

**National Airspace System  
Requirements Document**



**Department of Transportation  
Federal Aviation Administration**

August 11th, 2014

### NAS-RD Revision History

Section	Change	Date
3.1 Mission Services	<ul style="list-style-type: none"> <li>Added performance requirements</li> </ul>	May 13, 2011
3.2.1 RMA Requirements	<ul style="list-style-type: none"> <li>Restructured section slightly</li> <li>Re-binned some requirements, no change to requirements</li> </ul>	May 13, 2011
3.2.2 Communications	<ul style="list-style-type: none"> <li>Added voice latency requirements</li> <li>Added data integrity requirements</li> </ul>	May 13, 2011
Appendix A: Design Principles	<ul style="list-style-type: none"> <li>Added requirement for converting to IPv6</li> </ul>	May 13, 2011
Appendix B: Glossary	<ul style="list-style-type: none"> <li>Added definitions per the new requirements in the document</li> </ul>	May 13, 2011
All sections	<ul style="list-style-type: none"> <li>Text and requirements updated per comments received</li> </ul>	August 12, 2011
All sections	<ul style="list-style-type: none"> <li>Text and requirements updated per comments received</li> </ul>	September 30, 2011
3.1.1 Separation Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.1.3 Flight and State Data Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.1.4 Flow Contingency Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.1.5 Short Term Capacity Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.1.7 System and Service Analysis	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> <li>Added requirements to acquire and analyze security event logs</li> </ul>	June 1, 2012
3.1.8 System and Service Maintenance	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.1.9 Aeronautical Information Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> <li>Moved the function to maintain weather advisories to Weather Information Management</li> </ul>	June 1, 2012
3.1.10 Weather Information Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> <li>Moved the function to maintain weather advisories to Weather</li> </ul>	June 1, 2012

	Information Management	
3.1.11 Surveillance Information Management	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.1.12 Navigation Support	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.2.2 Communications	<ul style="list-style-type: none"> <li>Added appropriate NAS-SS-1000 requirements to section</li> </ul>	June 1, 2012
3.2.3 Security Requirements	<ul style="list-style-type: none"> <li>Added requirements to better define the functions involved in protecting from cyber security threats</li> </ul>	June 1, 2012
Appendix A: Design Principles	<ul style="list-style-type: none"> <li>Added requirement for an enterprise Precise Time Source</li> <li>Added requirement for an enterprise Domain Name Service</li> <li>Added requirement for enterprise cyber security controls</li> <li>Added requirement for enterprise External Boundary Protection</li> </ul>	June 1, 2012
Sections 1 and 2	<ul style="list-style-type: none"> <li>Updated text to reflect the new scope of the document</li> </ul>	June 1, 2012
3.1.11 Surveillance Information Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJE-6 recommendations</li> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
Sections 1 and 2	<ul style="list-style-type: none"> <li>Incorporated changes per AJE-6 recommendations</li> <li>Incorporated changes per AJM-3121 recommendations</li> <li>Incorporated changes per AJE-11 recommendations</li> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.1 Separation Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.2 Trajectory Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.3 Flight and State Data Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJM-3121 recommendations</li> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.4 Flow Contingency Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.5 Short Term Capacity Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.6 Long Term Capacity Management	<ul style="list-style-type: none"> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.7 System and Service	<ul style="list-style-type: none"> <li>Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012

Analysis		
3.1.8 System and Service Maintenance	<ul style="list-style-type: none"> <li>• Incorporated changes per AJM-3121 recommendations</li> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.9 Aeronautical Information Management	<ul style="list-style-type: none"> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.10 Weather Information Management	<ul style="list-style-type: none"> <li>• Incorporated changes per AJM-33 recommendations</li> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.11 Surveillance Information Management	<ul style="list-style-type: none"> <li>• Incorporated changes per AJE-6 recommendations</li> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.12 Navigation Support	<ul style="list-style-type: none"> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.1.13 Safety Management	<ul style="list-style-type: none"> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
3.2.2 Communications	<ul style="list-style-type: none"> <li>• Incorporated changes per AJM-3121 recommendations</li> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
Appendix A: Design Principles	<ul style="list-style-type: none"> <li>• Incorporated changes per AJM-3121 recommendations</li> </ul>	August 13, 2012
Appendix B: Glossary	<ul style="list-style-type: none"> <li>• Incorporated changes per AJM-3121 recommendations</li> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
Appendix C: Acronyms	<ul style="list-style-type: none"> <li>• Incorporated changes per AJT-13 recommendations</li> </ul>	August 13, 2012
Section 3	<ul style="list-style-type: none"> <li>• Sections and requirements renumbered to align with the Enterprise Architecture. Please see NCP attachment “Object Number Change Log” for complete traceability list.</li> </ul>	November 7, 2013
Section 3	<ul style="list-style-type: none"> <li>• Changed term “Inherent Availability” to “Service Availability” to better align with RMA Handbook 006A</li> </ul>	November 7, 2013
Appendix B	<ul style="list-style-type: none"> <li>• Added appendix to show the mapping of the NAS Sub-Systems to Enterprise Requirements.</li> </ul>	November 7, 2013
Appendix C	<ul style="list-style-type: none"> <li>• Added appendix to show the mapping of the Enterprise Requirements to NAS Sub-Systems that contribute to those requirements.</li> </ul>	November 7, 2013
Appendix D	<ul style="list-style-type: none"> <li>• Added appendix to show the references of the mapping between Enterprise Requirements to NAS Sub-Systems and NAS Sub-Systems to Enterprise Requirements</li> </ul>	November 7, 2013

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Appendix G	<ul style="list-style-type: none"><li>• Update acronyms per comments received</li></ul>	March 31, 2014

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# 1 Introduction

The National Airspace System (NAS) Requirements Document (NAS-RD-2013) is a compilation of the enterprise-level requirements for today's operating NAS. A second document, the NAS-RD-2025, contains all of the anticipated requirements for the Far-Term operations of the NAS. The NAS-RD-2013 represents the "as-is" set of Air Traffic Control requirements that are being met by equipment in today's NAS. The NAS-RD-2013 document is a revision to the NAS-RD-2012. The NAS-RD-2013 aligns the requirements to the NAS Enterprise Architecture (EA) System View 4 (SV-4). The NAS-RD-2013 also describes what operational systems in the NAS contribute to which enterprise requirements.

## 1.1 Purpose

The NAS-RD-2013 serves as the high-level source for the requirements allocated to systems operating within the current NAS. It defines requirements without constraining technical alternatives. The NAS-RD-2012 is the set of requirements that describe what the NAS does in terms of its current configuration. The NAS-RD-2013 supports NAS design, enterprise architecture engineering, and acquisition activities for routine changes to the operational NAS equipment. It is the baseline for conducting additional functional decomposition and performance analysis for modifications to the current NAS baseline. The NAS-RD-2013 is meant to be a "perform-to" document, not a "design-to" document.

A key goal of the NAS-RD-2013 is to map the enterprise-level NAS requirements to the current NAS EA. The mapping will trace enterprise-level requirements to sub-systems that perform them today. The term sub-system refers to an individual device or several integrated sets of devices that are a relatively independent, identifiable entity within a sub-element. These sub-systems perform a cleanly and clearly separated function, involving similar technical skills, or a separate supplier.

## 1.2 Background

The NAS-SR-1000 was first published in 1985 as the set of requirements to describe NAS operational capabilities as projected through year the 2000. In 2005, NAS-SR-1000 Revision A was published to update terms and concepts and realign the requirements with the NAS Architecture's services and capabilities as defined at that time. The requirements were also updated to conform to the characteristics of "strong requirements" as defined in the NAS System Engineering Manual (SEM). The SEM defines strong requirements as:

- necessary
- concise
- solution non-specific
- attainable
- complete
- consistent
- traceable
- unambiguous
- verifiable (testable)
- allocable

Well-written requirements at the NAS level provide a sound foundation that one may use to trace to all system-level requirements without dictating specific solutions.

In 2008, Revision B of NAS-SR-1000 provided a functional view of the requirements and included only high-level functional requirements linked to the services and capabilities of the NAS Architecture of the same timeframe. Revision B also updated the Reliability, Maintainability, and Availability requirements. Prior to Revision B, requirements were expressed at all levels of design—from the highest level of need down to requirements and specifications at both the system and design level.

In 2010, the NAS-RD-2010 was developed to replace the NAS SR-1000. The highest level requirements from Revision B were extracted—and in many cases rewritten—to bring the requirements to the highest consistent level across all NAS services defined by the EA. The requirements were also decomposed to show that the requirements that define today's NAS are sufficiently different from those describing the future system contained in the NAS-RD-2025. These products were used to derive the NAS-RD-2010 requirements: NAS SR-1000 Revision B; Next Generation Air Transportation System (NextGen) Concept of Operations (CONOPS); the Chief System Engineer Functional Analysis of the NextGen CONOPS; Draft Summary of Mid-Term Requirements; the Operational Improvements, and NAS Enterprise Architecture Views.

In order to complete the replacement of the NAS-SR-1000, the performance requirements that were previously in it had to be mapped into the EA as well. The NAS-RD-2011 upgraded the NAS-RD-2010 by incorporating those performance requirements into the document.

The NAS-RD-2012 updated the NAS-RD-2011 document by incorporating the top level performance requirements from the NAS-SS-1000. Requirements in the NAS-SS-1000 that were not been operational in the NAS were considered decommissioned. Conversely, the sections of the current NAS-SS-1000 that were not incorporated into the NAS-RD-2012 remain active. Finally, requirements in the NAS-SS-1000 that had been allocated to a specified system in the document were also not included.

The NAS-RD-2013 updates the NAS-RD-2012 in three ways. First, it reorganizes the requirements to align with the NAS EA SV-4 Mission Services and Technical Infrastructure. No requirements were changed as a result of the reorganization. These services from the SV-4 were selected because it is assumed that the functions they represent will be applicable both today and in NextGen. An updated SV-4 specific to the As-Is NAS is due out later this Fiscal Year.

The second upgrade is the inclusion of two tables that describe what operational systems contribute to which requirements. The first table is from the perspective of the requirements, and lists all of the systems that contribute to each requirement. The second table uses the perspective of the systems, and shows all of the requirements a system contributes to. Finally, the term “Inherent Availability” has been replaced with “Service Availability” to align with the version of the RMA Handbook 006A.

## **2 Scope**

The NAS Enterprise Architecture is a comprehensive, multiyear plan for improving, and evolving the NAS through 2025. It describes, at the highest functional level, the services and capabilities that the NAS requires to provide safe and efficient Air Traffic Control services. Requirements specified within the NAS-RD-2013 describe what the NAS must do to provide these services and capabilities. NAS-RD-2013 contains requirements that are currently funded by the NAS, and are enforceable by the FAA.

For this document, requirements are allocated to the System View 4- Systems/Service Functionality Description (SV-4), which documents system functional hierarchies and system functions. The Service Family called Mission Services in the SV-4 defines three Service Categories that enable the NAS performance. They are Information Services, Traffic Services, and Support Services. Each Service Category is further decomposed into Enterprise Services. Information Services includes Aeronautical Information Management, Flight and State Data Management, Surveillance Information Management, and Weather Information Management. Traffic Services include Separation Management, Trajectory Management, Flow Contingency Management, and Short Term Capacity

Management. Support Services include Long Term Capacity Management, System and Services Analysis, System and Services Management, and Safety Management. Each of these Enterprise Services has functions allocated to it in the document below.

Another Service Family is represented in the Technical Infrastructure Services. Technical Infrastructure Services includes three Enterprise Services: Surveillance Data Collection, Weather Data Collection, and Navigation Support. Finally, the document also includes support requirements for infrastructure components of the NAS, e.g., Communications and Design Principles (Appendix A).

Each requirement, except RMA, Communications, and Design Principles requirements, has been assigned a Service Availability rating. These ratings were derived from the projected level of risk the NAS would incur were the requirement not operational. Service Availabilities do not necessarily translate to physical implementations. Additional guidance and requirements are necessary to use these values for a physical implementation. Service Availabilities are defined in Section 3.3.1.1 Reliability, Maintainability, and Availability (RMA) and the glossary.

Appendixes B and C show a mapping between the enterprise level requirements and the subsystems that have implemented parts of those requirements. It should be emphasized that just because a requirement and system are mapped to each other, it does not imply that the system completely fulfills the requirement on its own. In most cases, systems will only contribute to part of a requirement. The contribution of each system to the requirements is part of the design of the system, and is determined by the program offices.

Dictating which requirements require interfaces by mapping communication systems to them could restrict design. Therefore any requirement that relies on an interface between multiple systems to accomplish is also contributed by the appropriate communication requirements and systems.

The subsystems that were selected to be represented in this document are those that are under NAS configuration control. These subsystems are represented in the NAS-SV-1H, the Facility, Service, and Equipment Profile (FSEP), or the NAS-MD-001. All selected subsystems must be denoted as subsystems on the NAS-SV-1H. Variants, functions, and components are not included.

## **2.1 Intended Use**

The NAS-RD-2013 is intended to provide a list of the current functional services provided by the NAS. The differences in the requirements between the NAS-RD-2013 and the NAS-RD-2025 create the shortfall between today and NextGen that aligns with the shortfall defined by the “as-is” and “to-be” Enterprise Architecture.

Programs that intend to address the shortfalls between today and NextGen, as identified on the NAS EA Roadmaps, will derive their program requirements from enterprise-level NextGen requirements. The direct link between these documents is vital to traceability and configuration management as the NAS evolves. This link between program requirements and enterprise requirements will be maintained in a database. As described by the FAA Acquisition Management System (AMS), programs must also show their traceability to enterprise level requirements in their Program Requirements Documents.

The use of the database allows for enhanced impact assessment capabilities. If changes are made to the NAS-RD-2025, the effects on program requirements can be shown directly. If a program office proposes a requirement that could impact enterprise-level requirements, the impact to NAS services can also be traced automatically.

As these new system requirements become applicable, the NAS-RD-2013 will be updated annually to reflect changes to the system.

**2.2 NAS-RD-2013 Updates**

As NextGen and the EA evolve, the NAS-RD-2013 must evolve as well. The Service Organizations must be engaged in developing the requirements for the document in order to reach the usability goals. Service Organization input to the level, scope, and content of the requirements is critical to successful deployment of the document.

After its’ initial baseline, this document will be updated annually to ensure that it stays aligned with the current operational NAS. These updates will be in the form of NAS Change Proposals submitted to the NAS Configuration Control Board. Planned future updates to the document include multi-year validation and verification of the requirements based on tests of operational systems, and the inclusion of Service-level inputs and outputs based on the Enterprise Architecture.

