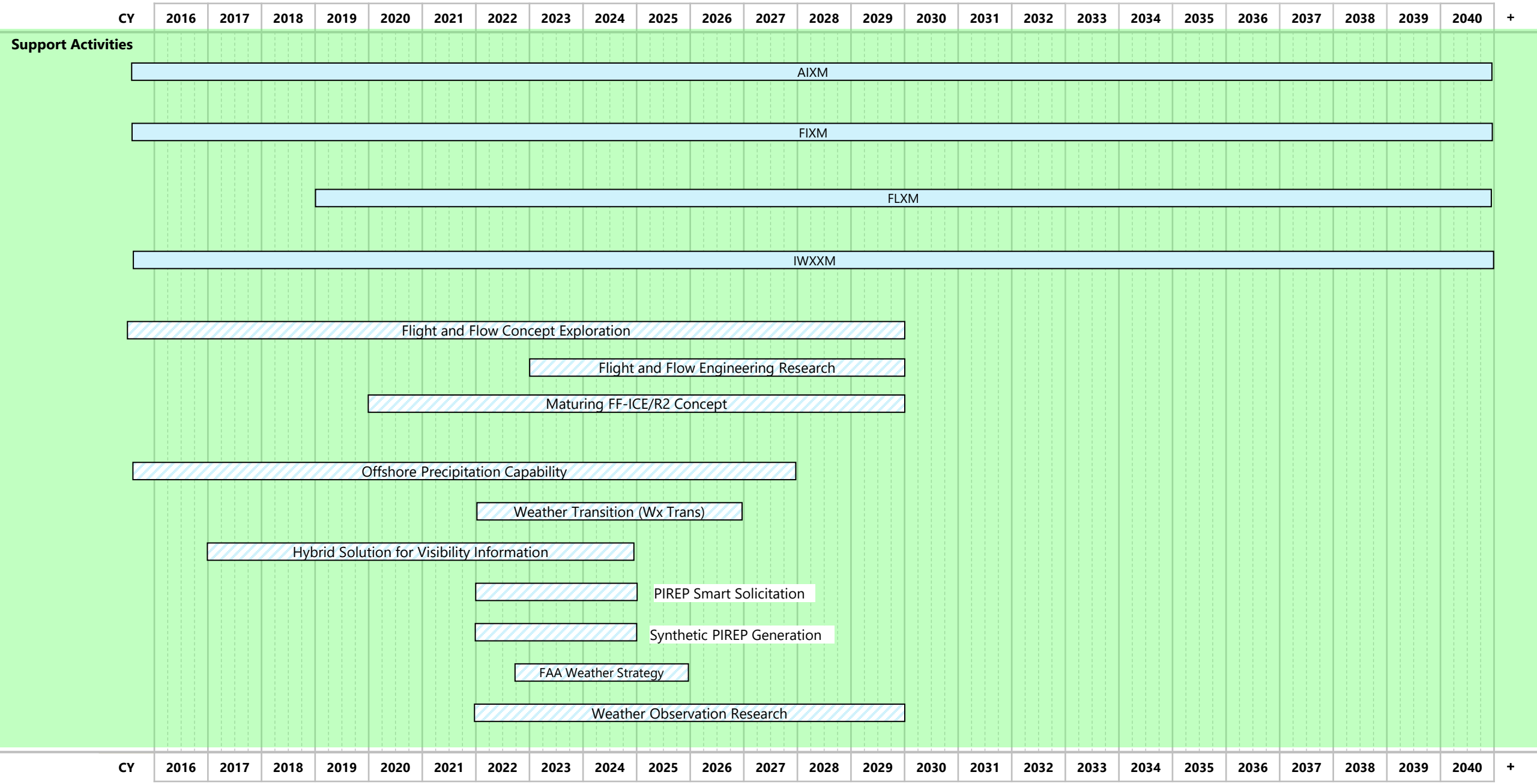
FAA Data and Information Management (2 of 2)



