

1 PART I INTRODUCTION TO THE NAS ARCHITECTURE OVERVIEW

The National Airspace System (NAS) architecture is an evolutionary plan for modernizing the NAS and moving toward Free Flight. It incorporates new technologies, procedures, and concepts to meet the needs of NAS users and service providers.

The NAS architecture is a result of intense Federal Aviation Administration (FAA) and aviation industry involvement in capturing and restructuring the requirements for a modernized, safer, and more efficient NAS. The NAS architecture describes the system support, operational concepts, schedules, human and physical resources, and other actions essential for maintaining NAS safety, capacity, and performance.

The modernized NAS will offer greater flexibility and functionality through systems that are based on up-to-date technology, information sharing, and common data exchange evolving over time. However, during this evolution, the NAS must be sustained to operate without interruptions.

This architecture is derived from internal and external briefings and reviews by the FAA and industry groups, as well as from thousands of comments on previous releases. The architecture attempts to respond to all comments and concerns, while considering the realities of the anticipated FAA budget constraints over the next 20 years.

Document Organization

The narrative is organized to give readers a comprehensive understanding of the entire architecture and to direct them to a specific portion of the document for more detailed information. References to source information are provided for a more in-depth understanding.

The *Government/Industry Concept of Operations*, *Air Traffic Services' Concept of Operations*, and the concepts expressed in the *Free Flight Action Plan* all have had a major impact on the architecture and are referenced throughout the document.

This document is organized into five parts, as shown in Figure 1-1, Roadmap of the NAS Architecture Document. Part I, Introduction to the NAS Architecture, provides an overview and discus-

sion of previous documents and how this document has evolved. It also describes the modernized NAS and how the various users benefit from it.

Part II, NAS Architecture Supporting Elements, covers the evolution of NAS capabilities and the costs of modernization. Additionally, it summarizes the architecture in the following areas critical to successful NAS modernization: Free Flight Phase 1 Core Capabilities Limited Deployment (FFP1 CCLD), Safe Flight 21, and Capstone program descriptions; risk mitigation; safety; human factors; security; research, engineering, and development; regulation and certification; and personnel.

Details of functional area changes are described in Part III, NAS Architecture Description, which introduces the core of the logical architecture. Each section addresses how that portion of the NAS is evolving. The functional area sections appear in the following format:

- Overview
- Evolution
- Summary of Capabilities
- Human Factors
- Transition
- Costs
- Watch Items.

A summary is presented in Part IV. Part V, Appendixes, contains the list of acronyms, participating organizations, references, and the NAS capabilities diagrams and matrix.

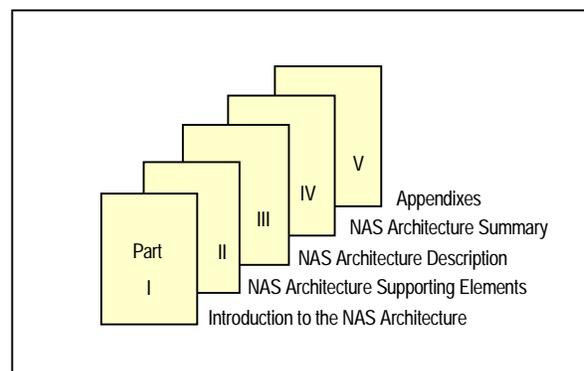


Figure 1-1. Roadmap of the NAS Architecture Document

The FAA understands the business needs and concerns of NAS users and has attempted to address these concerns in the NAS architecture. The architecture is both a planning tool and a “living”

document. As needs, technology, and operating concepts change, the architecture will be up-dated to accommodate the impact of those evolving changes.