Send comments to the following members of the NAS Requirements Services, ANG-B1:

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## **2.3 References**

### **2.3.1 FAA Documents**

1. National Airspace System, (NAS) System Engineering Manual v3.1, dated October 11, 2006
2. U.S. Department of Transportation Federal Aviation Administration NAS System Requirements Specification SR-1000 Revision B dated June 06, 2008
3. U.S. Department of Transportation Federal Aviation Administration NAS Specification SS-1000 Volume I, dated April 1995
4. International Civil Aviation Organization (ICAO) Annex 11, Model Civil Aviation Regulations Part 2, Personnel Licensing Version 2.5 dated April 2007
5. FAA Order 1100.161 CHG 1 U.S. Department of Transportation Federal Aviation Administration Air Traffic Safety Oversight dated August 11, 2006
6. FAA Order 1375.1D U.S. Department of Transportation Federal Aviation Administration Data Management dated July 25, 2006
7. Air Traffic Organization (ATO) Chief Systems Engineer Functional Analysis of the NextGen CONOPS, dated May 2009
8. Technical View (TV-1) Technical Standards v1.0 dated January 29, 2010
9. FAA-HDBK-006A Federal Aviation Administration Handbook- Reliability, Maintainability, and Availability (RMA) dated January 7, 2008
10. NAS Enterprise Architecture Near-Term Revision 23 dated 26 May 2010
11. NAS Enterprise Architecture Mid-Term Revision 41 dated 10 May 2011
12. NAS Enterprise Architecture Far-Term Revision 33 dated 05 July 2011

### **2.3.2 Non-FAA Government Documents**

1. 8-98 OMB No. 0704-0188 Next Generation Air Transportation System (NextGen) Concepts of Operations (CONOPS) v3.0, dated March 15, 2011
2. Memorandum for Chief Information Officers of Executive Departments and Agencies Transition to IPv6 September 28, 2010

### **2.3.3 Non-Government Documents**

None

### 3 Requirements

#### 3.1 Mission Service Requirements

Mission Services provide direct support to command and control operations in the NAS, including the functions required for the management and distribution of operational information, and decision support functions.

##### 3.1.1 Information Services

Information Services includes those mission services which provide common situational awareness required to support command and control operations related to the control and management of air traffic.

##### 3.1.1.1 Aeronautical Information Management

Aeronautical Information Management (AIM) is the means to ensure that all stakeholders have access to critical information about system resources, procedures, and constraints. Aeronautical information includes functions required to maintain airspace system configuration (airspace structures, routes, procedures, etc.) information. Maintenance of this information includes gathering/receiving the information, validating the information and the sources when generated by external stakeholders, maintaining the currency of the information (including purging expired information), producing products that result from filtering and combining different pieces of information, providing persistence of the information at various points of use, and distributing the information either on demand or according to business rules. The distribution of the information could include the provision of information in machine-readable format or in the form of a display to a human consumer of the information.

Object Number	Requirement	Service Availability
3.1.1.1.0-1	The NAS shall manage NAS configuration information.	Essential
3.1.1.1.0-1-1	The NAS shall acquire NAS configuration information.	Essential

3.1.1.1.0-1.0-2	The NAS shall analyze NAS configuration information.	Essential
3.1.1.1.0-1.0-3	The NAS shall process NAS configuration information.	Essential
3.1.1.1.0-1.0-4	The NAS shall disseminate NAS configuration information.	Essential
3.1.1.1.0-1.0-4.0-1	The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.	Essential
3.1.1.1.0-1.0-4.0-2	The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).	Essential
3.1.1.1.0-1.0-4.0-3	The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.	Essential
3.1.1.1.0-2	The NAS shall manage NAS status information.	Essential
3.1.1.1.0-2.0-1	The NAS shall acquire NAS status information.	Essential
3.1.1.1.0-2.0-1.0-1	The NAS shall acquire NAS status information within 15 seconds of its creation.	Essential
3.1.1.1.0-2.0-2	The NAS shall analyze NAS status information.	Essential
3.1.1.1.0-2.0-3	The NAS shall process NAS status information.	Essential
3.1.1.1.0-2.0-4	The NAS shall disseminate NAS status information.	Essential
3.1.1.1.0-2.0-4.0-1	The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.	Essential
3.1.1.1.0-2.0-4.0-2	The NAS shall process NAS status information requests within 5 seconds (99th percentile).	Essential
3.1.1.1.0-2.0-4.0-3	The NAS shall process NAS status information requests within a maximum of 10 seconds.	Essential
3.1.1.1.0-2.0-	The NAS shall provide requested NAS status information within a radius of 100 miles	Essential

4.0-4	from a specified location.	
3.1.1.1.0-3	The NAS shall maintain air traffic advisories.	Essential
3.1.1.1.0-3.0-1	The NAS shall maintain airspace restriction advisories.	Essential
3.1.1.1.0-3.0-2	The NAS shall maintain route status advisories.	Essential
3.1.1.1.0-3.0-3	The NAS shall maintain flow constraint advisories.	Essential
3.1.1.1.0-3.0-4	The NAS shall maintain TMI advisories.	Essential
3.1.1.1.0-4	The NAS shall disseminate air traffic advisories.	Essential
3.1.1.1.0-4.0-1	The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.	Essential
3.1.1.1.0-4.0-2	The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).	Essential
3.1.1.1.0-4.0-3	The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.	Essential

**3.1.1.2 Flight and State Data Management**

Flight & State Data Management (F&SDM) is the means through which the NAS maintains and distributes all flight information, including, aircraft characteristics and capabilities, flight crew capabilities and authority, flight security profile, flight plans (planned and proposed), flow management schedules (arrival, departure, metering), flight status (including flight progress, aircraft systems status, and emergency and security status), clearance delivery status, and which NAS facility and specialist has control of the flight. It includes functions required for maintaining information provided by flight operators concerning specific flights. Maintenance of this information includes gathering/receiving the information, validating the information and the sources when generated by external stakeholders, maintaining the currency of the information (including purging expired information), producing products that result from filtering and combining different pieces of information, providing persistence of the information at various points of use, and

distributing the information either on demand or according to business rules. The distribution of the information could include the provision of information in machine-readable format or in the form of a display to a human consumer of the information.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.2.0-1	The NAS shall process flight plans.	Efficiency-Critical
3.1.1.2.0-1.0-1	The NAS shall acquire flight information for flight planning.	Efficiency-Critical
3.1.1.2.0-1.0-1.0-1	The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.	Efficiency-Critical
3.1.1.2.0-1.0-1.0-2	The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).	Efficiency-Critical
3.1.1.2.0-1.0-1.0-3	The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.	Efficiency-Critical
3.1.1.2.0-1.0-2	The NAS shall provide feedback on proposed flight plans.	Efficiency-Critical
3.1.1.2.0-1.0-2.0-1	The NAS shall notify users of changes in the availability of their preferred flight routes.	Efficiency-Critical
3.1.1.2.0-2	The NAS shall collaborate with users on flight plans.	Efficiency-Critical
3.1.1.2.0-3	The NAS shall activate flight plans.	Efficiency-Critical
3.1.1.2.0-4	The NAS shall disseminate flight plans.	Efficiency-Critical
3.1.1.2.0-4.0-1	The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.	Efficiency-Critical
3.1.1.2.0-5	The NAS shall validate flight information.	Efficiency-Critical
3.1.1.2.0-5.0-1	The NAS shall update flight information within 12 seconds of receiving a flight plan.	Efficiency-Critical
3.1.1.2.0-5.0-2	The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.	Efficiency-Critical
3.1.1.2.0-5.0-3	The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).	Efficiency-Critical
3.1.1.2.0-5.0-4	The NAS shall validate active flight plan amendments with a maximum of 3 seconds.	Efficiency-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.2.0-5.0-5	The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.	Efficiency-Critical
3.1.1.2.0-5.0-6	The NAS shall validate flight plan actions within 3 seconds (99th percentile).	Efficiency-Critical
3.1.1.2.0-5.0-7	The NAS shall validate flight plan actions with a maximum of 6 seconds.	Efficiency-Critical
3.1.1.2.0-5.0-7.0-1	The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.	Efficiency-Critical
3.1.1.2.0-5.0-7.0-2	The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).	Efficiency-Critical
3.1.1.2.0-5.0-7.0-3	The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.	Efficiency-Critical
3.1.1.2.0-6	The NAS shall monitor aircraft status.	Efficiency-Critical
3.1.1.2.0-6.0-1	The NAS shall detect aircraft non-compliance with clearances.	Efficiency-Critical
3.1.1.2.0-6.0-2	The NAS shall display alternate route clearances for aircraft in non-compliance with a clearance within a maximum of 3 seconds of detection of the non-compliance.	Efficiency-Critical
3.1.1.2.0-7	The NAS shall close flight plans.	Efficiency-Critical

### 3.1.1.3 Surveillance Information Management

Surveillance Information Management (SIM) is the means for collecting and processing acquired surveillance information and transforming it into an integrated, comprehensive, and authoritative source for all consumers and service providers. The processing includes correlating surveillance information with flight data to provide continuous identification and tracking of each flight. It also involves the derivation of information from the surveillance data, such as velocity and intent.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.3.0-1	The NAS shall process surveillance information.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.3.0-1.0-1	The NAS shall determine the position for all targets.	Safety-Critical
3.1.1.3.0-1.0-1.0-1	The NAS shall detect aircraft entering an ADIZ within 13 seconds.	Safety-Critical
3.1.1.3.0-1.0-1.0-2	The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.	Safety-Critical
3.1.1.3.0-1.0-1.0-3	The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.	Safety-Critical
3.1.1.3.0-1.0-1.0-4	The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.	Safety-Critical
3.1.1.3.0-1.0-1.0-5	The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.	Safety-Critical
3.1.1.3.0-1.0-1.0-6	The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.	Safety-Critical
3.1.1.3.0-1.0-1.0-7	The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.	Safety-Critical
3.1.1.3.0-1.0-1.0-8	The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.	Safety-Critical
3.1.1.3.0-1.0-1.0-9	The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.	Safety-Critical
3.1.1.3.0-1.0-1.0-10	The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.	Safety-Critical
3.1.1.3.0-1.0-1.0-11	The NAS shall display position of aircraft operating within an ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.	Safety-Critical
3.1.1.3.0-1.0-1.0-12	The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.3.0-1.0-1.0-13	The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.	Safety-Critical
3.1.1.3.0-1.0-1.0-13.0-1	The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.	Safety-Critical
3.1.1.3.0-1.0-1.0-13.0-2	The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.	Safety-Critical
3.1.1.3.0-1.0-1.0-13.0-3	The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.	Safety-Critical
3.1.1.3.0-1.0-1.0-13.0-4	The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.	Safety-Critical
3.1.1.3.0-1.0-1.0-13.0-5	The NAS shall update the position of aircraft in flying closely spaced parallel approaches within a maximum time between updates of 1.125 seconds when the runways are less than 3400 feet apart.	Safety-Critical
3.1.1.3.0-1.0-1.0-14	The NAS shall track aircraft and vehicles on the airport surface.	Safety-Critical
3.1.1.3.0-1.0-1.0-15	The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.	Safety-Critical
3.1.1.3.0-1.0-2	The NAS shall generate flight paths.	Safety-Critical
3.1.1.3.0-1.0-2.0-1	The NAS shall project each aircraft's flight path at least every 13 seconds.	Safety-Critical
3.1.1.3.0-1.0-2.0-2	The NAS shall update each aircraft's flight path at least every 13 seconds.	Safety-Critical
3.1.1.3.0-1.0-3	The NAS shall determine the velocity for all aircraft detected by surveillance sources.	Safety-Critical
3.1.1.3.0-1.0-3.0-1	The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.	Safety-Critical
3.1.1.3.0-1.0-3.0-2	The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.3.0-1.0-3.0-3	The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.	Safety-Critical
3.1.1.3.0-1.0-3.0-4	The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.	Safety-Critical
3.1.1.3.0-1.0-3.0-5	The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.	Safety-Critical
3.1.1.3.0-1.0-3.0-6	The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.	Safety-Critical
3.1.1.3.0-1.0-3.0-7	The NAS shall provide the information and resources necessary for the manual entry of aircraft velocity information.	Safety-Critical
3.1.1.3.0-1.0-4	The NAS shall identify all aircraft receiving air traffic services.	Safety-Critical
3.1.1.3.0-1.0-4.0-1	The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.	Safety-Critical
3.1.1.3.0-1.0-4.0-2	The NAS shall provide the information and resources necessary for the manual entry of identity information.	Safety-Critical
3.1.1.3.0-1.0-5	The NAS shall transfer control responsibilities.	Safety-Critical
3.1.1.3.0-1.0-6	The NAS shall integrate surveillance information from multiple sources.	Safety-Critical
3.1.1.3.0-1.0-6.0-1	The NAS shall generate common surveillance situation information for use by all operations.	Safety-Critical
3.1.1.3.0-1.0-7	The NAS shall disseminate surveillance information.	Safety-Critical
3.1.1.3.0-1.0-7.0-1	The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a mean of less than or equal to 3 seconds.	Safety-Critical
3.1.1.3.0-1.0-7.0-2	The NAS shall respond to current aircraft position, altitude, and speed requests from specialists within 5 seconds (99th percentile).	Safety-Critical
3.1.1.3.0-1.0-7.0-3	The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a maximum of 10 seconds.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.3.0-1.0-7.0-4	The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.	Safety-Critical
3.1.1.3.0-1.0-7.0-5	The NAS shall display en route area surveillance data to specialists within a maximum of 3.0 seconds of its detection.	Safety-Critical
3.1.1.3.0-1.0-7.0-6	The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.	Safety-Critical
3.1.1.3.0-1.0-7.0-7	The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.	Safety-Critical
3.1.1.3.0-1.0-7.0-8	The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile).	Safety-Critical
3.1.1.3.0-1.0-7.0-9	The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source.	Safety-Critical
3.1.1.3.0-1.0-7.0-10	The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source.	Safety-Critical
3.1.1.3.0-1.0-7.0-11	The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight.	Safety-Critical
3.1.1.3.0-1.0-7.0-12	The NAS shall display requested aircraft speed within plus or minus 20 knots or less for an aircraft in constant steady-level flight.	Safety-Critical

### **3.1.1.4 Weather Information Management**

Weather Information Management (WIM) is the means for collecting and processing raw weather information and transforming it into an integrated, comprehensive, and authoritative source for all consumers and service providers. It also includes the derivation of products and data that can be applied to provide advisories of hazardous weather to consumers.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.4.0-1	The NAS shall analyze weather information.	Essential
3.1.1.4.0-1.0-1	The NAS shall analyze the impact of weather on operational capacity.	Essential
3.1.1.4.0-1.0-2	The NAS shall forecast surface weather.	Essential
3.1.1.4.0-1.0-2.0-1	The NAS shall forecast hazardous surface weather phenomenon in the terminal environment greater than or equal to 1 minute prior to the occurrence of the phenomenon.	Essential
3.1.1.4.0-1.0-3	The NAS shall forecast weather aloft.	Essential
3.1.1.4.0-1.0-3.0-1	The NAS shall update storm cell predictions every 5 minutes for flight planning.	Essential
3.1.1.4.0-2	The NAS shall generate weather products.	Essential
3.1.1.4.0-2.0-1	The NAS shall generate area weather products.	Essential
3.1.1.4.0-2.0-1.0-1	The NAS shall update en route weather conditions aloft every 5 minutes for flight planning.	Essential
3.1.1.4.0-2.0-1.0-2	The NAS shall update terminal weather conditions aloft every 5 minutes for flight planning.	Essential
3.1.1.4.0-2.0-2	The NAS shall generate weather advisories.	Essential
3.1.1.4.0-2.0-2.0-1	The NAS shall update hazardous weather information within 2 minutes of receipt.	Essential
3.1.1.4.0-2.0-2.0-2	The NAS shall update terminal area hazardous flight planning weather information within one minute of receiving an update.	Essential
3.1.1.4.0-2.0-2.0-3	The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.	Essential
3.1.1.4.0-2.0-2.0-4	The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.	Essential
3.1.1.4.0-2.0-2.0-5	The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.	Essential
3.1.1.4.0-2.0-2.0-5.0-1	The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.	Essential