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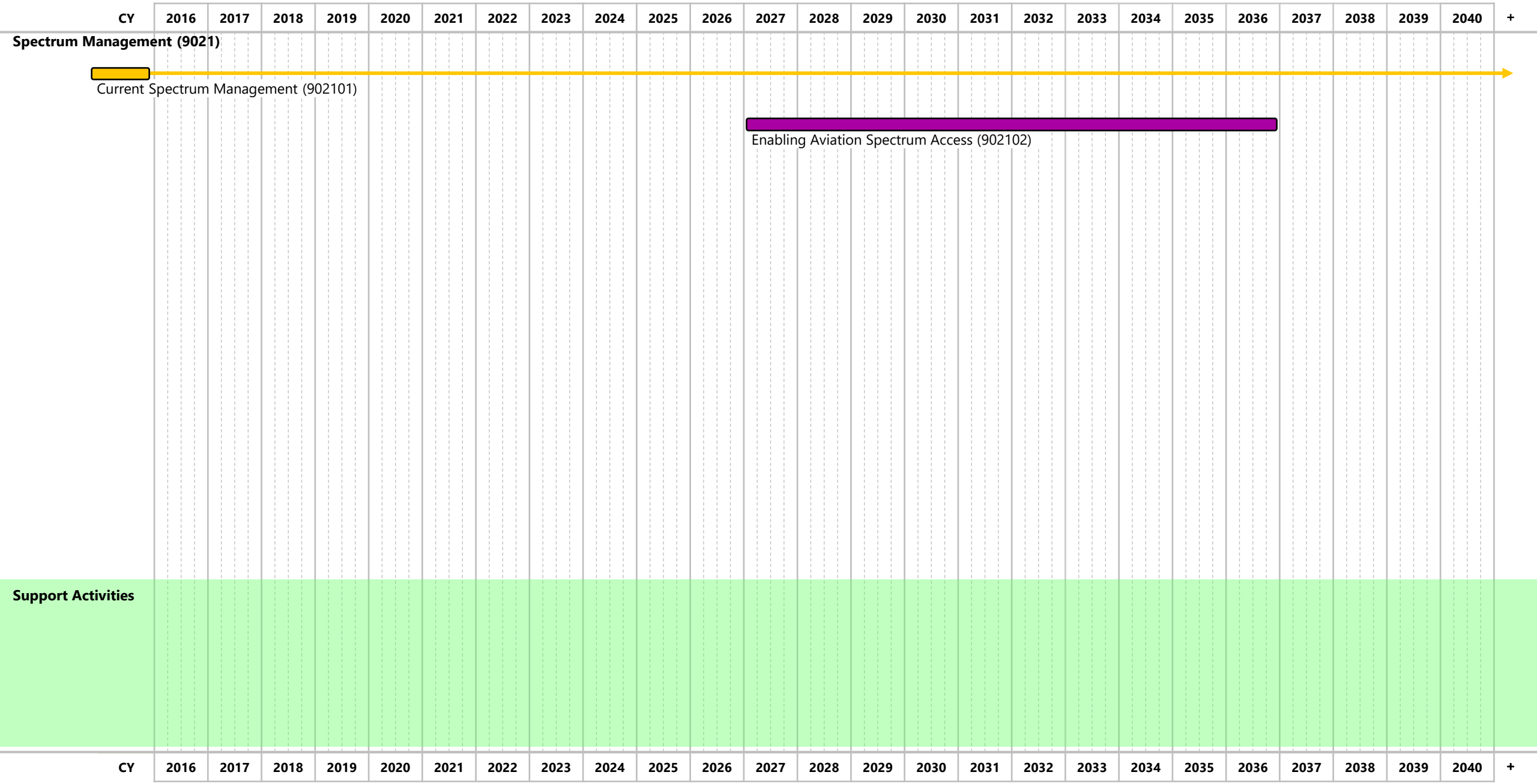
Service 902:
Spectrum Management

Spectrum Management secures, protects, and manages the radio spectrum for the FAA and the U.S. Aviation community. Through coordination and negotiation, it secures spectrum resources for aviation usage and establishes and issues policy and standards regarding frequency use. It assigns radio frequencies for ATM systems and conducts the engineering analysis and testing for new system requirements. It protects ATM systems by conducting Radio Frequency Interference investigations and coordinating with FCC and FBI to enforce the laws against unauthorized broadcast within the aviation protected radio frequencies. Spectrum Engineering Services protects the National Airspace System from any potential sources of interference from new wireless systems.

Spectrum Management (1 of 1)