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.4.0-3	The NAS shall disseminate weather information.	Essential
3.1.1.4.0-3.0-1	The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.	Essential
3.1.1.4.0-3.0-2	The NAS shall disseminate en route area hazardous weather information to specialists within 2 minutes of detection.	Essential
3.1.1.4.0-3.0-3	The NAS shall respond to weather information request with a mean of less than or equal to 3 seconds.	Essential
3.1.1.4.0-3.0-4	The NAS shall respond to weather information request within 5 seconds (99th percentile).	Essential
3.1.1.4.0-3.0-5	The NAS shall respond to weather information request with a maximum of 10 seconds.	Essential
3.1.1.4.0-3.0-6	The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.	Essential
3.1.1.4.0-3.0-7	The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).	Essential
3.1.1.4.0-3.0-8	The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.	Essential
3.1.1.4.0-3.0-9	The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.	Essential
3.1.1.4.0-3.0-10	The NAS shall respond to hazardous weather information requests for the continental US within 5 seconds (99th percentile).	Essential
3.1.1.4.0-3.0-11	The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.	Essential
3.1.1.4.0-3.0-12	The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.	Essential
3.1.1.4.0-3.0-13	The NAS shall disseminate weather advisories	Essential

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.1.4.0-3.0-13.0-1	The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.	Essential
3.1.1.4.0-3.0-13.0-2	The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).	Essential
3.1.1.4.0-3.0-13.0-3	The NAS shall respond to weather advisory requests within a maximum of 10 seconds.	Essential
3.1.1.4.0-4	The NAS shall display weather information.	Essential
3.1.1.4.0-5	The NAS shall maintain weather information.	Essential
3.1.1.4.0-5.0-1	The NAS shall maintain airspace weather advisories.	Essential
3.1.1.4.0-5.0-2	The NAS shall maintain route weather advisories.	Essential
3.1.1.4.0-5.0-3	The NAS shall maintain terminal weather advisories.	Essential
3.1.1.4.0-5.0-4	The NAS shall maintain weather forecasts.	Essential

### 3.1.2 Traffic Services

Traffic Services includes those mission services which provide support for command and control operations related to the control and management of air traffic.

#### 3.1.2.1 Separation Management

Separation Management (SM) is the tactical response to violations or projected violations of separation standards. It generates tactical variations of flight trajectories to resolve projected conflicts between aircraft, and between an aircraft and an aviation hazard, such as obstacles to flight, restricted airspace, or severe weather. It also generates tactical variations of flight trajectories in response to specific airspace security events.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.1.0-1	The NAS shall project short term trajectories.	Safety-Critical
3.1.2.1.0-1.0-1	The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.	Safety-Critical
3.1.2.1.0-1.0-2	The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.	Safety-Critical
3.1.2.1.0-1.0-3	The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.	Safety-Critical
3.1.2.1.0-1.0-4	The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).	Safety-Critical
3.1.2.1.0-1.0-5	The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.	Safety-Critical
3.1.2.1.0-2	The NAS shall evaluate information necessary for separation assurance.	Safety-Critical
3.1.2.1.0-2.0-1	The NAS shall evaluate traffic information for separation assurance.	Safety-Critical
3.1.2.1.0-2.0-2	The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.	Safety-Critical
3.1.2.1.0-2.0-3	The NAS shall evaluate Terrain/Obstacle information for separation assurance.	Safety-Critical
3.1.2.1.0-2.0-4	The NAS shall evaluate Flight Status for separation assurance.	Safety-Critical
3.1.2.1.0-3	The NAS shall predict separation conflicts.	Safety-Critical
3.1.2.1.0-3.0-1	The NAS shall predict aircraft-to-aircraft separation conflicts.	Safety-Critical
3.1.2.1.0-3.0-1.0-1	The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in terminal areas at least 30 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-1.0-2	The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-1.0-3	The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.	Safety-Critical
3.1.2.1.0-3.0-1.0-4	The NAS shall alert participating aircraft of separation conflicts with other aircraft within 10 seconds of making the prediction.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.1.0-3.0-1.0-5	The NAS shall alert users of separation conflicts in terminal airspace at least 30 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-1.0-6	The NAS shall alert users of separation conflicts in en route airspace at least 65 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-2	The NAS shall predict airspace separation conflicts.	Safety-Critical
3.1.2.1.0-3.0-2.0-1	The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.	Safety-Critical
3.1.2.1.0-3.0-2.0-2	The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.	Safety-Critical
3.1.2.1.0-3.0-2.0-3	The NAS shall alert participating aircraft to predicted conflicts with Special Use Airspace within 10 seconds of making the prediction.	Safety-Critical
3.1.2.1.0-3.0-3	The NAS shall predict terrain and obstacle separation conflicts.	Safety-Critical
3.1.2.1.0-3.0-3.0-1	The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-3.0-2	The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-3.0-3	The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-3.0-4	The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-3.0-5	The NAS shall alert users to separation conflicts with obstructions within 10 seconds of making the prediction.	Safety-Critical
3.1.2.1.0-3.0-3.0-6	The NAS shall alert users of aircraft-terrain separation conflicts in terminal airspace at least 30 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-3.0-7	The NAS shall alert users of aircraft-obstacle separation conflicts in terminal airspace at least 30 seconds prior to the violation.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.1.0-3.0-3.0-8	The NAS shall alert users of aircraft-terrain separation conflicts in en route airspace at least 65 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-3.0-3.0-9	The NAS shall alert users of aircraft-obstacle separation conflicts in en route airspace at least 65 seconds prior to the violation.	Safety-Critical
3.1.2.1.0-4	The NAS shall detect separation violations.	Safety-Critical
3.1.2.1.0-4.0-1	The NAS shall detect aircraft-to-aircraft separation violations.	Safety-Critical
3.1.2.1.0-4.0-1.0-1	The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.	Safety-Critical
3.1.2.1.0-4.0-1.0-2	The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.	Safety-Critical
3.1.2.1.0-4.0-1.0-3	The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.	Safety-Critical
3.1.2.1.0-4.0-1.0-4	The NAS shall alert appropriately equipped users to the collision danger within 10 seconds after the prediction is made.	Safety-Critical
3.1.2.1.0-4.0-2	The NAS shall detect airspace separation violations.	Safety-Critical
3.1.2.1.0-4.0-3	The NAS shall detect terrain and obstacle separation violations.	Safety-Critical
3.1.2.1.0-5	The NAS shall provide control instructions.	Safety-Critical
3.1.2.1.0-5.0-1	The NAS shall generate recommended avoidance instructions for separation violations and predicted separation conflicts.	Safety-Critical
3.1.2.1.0-5.0-2	The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.	Safety-Critical
3.1.2.1.0-5.0-3	The NAS shall display recommended avoidance maneuvers within 1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation violation.	Safety-Critical
3.1.2.1.0-5.0-4	The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.	Safety-Critical
3.1.2.1.0-5.0-5	The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.	Safety-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.1.0-5.0-6	The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation violation.	Safety-Critical

### 3.1.2.2 Trajectory Management

Trajectory Management (TM) is the means through which 4-D trajectories are generated, assessed, and modified for use in trajectory-based operations. It supports the implementation of flow management strategies by managing changes to trajectories required by localized changes in capacity and demand. It also supports the detection of airspace security events and the implementation of flight-specific responses to such events.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.2.0-1	The NAS shall associate flight paths with flight plans.	Efficiency-Critical
3.1.2.2.0-1.0-1	The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.	Efficiency-Critical
3.1.2.2.0-1.0-2	The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.	Efficiency-Critical
3.1.2.2.0-1.0-3	The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).	Efficiency-Critical
3.1.2.2.0-1.0-4	The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.	Efficiency-Critical
3.1.2.2.0-2	The NAS shall monitor flight path conformance.	Efficiency-Critical
3.1.2.2.0-3	The NAS shall predict flight path non-conformance.	Efficiency-Critical
3.1.2.2.0-3.0-1	The NAS shall disseminate to users non-adherence to ATC clearance within 10 seconds of the prediction of the deviation.	Efficiency-Critical

### 3.1.2.3 Flow Contingency Management

Flow Contingency Management (FCM) consists of those functions that support command and control decisions related to managing the flow of air traffic based on capacity constraints and airspace performance requirements. It provides automated assistance in the establishment of temporary flow constraints, traffic management initiatives, and the shifting of flights from one flow to another, matching aircraft capabilities to the performance requirements of specific airspace segments and routes. It works in coordination with Short Term Capacity Management to resolve congestion by identifying potential airspace and route configurations that could support specific flow initiatives. It also responds to requests to divert traffic in response to an airspace security event.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.3.0-1	The NAS shall provide the information and resources necessary for flow contingency management collaboration.	Efficiency-Critical
3.1.2.3.0-1.0-1	The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.	Efficiency-Critical
3.1.2.3.0-1.0-2	The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.	Efficiency-Critical
3.1.2.3.0-2	The NAS shall assess traffic flow.	Efficiency-Critical
3.1.2.3.0-2.0-1	The NAS shall evaluate congestion information.	Efficiency-Critical
3.1.2.3.0-2.0-2	The NAS shall evaluate flow constraints.	Efficiency-Critical
3.1.2.3.0-2.0-2.0-1	The NAS shall analyze the effectiveness of flow constraints.	Efficiency-Critical
3.1.2.3.0-2.0-3	The NAS shall evaluate airspace status.	Efficiency-Critical
3.1.2.3.0-2.0-4	The NAS shall evaluate route status.	Efficiency-Critical
3.1.2.3.0-2.0-5	The NAS shall predict delays.	Efficiency-Critical
3.1.2.3.0-2.0-6	The NAS shall monitor flow constraint conformance.	Efficiency-Critical
3.1.2.3.0-2.0-7	The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.	Efficiency-Critical
3.1.2.3.0-3	The NAS shall manage operational capacity.	Efficiency-Critical
3.1.2.3.0-3.0-1	The NAS shall manage flow constraints.	Efficiency-Critical
3.1.2.3.0-3.0-2	The NAS shall manage sequencing plans.	Efficiency-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.3.0-3.0-2.0-1	The NAS shall establish sequencing plans.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-1.0-1	The NAS shall establish flow sequencing plans for terminal airspace greater than or equal to two hours prior to the implementation of the plans.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-1.0-2	The NAS shall establish flow sequencing plans for en route airspace greater than or equal to eight hours prior to the implementation of the plans.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-2	The NAS shall implement sequencing plans.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-2.0-1	The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-2.0-2	The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).	Efficiency-Critical
3.1.2.3.0-3.0-2.0-2.0-3	The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-3	The NAS shall update sequencing plans.	Efficiency-Critical
3.1.2.3.0-3.0-2.0-4	The NAS shall disseminate sequencing plans.	Efficiency-Critical
3.1.2.3.0-3.0-3	The NAS shall manage Traffic Management Initiatives (TMI).	Efficiency-Critical
3.1.2.3.0-3.0-3.0-1	The NAS shall establish TMIs.	Essential
3.1.2.3.0-3.0-3.0-2	The NAS shall implement TMIs.	Efficiency-Critical
3.1.2.3.0-3.0-3.0-3	The NAS shall maintain TMI schedules.	Efficiency-Critical
3.1.2.3.0-3.0-3.0-4	The NAS shall disseminate TMIs.	Efficiency-Critical
3.1.2.3.0-4	The NAS shall generate flow advisories.	Efficiency-Critical

### 3.1.2.4 Short Term Capacity Management

Short Term Capacity Management (STCM) is the means through which planning is performed for applying available assets to adjust system capacity to meet the demand. It involves the assessment of demand within an operational timeframe, and the allocation of available resources to provide sufficient capacity to meet that demand. It also predicts congestion where capacity cannot be increased sufficiently to meet demand. It works in coordination with Flow Contingency Management to resolve predicted congestion by adjusting airspace and route configurations to match the needs of specific flow initiatives. It also responds to request for airspace restrictions required to address airspace security events by reconfiguring airspace and routes to accommodate the restrictions.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.4.0-1	The NAS shall provide the information and resources necessary for short term capacity management collaboration.	Essential
3.1.2.4.0-1.0-1	The NAS shall provide the information and resources necessary for stakeholder collaboration for short term capacity management.	Essential
3.1.2.4.0-1.0-2	The NAS shall provide the information and resources necessary for user collaboration for short term capacity management.	Essential
3.1.2.4.0-2	The NAS shall manage airspace restrictions.	Efficiency-Critical
3.1.2.4.0-2.0-1	The NAS shall manage special activity airspace (SAA).	Efficiency-Critical
3.1.2.4.0-2.0-1.0-1	The NAS shall monitor SAA status.	Efficiency-Critical
3.1.2.4.0-2.0-1.0-2	The NAS shall update SAA information after collaborating with the SAA owners.	Efficiency-Critical
3.1.2.4.0-2.0-1.0-2.0-1	The NAS shall approve special use airspace reservations within 30 minutes of initial receipt of request.	Efficiency-Critical
3.1.2.4.0-2.0-2	The NAS shall manage altitude reservations.	Efficiency-Critical
3.1.2.4.0-2.0-2.0-1	The NAS shall respond to altitude reservation requests within a maximum of 10 seconds.	Efficiency-Critical

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.2.4.0-2.0-3	The NAS shall manage airport reservations.	Efficiency-Critical
3.1.2.4.0-2.0-3.0-1	The NAS shall respond to airport reservation requests within a maximum 6 seconds.	Efficiency-Critical
3.1.2.4.0-2.0-4	The NAS shall respond to airspace security events.	Efficiency-Critical
3.1.2.4.0-2.0-5	The NAS shall respond to airspace restriction requests.	Efficiency-Critical
3.1.2.4.0-3	The NAS shall determine airspace capacity.	Efficiency-Critical
3.1.2.4.0-3.0-1	The NAS shall evaluate airspace status to determine airspace capacity.	Efficiency-Critical
3.1.2.4.0-3.0-2	The NAS shall evaluate flow constraints to determine airspace capacity.	Efficiency-Critical
3.1.2.4.0-3.0-3	The NAS shall evaluate weather information to determine airspace capacity.	Efficiency-Critical
3.1.2.4.0-3.0-4	The NAS shall evaluate NAS status information to determine airspace capacity.	Efficiency-Critical
3.1.2.4.0-4	The NAS shall determine operational demand.	Efficiency-Critical
3.1.2.4.0-4.0-1	The NAS shall monitor current traffic flow information.	Efficiency-Critical
3.1.2.4.0-4.0-2	The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.	Efficiency-Critical
3.1.2.4.0-4.0-3	The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance.	Efficiency-Critical
3.1.2.4.0-4.0-4	The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.	Efficiency-Critical
3.1.2.4.0-5	The NAS shall evaluate airspace capacity against demand.	Efficiency-Critical
3.1.2.4.0-5.0-1	The NAS shall predict congestion.	Efficiency-Critical
3.1.2.4.0-5.0-2	The NAS shall detect congested areas.	Efficiency-Critical
3.1.2.4.0-6	The NAS shall manage airspace capacity.	Efficiency-Critical
3.1.2.4.0-6.0-1	The NAS shall manage airspace status.	Efficiency-Critical
3.1.2.4.0-6.0-2	The NAS shall manage route status.	Efficiency-Critical
3.1.2.4.0-6.0-3	The NAS shall coordinate planned outages.	Efficiency-Critical
3.1.2.4.0-7	The NAS shall generate airspace advisories.	Efficiency-Critical

### 3.1.3 Mission Support Services

Mission Support Services includes those mission services which provide support for the sustainment and improvement of operational capabilities, and which provide ancillary analytic capabilities in support of command and control.