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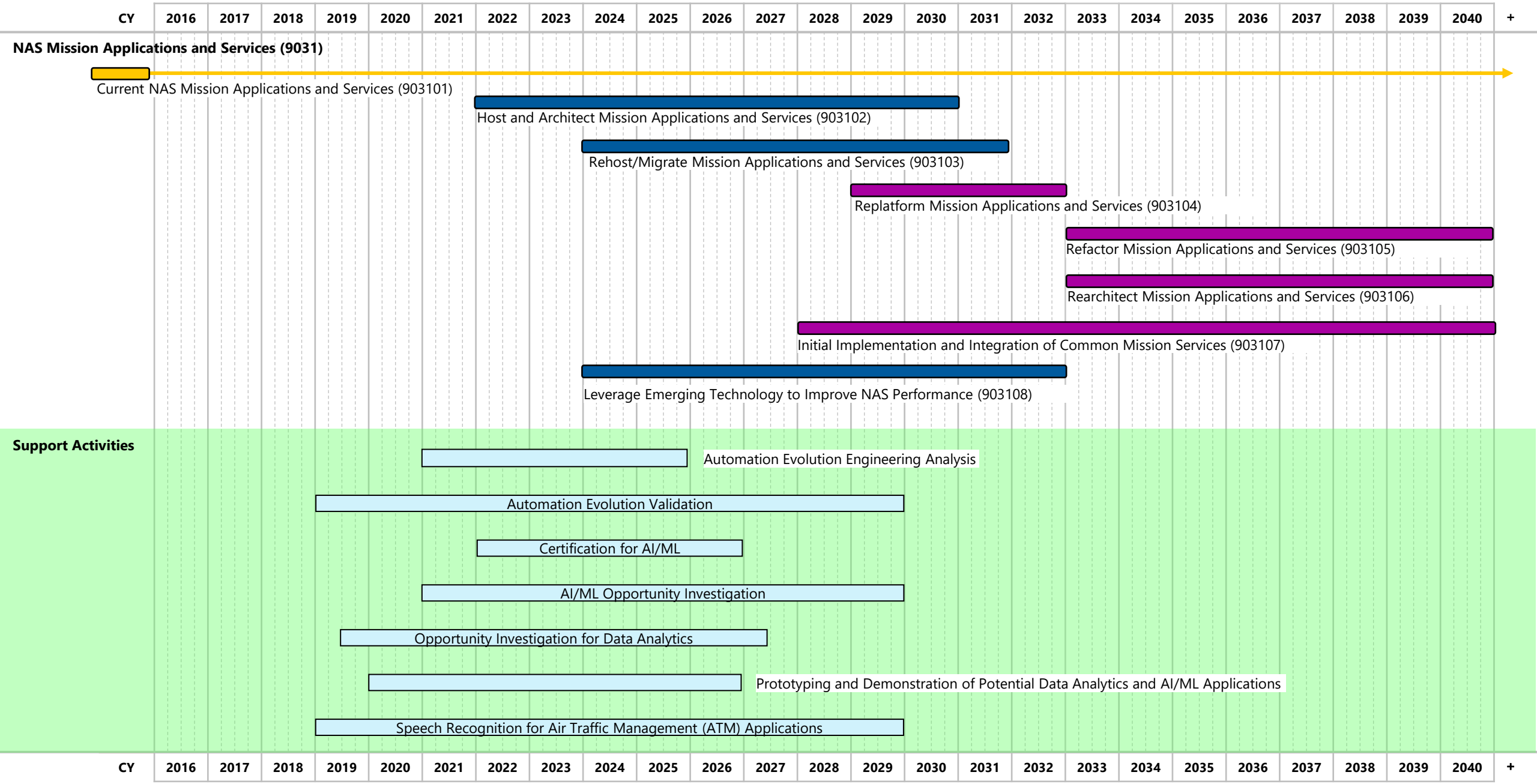
Service 903:
Automation Infrastructure

Automation Infrastructure provides critical hardware, software, networks, and services to enable decision support tools for air traffic services, including flight planning, air traffic control, and traffic management. This service includes on-premises infrastructure mechanisms as well as the transition of select systems to cloud-based infrastructure that uses a layered, service-based architecture and leverages common computing infrastructure to provide automation services.

Automation Infrastructure (1 of 2)



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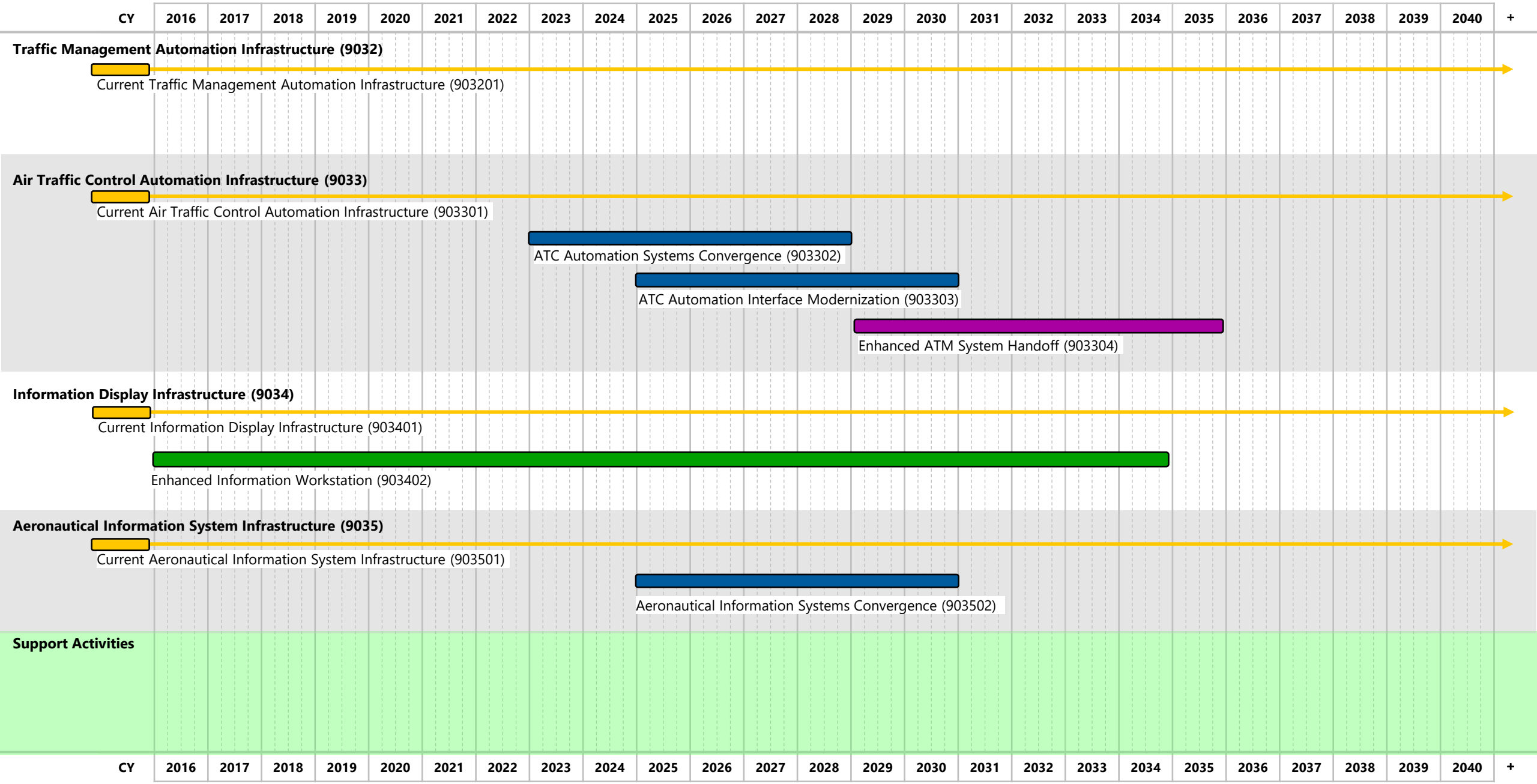
Automation Infrastructure (2 of 2)



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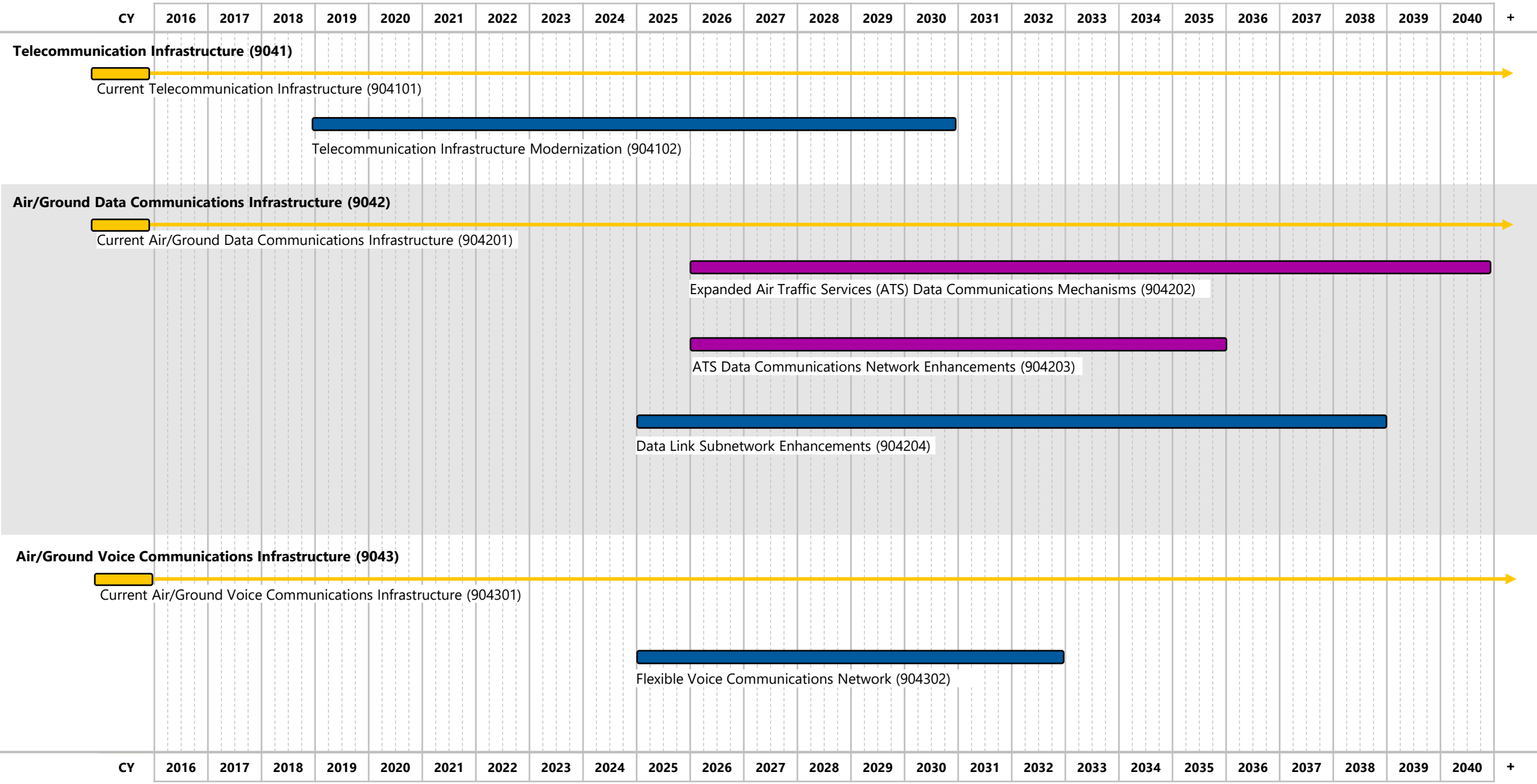
Service 904:
Communication Infrastructure

Communication Infrastructure provides transmission or recording infrastructure to enable voice and data communications within and external to the NAS.