#### 3.1.3.1 Long Term Capacity Management

Long Term Capacity Management (LTCM) is the means through which new system capacity is generated or developed. It provides the tools that support the management of capacity during operations, including airspace configurations, pre-defined routes and fixes, procedures, airport infrastructure improvements, and staffing structures.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.1.0-1	The NAS shall support stakeholder collaboration for long term capacity management.	Routine
3.1.3.1.0-2	The NAS shall project capacity needs.	Routine
3.1.3.1.0-2.0-1	The NAS shall identify current performance shortfalls.	Routine
3.1.3.1.0-2.0-1.0-1	The NAS shall identify specific airspace that consistently has high levels of congestion based on post-operational data.	Routine
3.1.3.1.0-2.0-1.0-2	The NAS shall identify airspace that is under utilized based on post-operational data.	Routine
3.1.3.1.0-2.0-1.0-3	The NAS shall utilize operational information to improve the strategic use of airports and en route airspace.	Routine
3.1.3.1.0-2.0-2	The NAS shall provide the information and resources necessary for strategic demand forecasting.	Routine
3.1.3.1.0-2.0-3	The NAS shall evaluate capacity projections against demand projections to determine strategic system needs.	Routine
3.1.3.1.0-3	The NAS shall provide the information and resources necessary to assess strategic capacity constraints.	Routine
3.1.3.1.0-3.0-1	The NAS shall provide the information and resources necessary to assess the impact of proposed airspace changes to existing configurations.	Routine

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.1.0-3.0-2	The NAS shall provide the information and resources necessary to assess environmental impacts of proposed airspace changes.	Routine
3.1.3.1.0-3.0-3	The NAS shall provide the information and resources necessary to assess the security impacts of proposed airspace changes.	Routine
3.1.3.1.0-3.0-4	The NAS shall provide the information and resources necessary to assess safety impacts of proposed airspace changes.	Routine
3.1.3.1.0-3.0-5	The NAS shall provide the information and resources necessary to assess infrastructure impacts on proposed airspace changes.	Routine
3.1.3.1.0-3.0-6	The NAS shall provide the information and resources necessary to assess terrain and obstacle information for proposed airspace changes.	Routine
3.1.3.1.0-4	The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.	Routine
3.1.3.1.0-4.0-1	The NAS shall provide the information and resources necessary for the design of airspace configurations.	Routine
3.1.3.1.0-4.0-1.0-1	The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.	Routine
3.1.3.1.0-4.0-1.0-2	The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.	Routine
3.1.3.1.0-4.0-1.0-3	The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.	Routine
3.1.3.1.0-4.0-2	The NAS shall provide the information and resources necessary for the design of air traffic procedures.	Routine
3.1.3.1.0-4.0-3	The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.	Routine
3.1.3.1.0-4.0-3.0-1	The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.	Routine
3.1.3.1.0-4.0-3.0-1.0-1	The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.	Routine

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.1.0-4.0-4	The NAS shall provide the information and resources necessary to assess proposed capacity improvement plans.	Routine

### 3.1.3.2 System and Service Analysis

System & Services Analysis (S&SA) includes both real-time and off-line analysis of information gathered throughout the system and from external entities. It is used to assess system performance and to support investigations of accidents, incidents, and criminal activity. It also includes the recording of operational information (including voice communications) for analysis and archival purposes.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.2.0-1	The NAS shall manage post operational data.	Essential
3.1.3.2.0-1.0-1	The NAS shall manage operational metrics.	Routine
3.1.3.2.0-1.0-2	The NAS shall record operational system information.	Essential
3.1.3.2.0-1.0-3	The NAS shall archive operational system information.	Essential
3.1.3.2.0-1.0-4	The NAS shall record voice communications	Essential
3.1.3.2.0-1.0-5	The NAS shall conduct data mining.	Essential
3.1.3.2.0-1.0-6	The NAS shall provide the information and resources necessary for accident/incident investigations.	Essential
3.1.3.2.0-1.0-7	The NAS shall acquire cyber security event logs.	Essential
3.1.3.2.0-2	The NAS shall perform operational analysis.	Essential
3.1.3.2.0-2.0-1	The NAS shall analyze operational performance information.	Essential
3.1.3.2.0-2.0-2	The NAS shall analyze operational trends.	Essential
3.1.3.2.0-2.0-3	The NAS shall analyze airspace security.	Essential
3.1.3.2.0-2.0-4	The NAS shall analyze environmental impacts.	Essential
3.1.3.2.0-2.0-5	The NAS shall analyze cyber security event logs	Essential

3.1.3.2.0-3	The NAS shall provide the information and resources necessary for search and rescue operations.	Routine
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### 3.1.3.3 System and Service Management

System & Services Management (S&SM) represents the enterprise-wide maintenance and system management function. It monitors the health of all system elements, identifies the impact of system issues on operational services, responds to failures and degradations of service, and provides logistics and preventative maintenance support to minimize system outages and degradation of services. It also monitors the health of external entities critical to the success of collaborative operations.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.3.0-1	The NAS shall monitor service status.	Essential
3.1.3.3.0-1.0-1	The NAS shall monitor system status.	Essential
3.1.3.3.0-1.0-1.0-1	The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.	Essential
3.1.3.3.0-1.0-1.0-2	The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.	Essential
3.1.3.3.0-1.0-2	The NAS shall monitor external system status.	Essential
3.1.3.3.0-1.0-3	The NAS shall perform diagnostic testing.	Essential
3.1.3.3.0-1.0-3.0-1	The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.	Essential
3.1.3.3.0-1.0-3.0-2	The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.	Essential
3.1.3.3.0-1.0-4	The NAS shall measure system parameters.	Essential
3.1.3.3.0-1.0-5	The NAS shall detect failures.	Essential
3.1.3.3.0-1.0-5.0-1	The NAS shall alert specialist of a system failure.	Essential

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.3.0-1.0-5.0-1.0-1	The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.	Essential
3.1.3.3.0-1.0-5.0-1.0-2	The NAS shall alert specialists to system failures within a maximum of 16 seconds.	Essential
3.1.3.3.0-1.0-5.0-1.0-3	The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.	Essential
3.1.3.3.0-1.0-5.0-2	The NAS shall alert users of a system failure.	Essential
3.1.3.3.0-1.0-5.0-2.0-1	The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.	Essential
3.1.3.3.0-1.0-5.0-3	The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.	Essential
3.1.3.3.0-1.0-6	The NAS shall determine the cause of failure.	Essential
3.1.3.3.0-1.0-7	The NAS shall derive service status from system status.	Essential
3.1.3.3.0-2	The NAS shall manage service performance.	Essential
3.1.3.3.0-2.0-1	The NAS shall configure systems.	Essential
3.1.3.3.0-2.0-1.0-1	The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.	Essential
3.1.3.3.0-2.0-1.0-2	The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.	Essential
3.1.3.3.0-2.0-2	The NAS shall adjust system parameters.	Essential
3.1.3.3.0-2.0-3	The NAS shall control selected subsystems on-site.	Essential
3.1.3.3.0-2.0-4	The NAS shall control selected subsystems off-site.	Essential
3.1.3.3.0-3	The NAS shall provide the information and resources necessary for logistics planning.	Essential
3.1.3.3.0-4	The NAS shall provide the information and resources necessary for preventative maintenance scheduling.	Essential
3.1.3.3.0-5	The NAS shall disseminate system updates.	Essential

### 3.1.3.4 Safety Management

Safety Management Service is the means through which safety information is collected, derived from other system data, and analyzed to determine relative risk and appropriate means for mitigation.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.4.0-1	The NAS shall provide the information and resources necessary to manage the safe provision of Air Traffic Services.	Essential
3.1.3.4.0-1.0-1	The NAS shall provide the information and resources necessary to operate a Safety Management System (SMS) in accordance with International Civil Aviation Organization (ICAO) Annex 11, FAA Order 1100.161, and any other pertinent FAA orders, policies, guidance documents, and standards that govern the safe provision of Air Traffic Services.	Essential
3.1.3.4.0-1.0-1.0-1	The NAS shall provide the information and resources necessary to develop metrics to monitor levels of safety.	Essential
3.1.3.4.0-1.0-1.0-2	The NAS shall monitor conformance to safety metrics.	Essential
3.1.3.4.0-1.0-1.0-3	The NAS shall analyze safety trends.	Essential
3.1.3.4.0-1.0-1.0-4	The NAS shall provide the information and resources necessary to determine operational risks.	Essential
3.1.3.4.0-1.0-1.0-5	The NAS shall provide the information and resources necessary to mitigate operational risks.	Essential
3.1.3.4.0-1.0-2	The NAS shall manage safety data.	Essential
3.1.3.4.0-1.0-2.0-1	The NAS shall integrate safety data.	Essential
3.1.3.4.0-1.0-2.0-2	The NAS shall accept requests for safety data.	Essential

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.1.3.4.0-1.0-2.0-3	The NAS shall respond to requests for safety data.	Essential
3.1.3.4.0-1.0-2.0-4	The NAS shall disseminate response to safety data request.	Essential
3.1.3.4.0-1.0-3	The NAS shall conduct Safety Risk Management (SRM) on all proposed NAS changes.	Essential

### 3.2 Technical Infrastructure Services

Technical Infrastructure Services provides the hardware and software infrastructure to support day to day operations for all NAS services. Some components are the run-time computing platforms, data storage systems, network infrastructure, and enclave boundary and transport-level protection elements. This layer also includes infrastructure-based functionality that enables the NAS to interact with external elements of the operational environment, including air-to-ground communications, surveillance, navigation services, and meteorological data collection.

#### 3.2.1 Surveillance Data Collection

Surveillance Data Collection includes functions required for collecting and distributing raw surveillance information for both airborne aircraft and ground vehicles.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.2.1.0-1	The NAS shall acquire surveillance information.	Safety-Critical
3.2.1.0-1.0-1	The NAS shall acquire dependent surveillance information.	Safety-Critical
3.2.1.0-1.0-2	The NAS shall acquire independent surveillance information.	Safety-Critical
3.2.1.0-1.0-2.0-1	The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.	Safety-Critical
3.2.1.0-1.0-2.0-2	The NAS shall detect aircraft and vehicles on the airport surface with an area radar cross section of greater than or equal to 3 square meters.	Safety-Critical
3.2.1.0-1.0-3	The NAS shall acquire cooperative surveillance information.	Safety-Critical

### 3.2.2 Weather Data Collection

Weather Data Collection includes functions required for collecting and maintaining raw weather information from ground-based and airborne sensors. Raw weather information includes measurements of atmospheric parameters that can be processed and analyzed to derive atmospheric conditions and forecasts. Weather Data Collection also receives data from external sources (e.g. NOAA). Maintenance of this information includes validating the information and the sources when generated by external stakeholders, maintaining the currency of the information (including purging expired information), producing products that result from filtering and combining different pieces of information, providing persistence of the information at various points of use, and distributing the information either on demand or according to business rules. The distribution of the information could include the provision of information in machine-readable format or in the form of a display to a human consumer of the information.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.2.2.0-1	The NAS shall acquire weather information.	Essential
3.2.2.0-1.0-1	The NAS shall acquire surface weather information.	Essential
3.2.2.0-1.0-1.0-1	The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.	Essential
3.2.2.0-1.0-2	The NAS shall acquire weather aloft information.	Essential
3.2.2.0-1.0-2.0-1	The NAS shall acquire airborne weather information within 15 seconds of creation.	Essential
3.2.2.0-1.0-3	The NAS shall acquire weather advisory information.	Essential
3.2.2.0-1.0-3.0-1	The NAS shall acquire weather advisories within 15 seconds of creation.	Essential

### 3.2.3 Navigation Support

Navigation Support includes functions performed by ground-based navigation and landing systems that provide electronic reference signals to assist an aircraft in determining its position relative to a navigation fix or runway. It also includes the provision of visual reference to flight crews.