Communication Infrastructure (1 of 2)



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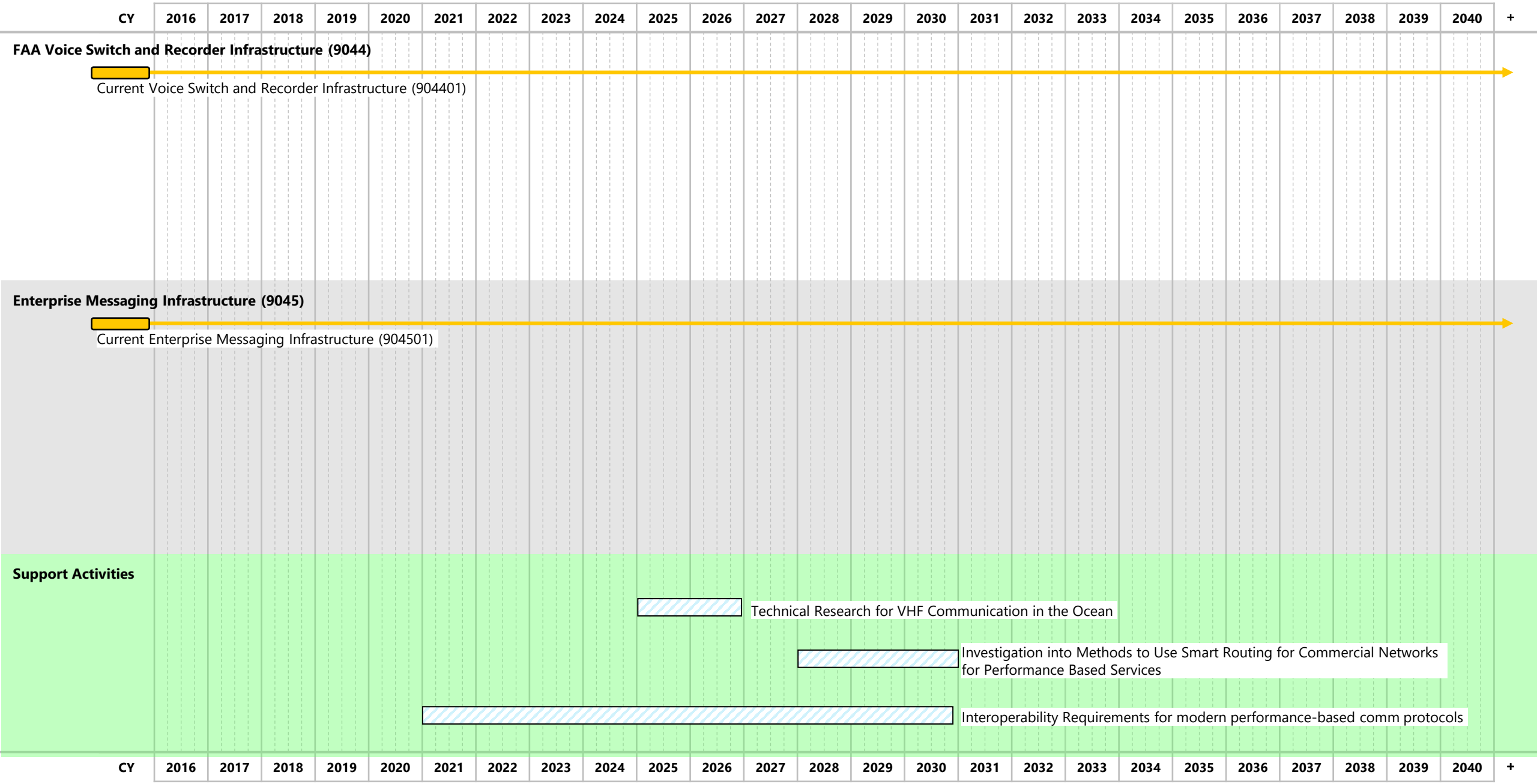
Communication Infrastructure (2 of 2)