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.2.3.0-1	The NAS shall provide electronic spatial references.	Efficiency-Critical
3.2.3.0-1.0-1	The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.	Efficiency-Critical
3.2.3.0-1.0-1.0-1	The NAS shall provide electronic signals that enable aircraft to determine their position in en route airspace.	Efficiency-Critical
3.2.3.0-1.0-1.0-2	The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.	Efficiency-Critical
3.2.3.0-1.0-2	The NAS shall provide electronic signals to enable Required Navigation Performance.	Efficiency-Critical
3.2.3.0-1.0-3	The NAS shall provide electronic signals to enable approach and landing operations.	Efficiency-Critical
3.2.3.0-1.0-3.0-1	The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal.	Efficiency-Critical
3.2.3.0-1.0-3.0-2	The NAS shall provide lateral electronic precision landing guidance to within plus or minus 35 feet for aircraft flying Category 1 approaches.	Efficiency-Critical
3.2.3.0-1.0-3.0-3	The NAS shall provide lateral electronic precision landing guidance to within plus or minus 25 feet for aircraft flying Category 2 approaches.	Efficiency-Critical
3.2.3.0-1.0-3.0-4	The NAS shall provide lateral electronic precision landing guidance to within plus or minus 10 feet for aircraft flying Category 3 approaches.	Efficiency-Critical
3.2.3.0-1.0-3.0-5	The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta.	Efficiency-Critical
3.2.3.0-1.0-3.0-6	The NAS shall provide a distance signal along electronic precision approach paths within plus or minus 0.1 NM.	Efficiency-Critical

3.2.3.0-1.0-3.0-7	The NAS shall provide lateral guidance to the runway from line-of-site to a designated reference point up to an altitude of 3000 feet and out to a maximum of 30 miles from the reference point for non-precision approaches.	Efficiency-Critical
3.2.3.0-1.0-4	The NAS shall provide electronic signals that enable aircraft to determine their position on the airport surface.	Efficiency-Critical
3.2.3.0-1.0-4.0-1	The NAS shall provide reference test signals on the airport surface for navigation avionics.	Efficiency-Critical
3.2.3.0-1.0-4.0-1.0-1	The NAS shall provide reference test signals for navigation avionics within plus or minus 0.1 degrees.	Efficiency-Critical
3.2.3.0-1.0-5	The NAS shall transmit facility identification information.	Efficiency-Critical
3.2.3.0-1.0-5.0-1	The NAS shall transmit a facility identification at least once every 30 seconds, and at least six times per minute, throughout the facility's area of coverage.	Efficiency-Critical
3.2.3.0-2	The NAS shall provide visual spatial references.	Efficiency-Critical
3.2.3.0-2.0-1	The NAS shall provide visual references along the extended runway centerline.	Efficiency-Critical
3.2.3.0-2.0-2	The NAS shall provide visual references for vertical descent guidance to runways.	Efficiency-Critical
3.2.3.0-2.0-2.0-1	The NAS shall provide visual approach guidance with a visual range of 4 NM day/night, within 10 degrees of the approach.	Efficiency-Critical
3.2.3.0-2.0-3	The NAS shall provide visual references for runway ends, centerlines, and edges.	Efficiency-Critical
3.2.3.0-2.0-4	The NAS shall provide visual references for airport surface navigation.	Efficiency-Critical

### 3.3 Support Requirements

#### 3.3.1 RMA Requirements

##### 3.3.1.1 Service Availability

Object Number	Requirement	Service Availability
3.3.1.1.0-1	Safety-Critical NAS Services shall have a minimum availability of .99999.	N/A

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.3.1.1.0-2	Efficiency-Critical NAS Services shall have a minimum availability of .9999.	N/A
3.3.1.1.0-3	Essential NAS Services shall have a minimum availability of .999.	N/A
3.3.1.1.0-4	Routine NAS Services shall have a minimum availability of .99.	N/A
3.3.1.1.0-5	The NAS shall restore efficiency-critical services within 6 seconds of failure.	N/A
3.3.1.1.0-6	The NAS shall restore essential services within 10 minutes of failure.	N/A
3.3.1.1.0-7	The NAS shall restore routine services within 72 hours of failure.	N/A

### 3.3.1.2 Service Thread Availability

<b>Object Number</b>	<b>Requirement</b>	<b>Service Availability</b>
3.3.1.2.0-1	Safety-Critical Service threads shall be accomplished by greater than or equal to two service threads.	N/A
3.3.1.2.0-2	Efficiency-Critical Service threads shall have availability equal to or greater than .9999.	N/A
3.3.1.2.0-3	Essential Service threads shall have availability equal to or greater than .999.	N/A
3.3.1.2.0-4	Routine Service threads shall have availability equal to or greater than .99.	N/A
3.3.1.2.0-5	The Mean Time to Restore (MTTR) for non-routine service thread components shall be less than or equal to 0.5 hours.	N/A
3.3.1.2.0-6	The Mean Time Between Failure (MTBF) for efficiency-critical service threads shall be equal to or greater than 50,000 hours.	N/A
3.3.1.2.0-7	The MTBF for essential service threads shall be equal to or greater than 5,000 hours.	N/A
3.3.1.2.0-8	The MTBF for routine service threads shall be equal to or greater than 500 hours.	N/A

### 3.3.2 Communications

NAS communications requirements encompass extensive capabilities for providing voice and data communications throughout the NAS and with external facilities and government agencies. These requirements address the air-ground, ground-ground interfacility and ground-ground intrafacility voice and data communications between aircraft and air traffic control and flight service facilities, between FAA and external facilities, and within NAS facilities.

The inherent availability of each requirement will be commensurate with NAS function being supported (e.g. if the NAS function has a routine availability the supporting communication function will also have a routine availability).

<b>Object Number</b>	<b>Requirement</b>	<b>Inherent Availability</b>
3.3.2.0-1	The NAS shall provide air-ground communications within the NAS.	N/A
3.3.2.0-2	The NAS shall provide ground-to-ground communications.	N/A
3.3.2.0-3	The NAS shall provide communications with stakeholders.	N/A
3.3.2.0-4	The NAS shall configure communication capabilities to support changes in operational conditions.	N/A
3.3.2.0-4.0-1	The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.	N/A
3.3.2.0-4.0-2	The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.	N/A
3.3.2.0-4.0-3	The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.	N/A
3.3.2.0-5	The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.	N/A
3.3.2.0-5.0-1	The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.	N/A
3.3.2.0-5.0-2	The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).	N/A

3.3.2.0-5.0-3	The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.	N/A
3.3.2.0-6	The NAS shall establish emergency communications for providing ATC services.	N/A
3.3.2.0-6.0-1	The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.	N/A
3.3.2.0-7	The NAS shall assure the data integrity of air-ground data communications within the NAS.	N/A
3.3.2.0-8	The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.	N/A
3.3.2.0-9	The NAS shall assure the data integrity of data communications with stakeholders.	N/A

### 3.3.3 Security

The NAS must prevent disclosure to unauthorized persons or processes of information that are either classified in the interest of national security or sensitive because of its operational or administrative nature. Access to information, facilities, and equipment must be controlled.

<b>Object Number</b>	<b>Requirement</b>	<b>Inherent Availability</b>
3.3.3.0-1	The NAS shall control physical access to equipment and facilities.	Essential
3.3.3.0-2	The NAS shall manage access to information.	Essential
3.3.3.0-3	The NAS shall protect against cyber security events.	Essential
3.3.3.0-3.0-1	The NAS shall monitor cyber security information.	Essential
3.3.3.0-3.0-1.0-1	The NAS shall detect cyber security events.	Essential
3.3.3.0-3.0-2	The NAS shall deter cyber security events.	Essential
3.3.3.0-3.0-3	The NAS shall respond to cyber security events.	Essential
3.3.3.0-4	The NAS shall manage security audit logs during all operational states.	Essential

### 3.3.4 Spectrum Management

This section establishes a requirement for frequency and spectrum allocation and management assistance programs. National policy dictates that prior to the procurement of telecommunication systems which involve the use of radio frequencies, the developers must ensure that adequate radio spectrum is available and that harmful interference from such systems will be neither caused to nor received from other authorized users.

<b>Object Number</b>	<b>Requirement</b>	<b>Inherent Availability</b>
3.3.4.0-1	The NAS shall coordinate national spectrum allocation programs.	Routine
3.3.4.0-2	The NAS shall comply with international standards to avoid interference of new systems with existing systems.	Routine
3.3.4.0-3	The NAS shall coordinate international spectrum allocation programs.	Routine

## Appendix A: Design Principles

Design principles are necessary to allow the NAS to evolve more efficiently to yield the intended improvements to the services it provides. Programs should contact their Enterprise Architecture (EA) and ISSO in order to determine which design principles must be followed for systems under development or for technical refreshes. The inherent availability of the requirement will be commensurate with NAS function being supported (e.g. if the NAS function has a routine availability the supporting design principle will also have a routine availability).

<b>Object Number</b>	<b>Requirement</b>	<b>Inherent Availability</b>
4.0-1	The NAS shall validate the accuracy, completeness, and integrity of information inputs.	N/A
4.0-2	The NAS shall integrate local exception event data into enterprise wide situational awareness.	N/A
4.0-3	The NAS shall utilize data environments for the applications of services in different Time horizons.	N/A
4.0-4	The NAS shall apply appropriate performance standards for the applications of services in different time horizons.	N/A
4.0-5	The NAS shall perform mission services within a service oriented architecture environment.	N/A
4.0-5.0-1	The NAS shall provide enterprise-wide net-centric data management.	N/A
4.0-5.0-2	The NAS shall publish information in a standardized format in accordance with FAA Order 1375.1 and the NAS EA Data Reference Model.	N/A
4.0-5.0-3	The NAS shall provide enterprise-wide net-centric data access.	N/A
4.0-5.0-4	The NAS shall perform mission services in accordance with adaptable business rules and processes.	N/A
4.0-5.0-5	The NAS shall apply business rules and processes to implement FAA policies and procedures for real-time adaptation functions.	N/A
4.0-5.0-6	The NAS shall provide application services that can be used by multiple mission services.	N/A

4.0-6	The NAS internal client applications that communicate with public internet servers shall comply with OMB “Transition to IPv6” memorandum.	N/A
4.0-7	The NAS enterprise networks shall comply with OMB “Transition to IPv6” memorandum.	N/A
4.0-8	The NAS shall comply with all applicable FIPS, NIST, FAA, DOT, OMB and other Federal guidelines and industry best practices for Information System Security.	N/A
4.0-9	The NAS shall comply with all directives, orders, and policies within the NAS EA Technical View-1, Standards.	N/A
4.0-10	The NAS shall provide a common enterprise precise time and frequency to all NAS sub-systems requiring a time and/or frequency source.	N/A
4.0-11	The NAS shall provide an enterprise Domain Name System (DNS) service to all NAS sub-systems that require identity and key management services.	N/A
4.0-12	The NAS shall provide enterprise cyber security controls to all NAS sub-systems that require cyber security.	N/A
4.0-13	The NAS shall provide an enterprise external boundary protection infrastructure to all systems requiring external boundary protection.	N/A

## Appendix B: NAS Sub-Systems to Enterprise Requirements Mapping

### BACKGROUND

This document presents National Airspace System (NAS) Requirements Document (RD) requirements mapping to the NAS systems that are currently in operation in the NAS. These are enterprise-level requirements that represent capabilities that have already been implemented. This work is based on the 2012 requirements document (see National Airspace System Requirements Document dated December 2012). The requirements presented in this document serve as the highest-level source of requirements that represent the “As-is” state of NAS at the time these requirements were approved. This is a working document and changes as more systems achieve the “in-service” state and improve NAS functionality over time.

### Documents Layout and Contents

Table 1, presented below, consists of three columns. Column 1 is the Acronym of the listed sub-system. Column 2 is the complete sub-system name. Column 3 contains the requirements that the listed sub-system contributes to in some way. It should be understood that the sub-systems mapped to the requirements may fulfill the requirement completely, or the sub-system may only contribute to requirement. In most cases, sub-systems will only contribute to part of a requirement. The contribution of each system to the requirements is part of the design of the system, and is determined by the program offices.

Dictating which requirements require interfaces by mapping communication systems to them could restrict design. Therefore any requirement that relies on an interface between multiple systems to accomplish is also contributed by the appropriate communication requirements and systems.

Acronym	Sub-System Name	Related Requirements
ACARS	Aircraft Communication and Reporting System	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.3.2.0-1 The NAS shall provide air-ground communications within the NAS. 3.3.2.0-3 The NAS shall provide communications with stakeholders. 3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS. 3.3.2.0-9 The NAS shall assure the data integrity of data communications with

Acronym	Sub-System Name	Related Requirements
		stakeholders.
ACD\VRS	Automatic Call Director / Voice Retrieval System	3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts. 3.1.3.2.0-1.0-2 The NAS shall record operational system information.
ACE-IDS	Automated Surface Observing System Controller Equipment-Information Display System	3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management. 3.1.2.3.0-3.0-3.0-4 The NAS shall disseminate TMIs. 3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.3.0-1.0-1 The NAS shall monitor system status. 3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing. 3.1.3.3.0-1.0-5 The NAS shall detect failures. 3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure. 3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure. 3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure. 3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling. 3.1.3.3.0-5 The NAS shall disseminate system updates. 3.1.1.1.0-2 The NAS shall manage NAS status information. 3.1.1.1.0-2.0-3 The NAS shall process NAS status information. 3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information. 3.1.1.4.0-4 The NAS shall display weather information.
ACES	Adaptation Controlled Environmental System	3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts. 3.1.3.3.0-2.0-2 The NAS shall adjust system parameters. 3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site. 3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site. 3.1.3.3.0-5 The NAS shall disseminate system updates.

Acronym	Sub-System Name	Related Requirements
ADAS	Automated Weather Observing System/Automated Surface Observing System Data Acquisition System	<p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-1 The NAS shall acquire surface weather information.</p> <p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.2.2.0-1.0-2.0-1 The NAS shall acquire airborne weather information within 15 seconds of creation.</p> <p>3.2.2.0-1.0-3 The NAS shall acquire weather advisory information.</p> <p>3.2.2.0-1.0-3.0-1 The NAS shall acquire weather advisories within 15 seconds of creation.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-2.0-2.0-1 The NAS shall update hazardous weather information within 2 minutes of receipt.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-1 The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.</p> <p>3.1.1.4.0-3.0-2 The NAS shall disseminate en route area hazardous weather information to specialists within 2 minutes of detection.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p>
AEFS	Advanced Electronic Flight Strip	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p>

Acronym	Sub-System Name	Related Requirements
AFM	Automated Frequency Manager	<p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p> <p>3.3.4.0-1 The NAS shall coordinate national spectrum allocation programs.</p> <p>3.3.4.0-2 The NAS shall comply with international standards to avoid interference of</p>

Acronym	Sub-System Name	Related Requirements
		<p>new systems with existing systems.</p> <p>3.3.4.0-3 The NAS shall coordinate international spectrum allocation programs.</p>
AFTechNet	The Airway Facilities Technicians Network Portal	<p>3.1.3.1.0-2.0-1 The NAS shall identify current performance shortfalls.</p> <p>3.1.3.1.0-2.0-2 The NAS shall provide the information and resources necessary for strategic demand forecasting.</p> <p>3.1.3.1.0-3 The NAS shall provide the information and resources necessary to assess strategic capacity constraints.</p> <p>3.1.3.1.0-3.0-5 The NAS shall provide the information and resources necessary to assess infrastructure impacts on proposed airspace changes.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p> <p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p>
AFTN	Aeronautical Fixed Telecommunication Network	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>

Acronym	Sub-System Name	Related Requirements
AIDAP	Aeronautical Integrated Data Access portal	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p>
AIPA	Aeronautical Information Production Automation	<p>3.1.3.1.0-4 The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.</p> <p>3.1.3.1.0-4.0-1 The NAS shall provide the information and resources necessary for the design of airspace configurations.</p> <p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p> <p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.3.1.0-4.0-3.0-1.0-1 The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.</p>

Acronym	Sub-System Name	Related Requirements
		3.1.3.2.0-1.0-2 The NAS shall record operational system information.
AISR	Aeronautical Information System Replacement	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p>
ALS	Approach Lighting System	<p>3.2.3.0-2 The NAS shall provide visual spatial references.</p> <p>3.2.3.0-2.0-1 The NAS shall provide visual references along the extended runway centerline.</p> <p>3.2.3.0-2.0-2 The NAS shall provide visual references for vertical descent guidance to runways.</p> <p>3.2.3.0-2.0-2.0-1 The NAS shall provide visual approach guidance with a visual range of 4 NM day/night, within 10 degrees of the approach.</p>
AMCS	Aerospace Medical Certification Subsystem	<p>3.1.3.4.0-1.0-2 The NAS shall manage safety data.</p> <p>3.1.3.4.0-1.0-2.0-1 The NAS shall integrate safety data.</p> <p>3.1.3.4.0-1.0-2.0-2 The NAS shall accept requests for safety data.</p> <p>3.1.3.4.0-1.0-2.0-3 The NAS shall respond to requests for safety data.</p> <p>3.1.3.4.0-1.0-2.0-4 The NAS shall disseminate response to safety data request.</p>
APIMS	Arrival Procedure Information Management System	<p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p>

Acronym	Sub-System Name	Related Requirements
ARBAC	ARTCC Building Automation Controls	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for</p>

Acronym	Sub-System Name	Related Requirements
		preventative maintenance scheduling.
ARFAS	ARTCC Fire Alarm System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p>

Acronym	Sub-System Name	Related Requirements
		3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.
ARMT	Airport Resource Management Tool	3.1.3.2.0-1.0-1 The NAS shall manage operational metrics. 3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.2.0-1.0-3 The NAS shall archive operational system information.
ARSR-1	Air Route Surveillance Radar [Long-range radar] Facilities -1	3.2.1.0-1 The NAS shall acquire surveillance information 3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information. 3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM. 3.2.2.0-1 The NAS shall acquire weather information. 3.1.1.3.0-1 The NAS shall process surveillance information. 3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets. 3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds. 3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site. 3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site. 3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds. 3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds. 3.1.1.3.0-1.0-2 The NAS shall generate flight paths 3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds. 3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13

Acronym	Sub-System Name	Related Requirements
		<p>seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
ARSR-2	Air Route Surveillance Radar	<p>3.2.1.0-1 The NAS shall acquire surveillance information</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p>

Acronym	Sub-System Name	Related Requirements
	[Long-range radar]-2	<p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
ARSR-3	Air Route Surveillance Radar [Long-range radar] -3	<p>3.2.1.0-1 The NAS shall acquire surveillance information</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13</p>

Acronym	Sub-System Name	Related Requirements
		<p>seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
ARSR-4	Air Route Surveillance Radar [Long-range radar] -4	<p>3.2.1.0-1 The NAS shall acquire surveillance information</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an</p>

Acronym	Sub-System Name	Related Requirements
		<p>earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees</p>

Acronym	Sub-System Name	Related Requirements
		<p>(99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p>
ASCCL	Airport Signal and Control Cable Loop	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>
ASDE-3	Airport Surface Detection Equipment-3	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1.0-14 The NAS shall track aircraft and vehicles on the airport surface.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-13.0-3 The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.2.1.0-1.0-2.0-2 The NAS shall detect aircraft and vehicles on the airport surface with an area radar cross section of greater than or equal to 3 square meters.</p>
ASDE-X	Airport Surface Detection Equipment - Model X (Airport Ground Surveillance)	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1.0-14 The NAS shall track aircraft and vehicles on the airport surface.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-13.0-3 The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1.0-2.0-2 The NAS shall detect aircraft and vehicles on the airport surface with an area radar cross section of greater than or equal to 3 square meters.</p>

Acronym	Sub-System Name	Related Requirements
ASI	Altimeter Setting Indicator	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-1 The NAS shall acquire surface weather information.</p> <p>3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p>
ASIAS	Aviation Safety Information Analysis and Sharing	<p>3.1.3.4.0-1 The NAS shall provide the information and resources necessary to manage the safe provision of Air Traffic Services.</p> <p>3.1.3.4.0-1.0-1 The NAS shall provide the information and resources necessary to operate a Safety Management System (SMS) in accordance with International Civil Aviation Organization (ICAO) Annex 11, FAA Order 1100.161, and any other pertinent FAA orders, policies, guidance documents, and standards that govern the safe provision of Air Traffic Services.</p> <p>3.1.3.4.0-1.0-1.0-1 The NAS shall provide the information and resources necessary to develop metrics to monitor levels of safety.</p> <p>3.1.3.4.0-1.0-1.0-2 The NAS shall monitor conformance to safety metrics.</p> <p>3.1.3.4.0-1.0-1.0-3 The NAS shall analyze safety trends.</p> <p>3.1.3.4.0-1.0-1.0-4 The NAS shall provide the information and resources necessary to determine operational risks.</p> <p>3.1.3.4.0-1.0-1.0-5 The NAS shall provide the information and resources necessary to mitigate operational risks.</p> <p>3.1.3.4.0-1.0-2 The NAS shall manage safety data.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.4.0-1.0-2.0-1 The NAS shall integrate safety data.</p> <p>3.1.3.4.0-1.0-2.0-2 The NAS shall accept requests for safety data.</p> <p>3.1.3.4.0-1.0-2.0-3 The NAS shall respond to requests for safety data.</p> <p>3.1.3.4.0-1.0-2.0-4 The NAS shall disseminate response to safety data request.</p> <p>3.1.3.4.0-1.0-3 The NAS shall conduct Safety Risk Management (SRM) on all proposed NAS changes.</p>
ASOS	Automated Surface Observing System	<p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-1 The NAS shall acquire surface weather information.</p> <p>3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.</p> <p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.2.2.0-1.0-3 The NAS shall acquire weather advisory information.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-1 The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p>
ASPM	Aviation System Performance Metrics	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a</p>

Acronym	Sub-System Name	Related Requirements
		<p>maximum of 10 seconds.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-2.0-2.0-2 The NAS shall update terminal area hazardous flight planning weather information within one minute of receiving an update.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-1 The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.</p> <p>3.1.1.4.0-3.0-3 The NAS shall respond to weather information request with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-4 The NAS shall respond to weather information request within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-5 The NAS shall respond to weather information request with a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p>
ASR-11	Air Surveillance Radar - 11	<p>3.2.1.0-1.0-1 The NAS shall acquire dependent surveillance information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft</p>

Acronym	Sub-System Name	Related Requirements
		<p>acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
ASR-8	Air Surveillance Radar - 8	<p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.2.1.0-1.0-2.0-2 The NAS shall detect aircraft and vehicles on the airport surface with an area radar cross section of greater than or equal to 3 square meters.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
ASR-9	Air Surveillance Radar - 9	<p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.2.1.0-1.0-2.0-2 The NAS shall detect aircraft and vehicles on the airport surface with an area radar cross section of greater than or equal to 3 square meters.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
ASSC	Airport Surface Surveillance Capability	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.2.1.0-1.0-1 The NAS shall acquire dependent surveillance information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1.0-13.0-3 The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.</p> <p>3.1.1.3.0-1.0-1.0-14 The NAS shall track aircraft and vehicles on the airport surface.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air</p>

Acronym	Sub-System Name	Related Requirements
		<p>traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p>
ASTI	Alaska Satellite Telecommunications Infrastructure	<p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>
ATCBI-5	Air Traffic Control Beacon Interrogator - 5	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-3 The NAS shall acquire cooperative surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-3 The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
ATCBI-6	Air Traffic Control Beacon Interrogator-6	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.2.1.0-1.0-1 The NAS shall acquire dependent surveillance information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and</p>

Acronym	Sub-System Name	Related Requirements
		<p>including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
ATCSCC (NDS)	Air Traffic Control System Command Center (Notice to Airmen Distribution System)	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds</p>

Acronym	Sub-System Name	Related Requirements
		<p>of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p>
ATIS	Automatic Terminal Information Systems	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.1.1.4.0-1.0-2 The NAS shall forecast surface weather.</p>

Acronym	Sub-System Name	Related Requirements
ATM	Air Traffic Management	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-2 The NAS shall perform operational analysis.</p> <p>3.1.3.2.0-2.0-1 The NAS shall analyze operational performance information.</p> <p>3.1.3.2.0-2.0-2 The NAS shall analyze operational trends.</p> <p>3.1.3.2.0-2.0-4 The NAS shall analyze environmental impacts.</p> <p>3.1.3.2.0-2.0-5 The NAS shall analyze cyber security event logs</p>
ATOP	Advanced Technologies and Oceanic Procedures	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration.</p> <p>3.1.2.3.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-1 The NAS shall predict congestion.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than</p>

Acronym	Sub-System Name	Related Requirements
		<p>or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an</p>

Acronym	Sub-System Name	Related Requirements
		earth tangential plane at the sensor site.
ATTV	Automated Text-To-Voice - StarCaster	3.3.2.0-1 The NAS shall provide air-ground communications within the NAS. 3.3.2.0-2 The NAS shall provide ground-to-ground communications. 3.3.2.0-3 The NAS shall provide communications with stakeholders. 3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS. 3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS. 3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.
AWIPS	Advanced Weather Interactive Processing System	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute. 3.2.2.0-1.0-2 The NAS shall acquire weather aloft information. 3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-3.0-10 The NAS shall respond to hazardous weather information requests for the continental US within 5 seconds (99th percentile). 3.1.1.4.0-4 The NAS shall display weather information. 3.1.1.4.0-5 The NAS shall maintain weather information.
AWIS	Airport Weather Information System	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information.

Acronym	Sub-System Name	Related Requirements
AWOS	Automated Weather Observing System	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information.
AWSS	Automated Weather Sensors Systems	3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-3.0-1 The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection. 3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.2.2.0-1.0-2 The NAS shall acquire weather aloft information. 3.2.2.0-1.0-3 The NAS shall acquire weather advisory information.
BCS	Buoy Communication System	3.3.2.0-1 The NAS shall provide air-ground communications within the NAS. 3.3.2.0-2 The NAS shall provide ground-to-ground communications. 3.3.2.0-3 The NAS shall provide communications with stakeholders. 3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS. 3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS. 3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.
BUEC	Backup Emergency Communications	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.3.2.0-1 The NAS shall provide air-ground communications within the NAS. 3.3.2.0-2 The NAS shall provide ground-to-ground communications.

Acronym	Sub-System Name	Related Requirements
		<p>3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p>
BWM	Bandwidth Manager	<p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>
CAPER	CAASD Analysis Platform for En Route	<p>3.1.2.3.0-2 The NAS shall assess traffic flow.</p> <p>3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information.</p> <p>3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints.</p> <p>3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints.</p> <p>3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status.</p> <p>3.1.2.3.0-2.0-4 The NAS shall evaluate route status.</p> <p>3.1.2.3.0-2.0-5 The NAS shall predict delays.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.3.0-2.0-7 The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.</p> <p>3.1.2.3.0-3 The NAS shall manage operational capacity.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-4.0-3 The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance.</p> <p>3.1.2.4.0-4.0-4 The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-1 The NAS shall predict congestion.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p>
CARSR	Common Air Route Surveillance Radar	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.2.1.0-1.0-2.0-1 The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including</p>

Acronym	Sub-System Name	Related Requirements
		<p>an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p>
CARTS	Common Automated Radar Terminal System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position,</p>

Acronym	Sub-System Name	Related Requirements
		<p>altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in terminal areas at least 30 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-1 The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-2 The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation</p>

Acronym	Sub-System Name	Related Requirements
		<p>violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5.0-2 The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-3 The NAS shall display recommended avoidance maneuvers within 1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-4 The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-5 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.</p> <p>3.1.2.1.0-5.0-6 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3</p>

Acronym	Sub-System Name	Related Requirements
		<p>seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-6.0-2 The NAS shall display alternate route clearances for aircraft in non-compliance with a clearance within a maximum of 3 seconds of detection of the non-compliance.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-4 The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-5 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-6 The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-7 The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-8 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.</p> <p>3.1.1.3.0-1.0-1.0-9 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-10 The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-11 The NAS shall display position of aircraft operating within an ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-12 The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-1.0-15 The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-5 The NAS shall transfer control responsibilities.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-1 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.3.0-1.0-7.0-2 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists within 5 seconds (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-3 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-6 The NAS shall display identification information received from</p>

Acronym	Sub-System Name	Related Requirements
		aircraft in remote areas within 15 seconds of receipt. 3.1.1.3.0-1.0-7.0-7 The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt. 3.1.1.3.0-1.0-7.0-8 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile). 3.1.1.3.0-1.0-7.0-9 The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source. 3.1.1.3.0-1.0-7.0-10 The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source. 3.1.1.3.0-1.0-7.0-11 The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight. 3.1.1.3.0-1.0-7.0-12 The NAS shall display requested aircraft speed within plus or minus 20 knots or less for an aircraft in constant steady-level flight.
CCS	Conference Control System	3.3.2.0-2 The NAS shall provide ground-to-ground communications.
CCSP	Commercial Communications Svc Provider	3.3.2.0-2 The NAS shall provide ground-to-ground communications. 3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.
CD-2	Air Route Surveillance Radar Model Common Digitizer-2	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.2.1.0-1 The NAS shall acquire surveillance information. 3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information. 3.1.1.3.0-1 The NAS shall process surveillance information. 3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
CIWS	Corridor Integrated Weather System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-1.0-1 The NAS shall analyze the impact of weather on operational capacity.</p> <p>3.1.1.4.0-1.0-2 The NAS shall forecast surface weather.</p> <p>3.1.1.4.0-1.0-2.0-1 The NAS shall forecast hazardous surface weather phenomenon in the terminal environment greater than or equal to 1 minute prior to the occurrence of the phenomenon.</p> <p>3.1.1.4.0-1.0-3 The NAS shall forecast weather aloft.</p> <p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5</p>

Acronym	Sub-System Name	Related Requirements
		<p>seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p> <p>3.1.1.4.0-5.0-1 The NAS shall maintain airspace weather advisories.</p> <p>3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.</p>
CSS	Common Support Services	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>
CTAS	Center TRACON Automation System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position,</p>

Acronym	Sub-System Name	Related Requirements
		<p>altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
CTS	Coded Time Source	<p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p>
CV-4400	Converter (converts ASR to equivalent ARSR for En Route)	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled</p>