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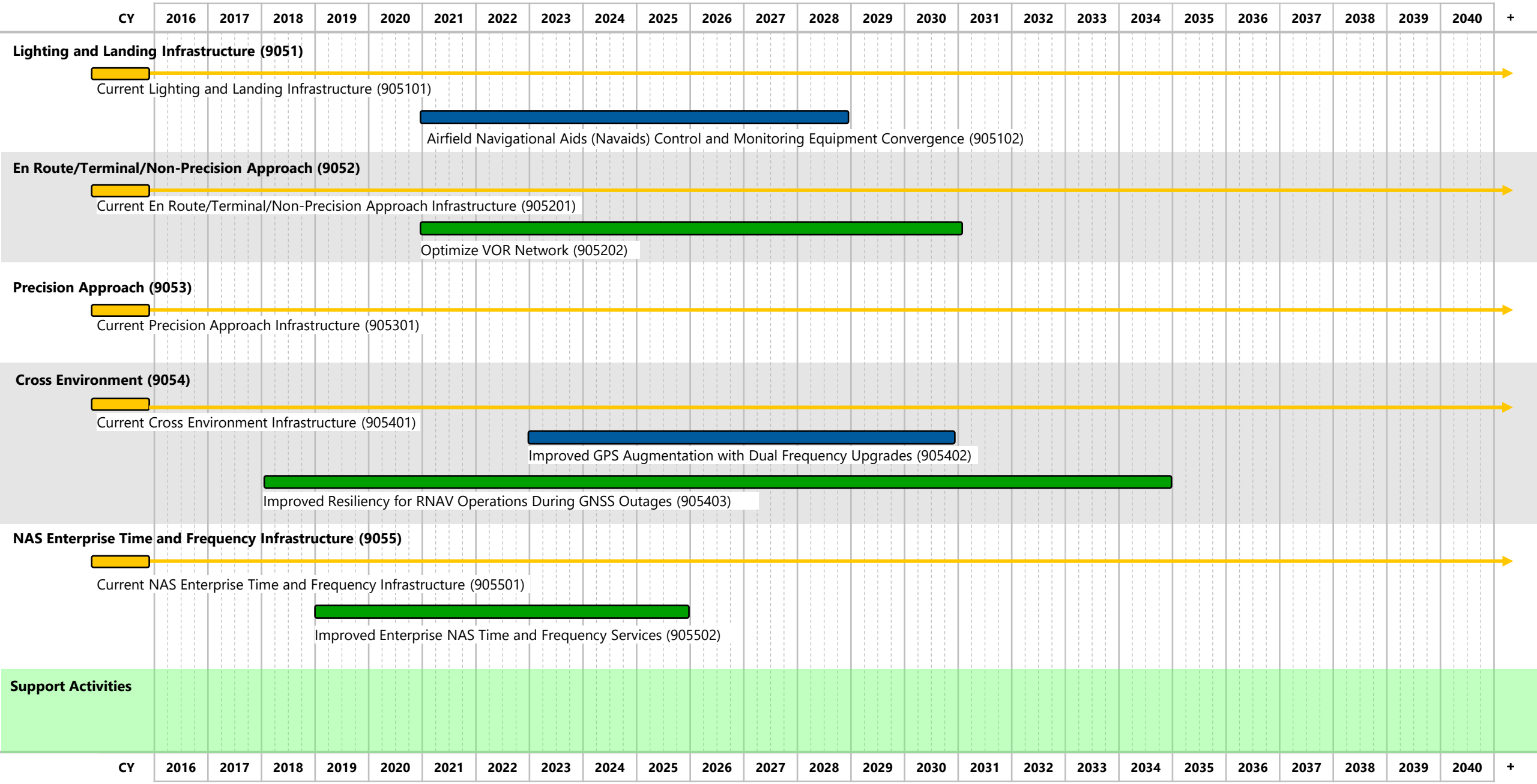
Service 905:
Navigation Infrastructure

Navigation Infrastructure provides the satellite- and ground-based navigational aid (NAVAID) infrastructure to support in both the en route and terminal environments. It includes the capability to support precision and non-precision approaches, as well as lighting and landing infrastructure to enable safe landings.

Navigation Infrastructure (1 of 1)



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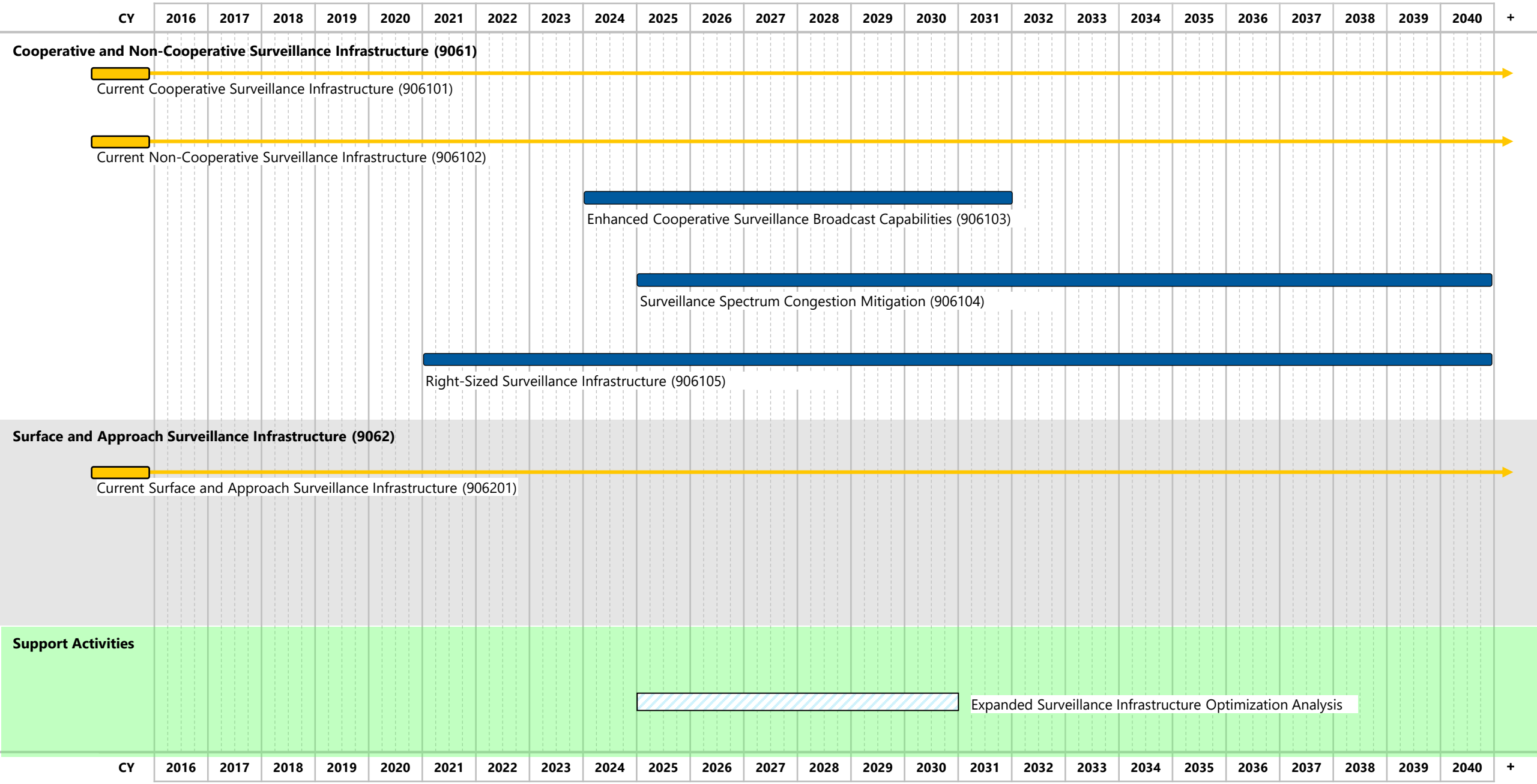
Service 906:
Surveillance Infrastructure