Acronym	Sub-System Name	Related Requirements
		<p>airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
DASI	Digital Altimeter Setting Indicator	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p>
DataComm	Data Communications	<p>3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.</p> <p>3.1.2.4.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for short term capacity management.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>
DCS	Display and Coordination System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p>
DINS	U.S. Department of Defense (Defense Internet NOTAM Services)	<p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p>
DLP	Data Link Processor	<p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>
DME	Distance Measuring Equipment	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.2.3.0-1.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in en route airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p> <p>3.2.3.0-1.0-3.0-1 The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal.</p> <p>3.2.3.0-1.0-3.0-6 The NAS shall provide a distance signal along electronic precision approach paths within plus or minus 0.1 NM.</p> <p>3.2.3.0-1.0-5 The NAS shall transmit facility identification information.</p> <p>3.2.3.0-1.0-5.0-1 The NAS shall transmit a facility identification at least once every 30 seconds, and at least six times per minute, throughout the facility's area of coverage.</p>
DMN	Data Multiplexing Network	<p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>
DOTS	Dynamic Ocean Tracking System	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.3.0-2.0-7 The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.</p> <p>3.1.2.3.0-3.0-2 The NAS shall manage sequencing plans.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.3.0-3.0-2.0-1 The NAS shall establish sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-1 The NAS shall establish flow sequencing plans for terminal airspace greater than or equal to two hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-2 The NAS shall establish flow sequencing plans for en route airspace greater than or equal to eight hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-2 The NAS shall implement sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-2.0-1 The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.3.0-3.0-2.0-2.0-2 The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).</p> <p>3.1.2.3.0-3.0-2.0-2.0-3 The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.</p> <p>3.1.2.3.0-3.0-2.0-3 The NAS shall update sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-4 The NAS shall disseminate sequencing plans.</p> <p>3.1.2.3.0-4 The NAS shall generate flow advisories.</p> <p>3.1.2.4.0-2.0-2 The NAS shall manage altitude reservations.</p> <p>3.1.2.4.0-2.0-2.0-1 The NAS shall respond to altitude reservation requests within a maximum of 10 seconds.</p> <p>3.1.2.4.0-2.0-3 The NAS shall manage airport reservations.</p> <p>3.1.2.4.0-2.0-3.0-1 The NAS shall respond to airport reservation requests within a maximum 6 seconds.</p> <p>3.1.2.4.0-2.0-5 The NAS shall respond to airspace restriction requests.</p>
DPIMS	Departure Procedure Information Management System	<p>3.1.3.1.0-4 The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.</p> <p>3.1.3.1.0-4.0-1 The NAS shall provide the information and resources necessary for the design of airspace configurations.</p> <p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to</p>

Acronym	Sub-System Name	Related Requirements
		<p>within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p> <p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.3.1.0-4.0-3.0-1.0-1 The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
DSP	Departure Spacing Program	<p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration.</p> <p>3.1.2.3.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.</p> <p>3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.</p> <p>3.1.2.3.0-2 The NAS shall assess traffic flow.</p> <p>3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints.</p> <p>3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status.</p> <p>3.1.2.3.0-2.0-4 The NAS shall evaluate route status.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.3.0-3.0-2.0-2 The NAS shall implement sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-2.0-1 The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.3.0-3.0-2.0-2.0-2 The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).</p> <p>3.1.2.3.0-3.0-2.0-2.0-3 The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.</p> <p>3.1.2.4.0-1 The NAS shall provide the information and resources necessary for short term capacity management collaboration.</p> <p>3.1.2.4.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for short term capacity management.</p> <p>3.1.2.4.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for short term capacity management.</p> <p>3.1.2.4.0-2 The NAS shall manage airspace restrictions.</p> <p>3.1.2.4.0-2.0-1 The NAS shall manage special activity airspace (SAA).</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-6 The NAS shall manage airspace capacity.</p> <p>3.1.2.4.0-6.0-1 The NAS shall manage airspace status.</p> <p>3.1.2.4.0-7 The NAS shall generate airspace advisories.</p>
DSR	Display System Replacement	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.3.0-2.0-7 The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.</p> <p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p> <p>3.1.1.3.0-1.0-1.0-4 The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-5 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-6 The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-7 The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-8 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.</p> <p>3.1.1.3.0-1.0-1.0-9 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-10 The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-11 The NAS shall display position of aircraft operating within an</p>

Acronym	Sub-System Name	Related Requirements
		<p>ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-12 The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-5 The NAS shall display en route area surveillance data to specialists within a maximum of 3.0 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-6 The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-7 The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-8 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-9 The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-10 The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source.</p>

Acronym	Sub-System Name	Related Requirements
		3.1.1.3.0-1.0-7.0-11 The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight.
DUATS	FAA's Direct User Access Terminal	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.1.4.0-1.0-3.0-1 The NAS shall update storm cell predictions every 5 minutes for flight planning.</p> <p>3.1.1.4.0-2.0-1.0-1 The NAS shall update en route weather conditions aloft every 5 minutes for flight planning.</p> <p>3.1.1.4.0-2.0-1.0-2 The NAS shall update terminal weather conditions aloft every 5 minutes for flight planning.</p> <p>3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration.</p> <p>3.1.2.3.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.</p> <p>3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.</p> <p>3.1.2.3.0-4 The NAS shall generate flow advisories.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5</p>

Acronym	Sub-System Name	Related Requirements
		<p>seconds (99th percentile).</p> <p>3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-1 The NAS shall acquire surface weather information.</p> <p>3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-1.0-3 The NAS shall forecast weather aloft.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p>
DVC	DBRITE Video Compression	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p>
DVRS	Digital Voice Recorder System (Air	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p>

Acronym	Sub-System Name	Related Requirements
	Route Traffic Control Center Terminal Radar Approach Control Air Traffic Control Tower Automated Flight Service Station)	
EBUS	En Route backup surveillance system	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation</p>

Acronym	Sub-System Name	Related Requirements
		<p>assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-2 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-1 The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-2 The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation</p>

Acronym	Sub-System Name	Related Requirements
		<p>violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees</p>

Acronym	Sub-System Name	Related Requirements
		<p>relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p>
ECG	En Route Communications Gateway	<p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation</p>

Acronym	Sub-System Name	Related Requirements
		<p>assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-2 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-3 The NAS shall alert participating aircraft to predicted conflicts with Special Use Airspace within 10 seconds of making the prediction.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-1 The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-2 The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-4 The NAS shall alert appropriately equipped users to the collision danger within 10 seconds after the prediction is made.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5.0-2 The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-3 The NAS shall display recommended avoidance maneuvers within 1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-4 The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated</p>

Acronym	Sub-System Name	Related Requirements
		<p>with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p>
EDDS	En Route Data Distribution System	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p> <p>3.3.3.0-2 The NAS shall manage access to information.</p> <p>3.3.3.0-3 The NAS shall protect against cyber security events.</p> <p>3.3.3.0-4 The NAS shall manage security audit logs during all operational states.</p>
EFSTS	Electronic Flight	<p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p>

Acronym	Sub-System Name	Related Requirements
	Strip Transfer System	
EM	Event Manager	<p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p>
EPIMS	Enroute Procedure Information Management System	<p>3.1.3.1.0-4 The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.</p> <p>3.1.3.1.0-4.0-1 The NAS shall provide the information and resources necessary for the design of airspace configurations.</p> <p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p> <p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.3.1.0-4.0-3.0-1.0-1 The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>

Acronym	Sub-System Name	Related Requirements
ERAM	En Route Automation Modernization	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-2 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5.0-2 The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-3 The NAS shall display recommended avoidance maneuvers within 1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation</p>

Acronym	Sub-System Name	Related Requirements
		<p>violation.</p> <p>3.1.2.1.0-5.0-4 The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-5 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.</p> <p>3.1.2.1.0-5.0-6 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2 The NAS shall assess traffic flow.</p> <p>3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information.</p> <p>3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints.</p> <p>3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints.</p> <p>3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status.</p> <p>3.1.2.3.0-2.0-4 The NAS shall evaluate route status.</p> <p>3.1.2.3.0-2.0-5 The NAS shall predict delays.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.3.0-3.0-3.0-2 The NAS shall implement TMIs.</p> <p>3.1.2.4.0-2.0-2 The NAS shall manage altitude reservations.</p> <p>3.1.2.4.0-2.0-2.0-1 The NAS shall respond to altitude reservation requests within a maximum of 10 seconds.</p> <p>3.1.2.4.0-2.0-3 The NAS shall manage airport reservations.</p> <p>3.1.2.4.0-2.0-3.0-1 The NAS shall respond to airport reservation requests within a maximum 6 seconds.</p> <p>3.1.2.4.0-2.0-5 The NAS shall respond to airspace restriction requests.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace</p>

Acronym	Sub-System Name	Related Requirements
		<p>capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-4.0-3 The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance.</p> <p>3.1.2.4.0-4.0-4 The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-1 The NAS shall predict congestion.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p> <p>3.1.2.4.0-6 The NAS shall manage airspace capacity.</p> <p>3.1.2.4.0-6.0-1 The NAS shall manage airspace status.</p> <p>3.1.2.4.0-6.0-2 The NAS shall manage route status.</p> <p>3.1.2.4.0-6.0-3 The NAS shall coordinate planned outages.</p> <p>3.1.2.4.0-7 The NAS shall generate airspace advisories.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-1.0-7 The NAS shall acquire cyber security event logs.</p> <p>3.1.3.2.0-3 The NAS shall provide the information and resources necessary for</p>

Acronym	Sub-System Name	Related Requirements
		<p>search and rescue operations.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a</p>

Acronym	Sub-System Name	Related Requirements
		<p>maximum of 10 seconds.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-4 The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-5 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-6 The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-7 The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-8 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.</p> <p>3.1.1.3.0-1.0-1.0-9 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-10 The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-11 The NAS shall display position of aircraft operating within an</p>

Acronym	Sub-System Name	Related Requirements
		<p>ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-12 The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-1.0-15 The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-5 The NAS shall transfer control responsibilities.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-1 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.3.0-1.0-7.0-2 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists within 5 seconds (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-3 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-7.0-5 The NAS shall display en route area surveillance data to specialists within a maximum of 3.0 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-6 The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-7 The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-8 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-9 The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-10 The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-11 The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight.</p> <p>3.1.1.3.0-1.0-7.0-12 The NAS shall display requested aircraft speed within plus or minus 20 knots or less for an aircraft in constant steady-level flight.</p>
ERIDS	En Route Information Display System	<p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p>
ERMS	Environmental Remote Monitoring Subsystem	<p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system</p>

Acronym	Sub-System Name	Related Requirements
		changes within a maximum time of 16 seconds.
ETAP	Enroute Track Analysis Program	3.1.2.3.0-2 The NAS shall assess traffic flow. 3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information. 3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints. 3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints. 3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status. 3.1.2.3.0-2.0-4 The NAS shall evaluate route status. 3.1.2.3.0-2.0-5 The NAS shall predict delays. 3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance. 3.1.2.4.0-4 The NAS shall determine operational demand. 3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information. 3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand. 3.1.2.4.0-5.0-2 The NAS shall detect congested areas.
ETARS	En-Route Tracking Automatic Radar Service	3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.
ETR	Emergency Transceiver Replacement	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.3.2.0-1 The NAS shall provide air-ground communications within the NAS. 3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.
FBWTG	FAA Bulk Weather Telecommunications Gateway	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.

Acronym	Sub-System Name	Related Requirements
FDAT	Flight data information between ARTCCs and terminal facilities	<p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
FDIO	Flight Data Input/Output	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or</p>

Acronym	Sub-System Name	Related Requirements
		<p>equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-3 The NAS shall acquire weather advisory information.</p>
FDIOC	Flight Data Input/Output System Control	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p>

Acronym	Sub-System Name	Related Requirements
		3.1.3.2.0-1.0-2 The NAS shall record operational system information.
FDIOR	Flight Data Input/Output System Remote	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th</p>

Acronym	Sub-System Name	Related Requirements
		<p>percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
FDMSAW	Fully Digital Minimum Safe Altitude Warning System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-1 The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-2 The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-5 The NAS shall alert users to separation conflicts with obstructions within 10 seconds of making the prediction.</p> <p>3.1.2.1.0-3.0-3.0-6 The NAS shall alert users of aircraft-terrain separation conflicts in terminal airspace at least 30 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-7 The NAS shall alert users of aircraft-obstacle separation conflicts in terminal airspace at least 30 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-8 The NAS shall alert users of aircraft-terrain separation conflicts in en route airspace at least 65 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-9 The NAS shall alert users of aircraft-obstacle separation conflicts in en route airspace at least 65 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p>
FDPS	Flight Data	<p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p>

Acronym	Sub-System Name	Related Requirements
	Processing System	<p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.3.0-3.0-3.0-2 The NAS shall implement TMIs.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.2.4.0-2.0-2 The NAS shall manage altitude reservations.</p> <p>3.1.2.4.0-2.0-2.0-1 The NAS shall respond to altitude reservation requests within a maximum of 10 seconds.</p> <p>3.1.2.4.0-2.0-3 The NAS shall manage airport reservations.</p> <p>3.1.2.4.0-2.0-3.0-1 The NAS shall respond to airport reservation requests within a maximum 6 seconds.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p>
FDRS	Flight Data Remoting System	<p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>

Acronym	Sub-System Name	Related Requirements
FNS	Federal NOTAM System	<p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p>
FOTS	Fiber Optic Transmission System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>
FPS-20	Fixed Position Surveillance (U.S. Air Force radar)-20	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13</p>

Acronym	Sub-System Name	Related Requirements
		<p>seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
FPS-60	Fixed Position Surveillance (U.S. Air Force radar)-60	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>
FS-21	Flight Service 21	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information</p>

Acronym	Sub-System Name	Related Requirements
		<p>requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p>
FTI	FAA Telecommunications Infrastructure	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p> <p>3.3.3.0-2 The NAS shall manage access to information.</p> <p>3.3.3.0-3 The NAS shall protect against cyber security events.</p> <p>3.3.3.0-3.0-1 The NAS shall monitor cyber security information.</p> <p>3.3.3.0-3.0-1.0-1 The NAS shall detect cyber security events.</p> <p>3.3.3.0-3.0-2 The NAS shall deter cyber security events.</p> <p>3.3.3.0-3.0-3 The NAS shall respond to cyber security events.</p> <p>3.3.3.0-4 The NAS shall manage security audit logs during all operational states.</p>
GPS	Global Positioning System	<p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a</p>

Acronym	Sub-System Name	Related Requirements
		maximum of 10 seconds. 3.1.1.2.0-5 The NAS shall validate flight information. 3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan. 3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds. 3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile). 3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds. 3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds. 3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile). 3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds. 3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds. 3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile). 3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds. 3.1.1.2.0-6 The NAS shall monitor aircraft status. 3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances. 3.1.1.2.0-7 The NAS shall close flight plans.
GS	Glide Slope	3.2.3.0-1 The NAS shall provide electronic spatial references. 3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to

Acronym	Sub-System Name	Related Requirements
		<p>determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p> <p>3.2.3.0-1.0-3.0-1 The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal.</p> <p>3.2.3.0-1.0-3.0-5 The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta.</p>
HCS	Host Computer System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use</p>

Acronym	Sub-System Name	Related Requirements
		<p>airspace within 80 seconds of the actual violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-2 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5.0-2 The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-3 The NAS shall display recommended avoidance maneuvers within</p>

Acronym	Sub-System Name	Related Requirements
		<p>1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-4 The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-5 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.</p> <p>3.1.2.1.0-5.0-6 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.3.0-3.0-3.0-2 The NAS shall implement TMIs.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-4 The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-5 The NAS shall display the position of aircraft in terminal</p>

Acronym	Sub-System Name	Related Requirements
		<p>environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-6 The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-7 The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-8 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.</p> <p>3.1.1.3.0-1.0-1.0-9 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-10 The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-11 The NAS shall display position of aircraft operating within an ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-12 The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p>
HCVR	High Capacity Voice Recorder System	3.1.3.2.0-1.0-4 The NAS shall record voice communications

Acronym	Sub-System Name	Related Requirements
HNL	Host Interface Device NAS LAN	3.3.2.0-2 The NAS shall provide ground-to-ground communications.
ICE-MAN	Integrated Computing Environment Mainframe and Network (ICE-MAN)	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-1.0-3 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure</p>

Acronym	Sub-System Name	Related Requirements
		<p>affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-3 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
ICMS	Integrated Control and Monitoring System	<p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p>

Acronym	Sub-System Name	Related Requirements
ICSS	Integrated Communication Switching System	3.3.2.0-2 The NAS shall provide ground-to-ground communications.
IDAT	Host to Host Interfacility Data	3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.
IDS-4	Information Display System-4	<p>3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.</p> <p>3.1.2.3.0-3.0-3.0-4 The NAS shall disseminate TMIs.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p>
IFPA	Instrument Approach Procedures	3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.