Surveillance Infrastructure provides the infrastructure necessary to determine aircraft position and to separate aircraft from other aircraft, airspace, terrain, surface vehicles, and other obstacles. The infrastructure includes both cooperative and non-cooperative surveillance, as well as surface and approach infrastructure.

Surveillance Infrastructure (1 of 1)



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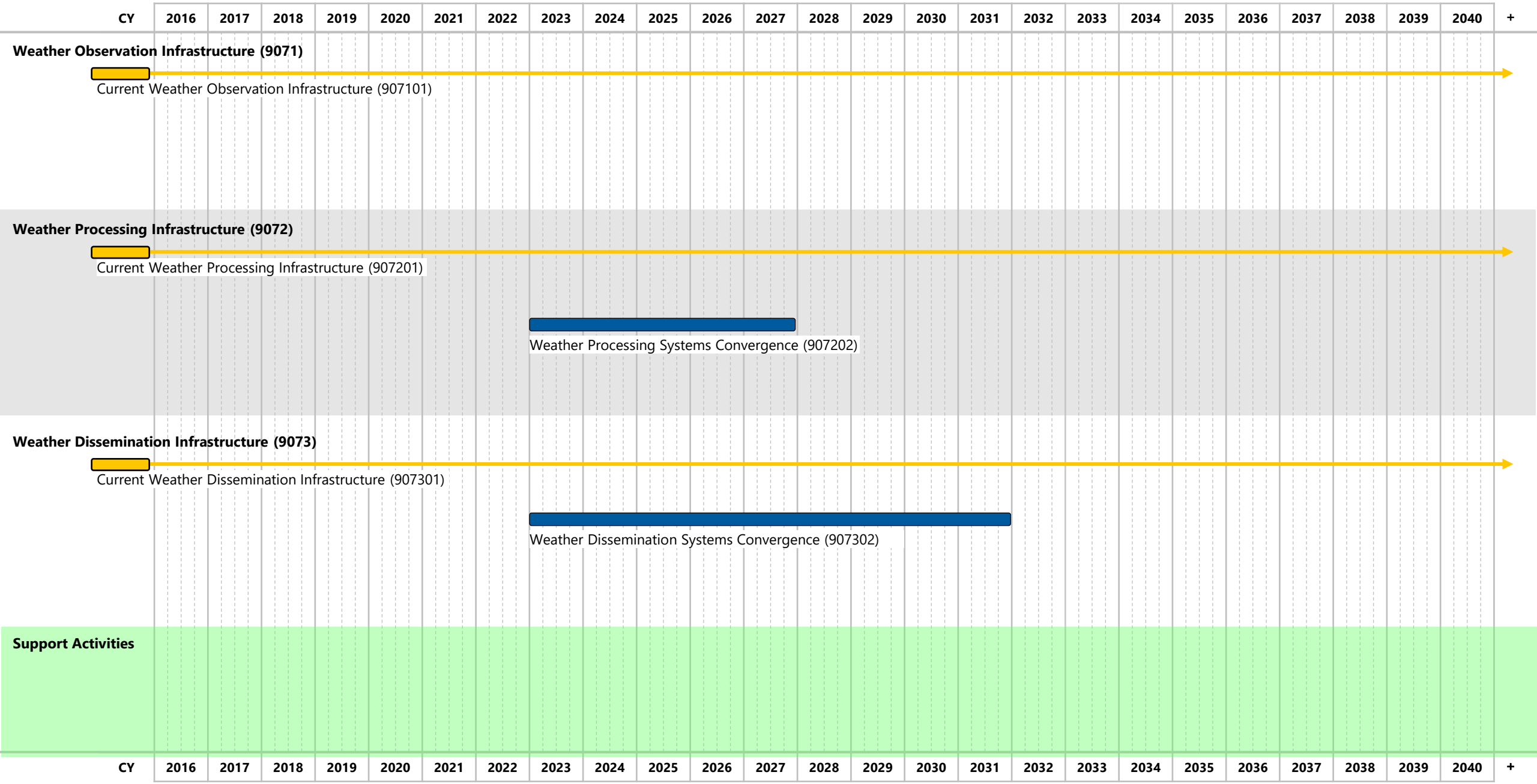
Service 907:
Weather Infrastructure

Weather Infrastructure provides the infrastructure required to observe, process, and distribute weather information for aviation use. FAA weather systems organize weather inputs from FAA and NWS observation systems for processing and dissemination to ATC display systems and users.

Weather Infrastructure (1 of 1)



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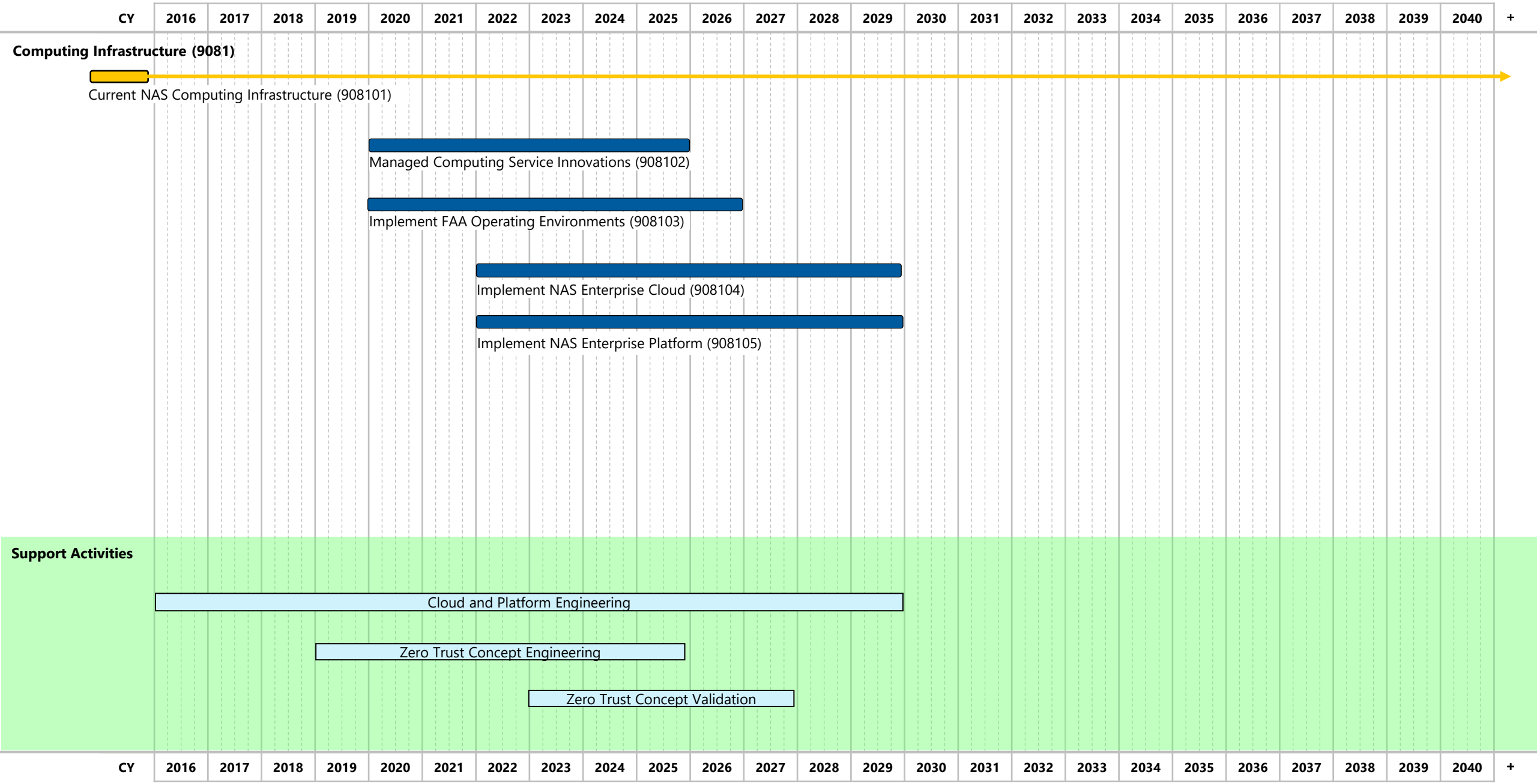
Service 908:
Computing Infrastructure

Computing infrastructure is a framework of physical and virtual resources that support the storage, processing, flow, and analysis of data. It includes computing power, networking, and storage, as well as an interface for users to access their physical or virtualized resources. This service includes the ability to implement a layered, service-based architecture that meet the needs of multiple programs and associated Air Traffic Management (ATM) systems.

Computing Infrastructure (1 of 1)



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