Acronym	Sub-System Name	Related Requirements
	Automation	
IFST	International Flight Service Transmitter Station	<p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories.</p>
ILS	Instrument Landing System	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p> <p>3.2.3.0-1.0-3.0-1 The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal.</p> <p>3.2.3.0-1.0-3.0-2 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 35 feet for aircraft flying Category 1 approaches.</p> <p>3.2.3.0-1.0-3.0-3 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 25 feet for aircraft flying Category 2 approaches.</p> <p>3.2.3.0-1.0-3.0-4 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 10 feet for aircraft flying Category 3 approaches.</p> <p>3.2.3.0-1.0-3.0-5 The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta.</p>
IM	Inner 75 MHZ Marker	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p>

Acronym	Sub-System Name	Related Requirements
ITWS	Integrated Terminal Weather System	<p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.1.1.4.0-1.0-2 The NAS shall forecast surface weather.</p> <p>3.1.1.4.0-1.0-2.0-1 The NAS shall forecast hazardous surface weather phenomenon in the terminal environment greater than or equal to 1 minute prior to the occurrence of the phenomenon.</p> <p>3.1.1.4.0-1.0-3 The NAS shall forecast weather aloft.</p> <p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p> <p>3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.</p>
JAWS	Juneau Airport Wind System	<p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.1.1.4.0-1 The NAS shall analyze weather information.</p> <p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p> <p>3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.</p>
LAAS	Local Area Augmentation System	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-2 The NAS shall provide electronic signals to enable Required</p>

Acronym	Sub-System Name	Related Requirements
		<p>Navigation Performance.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p> <p>3.2.3.0-1.0-3.0-1 The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal.</p> <p>3.2.3.0-1.0-3.0-2 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 35 feet for aircraft flying Category 1 approaches.</p> <p>3.2.3.0-1.0-3.0-3 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 25 feet for aircraft flying Category 2 approaches.</p> <p>3.2.3.0-1.0-3.0-4 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 10 feet for aircraft flying Category 3 approaches.</p> <p>3.2.3.0-1.0-3.0-5 The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta.</p> <p>3.2.3.0-1.0-3.0-6 The NAS shall provide a distance signal along electronic precision approach paths within plus or minus 0.1 NM.</p> <p>3.2.3.0-1.0-4 The NAS shall provide electronic signals that enable aircraft to determine their position on the airport surface.</p>
LCGS	Low Cost Surface Surveillance	<p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1.0-14 The NAS shall track aircraft and vehicles on the airport surface.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>

Acronym	Sub-System Name	Related Requirements
LDIN	Lead in (From Approach Lighting System)	3.2.3.0-2 The NAS shall provide visual spatial references. 3.2.3.0-2.0-1 The NAS shall provide visual references along the extended runway centerline.
LLWAS	Low Level Wind Shear Alert System	3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information.
LMM	Locator middle marker	3.2.3.0-1 The NAS shall provide electronic spatial references.
LOC	Localizer (Instrument Landing System)	3.2.3.0-1 The NAS shall provide electronic spatial references. 3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace. 3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace. 3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations. 3.2.3.0-1.0-3.0-1 The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal. 3.2.3.0-1.0-3.0-2 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 35 feet for aircraft flying Category 1 approaches. 3.2.3.0-1.0-3.0-3 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 25 feet for aircraft flying Category 2 approaches. 3.2.3.0-1.0-3.0-4 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 10 feet for aircraft flying Category 3 approaches. 3.2.3.0-1.0-3.0-7 The NAS shall provide lateral guidance to the runway from line-of-

Acronym	Sub-System Name	Related Requirements
		site to a designated reference point up to an altitude of 3000 feet and out to a maximum of 30 miles from the reference point for non-precision approaches.
LOM	Compass Locator at Outer Marker	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p>
MASS	Maintenance Automation System Software	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
MB	Marker Beacon	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p>
MDR	Multi-Mode Digital Radios (MDR)	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>
MDS	Master Demarcation System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>
MDT	Maintenance Data Terminal	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
MEARTS	Micro En Route Automated Radar Terminal System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position,</p>

Acronym	Sub-System Name	Related Requirements
		<p>altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-2 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5.0-2 The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-3 The NAS shall display recommended avoidance maneuvers within 1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-4 The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-5 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.</p> <p>3.1.2.1.0-5.0-6 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation</p>

Acronym	Sub-System Name	Related Requirements
		<p>violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.2.3.0-2 The NAS shall assess traffic flow.</p> <p>3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information.</p> <p>3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints.</p> <p>3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints.</p> <p>3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status.</p> <p>3.1.2.3.0-2.0-4 The NAS shall evaluate route status.</p> <p>3.1.2.3.0-2.0-5 The NAS shall predict delays.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.3.0-3.0-3.0-2 The NAS shall implement TMIs.</p> <p>3.1.2.4.0-2.0-2 The NAS shall manage altitude reservations.</p> <p>3.1.2.4.0-2.0-2.0-1 The NAS shall respond to altitude reservation requests within a maximum of 10 seconds.</p> <p>3.1.2.4.0-2.0-3 The NAS shall manage airport reservations.</p> <p>3.1.2.4.0-2.0-3.0-1 The NAS shall respond to airport reservation requests within a maximum 6 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.4.0-2.0-5 The NAS shall respond to airspace restriction requests.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-4.0-3 The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance.</p> <p>3.1.2.4.0-4.0-4 The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-1 The NAS shall predict congestion.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p> <p>3.1.2.4.0-6 The NAS shall manage airspace capacity.</p> <p>3.1.2.4.0-6.0-1 The NAS shall manage airspace status.</p> <p>3.1.2.4.0-6.0-2 The NAS shall manage route status.</p> <p>3.1.2.4.0-6.0-3 The NAS shall coordinate planned outages.</p> <p>3.1.2.4.0-7 The NAS shall generate airspace advisories.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-1.0-7 The NAS shall acquire cyber security event logs.</p> <p>3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-4 The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-5 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-6 The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-7 The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-8 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.</p> <p>3.1.1.3.0-1.0-1.0-9 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-10 The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-11 The NAS shall display position of aircraft operating within an ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-12 The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.</p> <p>3.1.1.3.0-1.0-1.0-15 The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an</p>

Acronym	Sub-System Name	Related Requirements
		<p>ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-5 The NAS shall transfer control responsibilities.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-1 The NAS shall respond to current aircraft position, altitude, and</p>

Acronym	Sub-System Name	Related Requirements
		<p>speed requests from specialists with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.3.0-1.0-7.0-2 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists within 5 seconds (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-3 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-5 The NAS shall display en route area surveillance data to specialists within a maximum of 3.0 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-6 The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-7 The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-8 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-9 The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-10 The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-11 The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight.</p> <p>3.1.1.3.0-1.0-7.0-12 The NAS shall display requested aircraft speed within plus or minus 20 knots or less for an aircraft in constant steady-level flight.</p>
MLS	Microwave Landing	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to</p>

Acronym	Sub-System Name	Related Requirements
	System	<p>determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p> <p>3.2.3.0-1.0-3.0-2 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 35 feet for aircraft flying Category 1 approaches.</p> <p>3.2.3.0-1.0-3.0-3 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 25 feet for aircraft flying Category 2 approaches.</p> <p>3.2.3.0-1.0-3.0-4 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 10 feet for aircraft flying Category 3 approaches.</p> <p>3.2.3.0-1.0-3.0-5 The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta.</p>
MM	Middle Marker	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p>
Mobile Mission Support	Mobile Mission Support	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
Mode S	Mode “Select” Secondary Surveillance Radar	<p>3.2.1.0-1.0-1 The NAS shall acquire dependent surveillance information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
MPS	Maintenance Processor System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p>

Acronym	Sub-System Name	Related Requirements
		3.1.3.3.0-5 The NAS shall disseminate system updates.
NACG	National Aeronautical Charting Group	<p>3.1.3.1.0-1 The NAS shall support stakeholder collaboration for long term capacity management.</p> <p>3.1.3.1.0-2 The NAS shall project capacity needs.</p> <p>3.1.3.1.0-2.0-1 The NAS shall identify current performance shortfalls.</p> <p>3.1.3.1.0-2.0-1.0-1 The NAS shall identify specific airspace that consistently has high levels of congestion based on post-operational data.</p> <p>3.1.3.1.0-2.0-1.0-2 The NAS shall identify airspace that is under utilized based on post-operational data.</p> <p>3.1.3.1.0-2.0-1.0-3 The NAS shall utilize operational information to improve the strategic use of airports and en route airspace.</p> <p>3.1.3.1.0-2.0-2 The NAS shall provide the information and resources necessary for strategic demand forecasting.</p> <p>3.1.3.1.0-2.0-3 The NAS shall evaluate capacity projections against demand projections to determine strategic system needs.</p> <p>3.1.3.1.0-3 The NAS shall provide the information and resources necessary to assess strategic capacity constraints.</p> <p>3.1.3.1.0-3.0-1 The NAS shall provide the information and resources necessary to assess the impact of proposed airspace changes to existing configurations.</p> <p>3.1.3.1.0-3.0-2 The NAS shall provide the information and resources necessary to assess environmental impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-3 The NAS shall provide the information and resources necessary to assess the security impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-4 The NAS shall provide the information and resources necessary to assess safety impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-5 The NAS shall provide the information and resources necessary to assess infrastructure impacts on proposed airspace changes.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.1.0-3.0-6 The NAS shall provide the information and resources necessary to assess terrain and obstacle information for proposed airspace changes.</p> <p>3.1.3.1.0-4 The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.</p> <p>3.1.3.1.0-4.0-1 The NAS shall provide the information and resources necessary for the design of airspace configurations.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p> <p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.3.1.0-4.0-3.0-1.0-1 The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.</p> <p>3.1.3.1.0-4.0-4 The NAS shall provide the information and resources necessary to assess proposed capacity improvement plans.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
NADIN	National Airspace Data Interchange Network	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>

Acronym	Sub-System Name	Related Requirements
		3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.
NAPRS	National Airspace Performance Reporting Systems	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.3.0-1 The NAS shall monitor service status. 3.1.3.3.0-1.0-1 The NAS shall monitor system status. 3.1.3.3.0-1.0-2 The NAS shall monitor external system status. 3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing. 3.1.3.3.0-1.0-4 The NAS shall measure system parameters. 3.1.3.3.0-1.0-5 The NAS shall detect failures. 3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure. 3.1.3.3.0-1.0-7 The NAS shall derive service status from system status. 3.1.3.3.0-2 The NAS shall manage service performance. 3.1.3.3.0-2.0-1 The NAS shall configure systems. 3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure. 3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC. 3.1.3.3.0-2.0-2 The NAS shall adjust system parameters. 3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site. 3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site. 3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning. 3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling. 3.1.3.3.0-5 The NAS shall disseminate system updates.
NAS AIS	NAS Aeronautical Information System	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.3.0-1 The NAS shall monitor service status.

Acronym	Sub-System Name	Related Requirements
DataBase	Database	<p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
NAS CGW	David J. Hurley Air Traffic Control System Command Center National Airspace System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data</p>

Acronym	Sub-System Name	Related Requirements
	Communications Gateway	communications within the NAS. 3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.
NAS SA	NAS Subsystem Software and Adaptation	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.3.0-2 The NAS shall manage service performance. 3.1.3.3.0-2.0-1 The NAS shall configure systems. 3.1.3.3.0-2.0-2 The NAS shall adjust system parameters. 3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site. 3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site. 3.1.3.3.0-5 The NAS shall disseminate system updates.
NASPAS	National Airspace System Performance Analysis System	3.1.3.2.0-1 The NAS shall manage post operational data. 3.1.3.2.0-1.0-1 The NAS shall manage operational metrics. 3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.2.0-1.0-3 The NAS shall archive operational system information. 3.1.3.2.0-1.0-4 The NAS shall record voice communications 3.1.3.2.0-1.0-5 The NAS shall conduct data mining. 3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations. 3.1.3.2.0-1.0-7 The NAS shall acquire cyber security event logs. 3.1.3.2.0-2 The NAS shall perform operational analysis. 3.1.3.2.0-2.0-1 The NAS shall analyze operational performance information. 3.1.3.2.0-2.0-2 The NAS shall analyze operational trends. 3.1.3.2.0-2.0-3 The NAS shall analyze airspace security. 3.1.3.2.0-2.0-4 The NAS shall analyze environmental impacts. 3.1.3.2.0-2.0-5 The NAS shall analyze cyber security event logs 3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.

Acronym	Sub-System Name	Related Requirements
NASR	National Airspace System Resources	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-2 The NAS shall analyze NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-2 The NAS shall analyze NAS status information.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p>
NASSI	National Airspace System Status Information	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information</p>

Acronym	Sub-System Name	Related Requirements
		<p>with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-1.0-3 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-3 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-2 The NAS shall analyze NAS status information.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p>
NAVMN	Navigation Monitor and Control	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p>
NCIME	Navaid Control Interlock and Monitoring	<p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system</p>

Acronym	Sub-System Name	Related Requirements
	Equipment (NCIME)	<p>changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-1.0-3 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-3 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p>
NDB	Non-directional Beacon	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to</p>

Acronym	Sub-System Name	Related Requirements
		<p>determine their position in en route airspace.                      3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p>
NEXCOM	Next-Generation VHF A/G Communication System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.                      3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.                      3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p>
NEXRAD	Next Generation Weather Radar	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.                      3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.                      3.1.1.4.0-1 The NAS shall analyze weather information.                      3.1.1.4.0-2 The NAS shall generate weather products.                      3.1.1.4.0-2.0-1 The NAS shall generate area weather products.                      3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.                      3.1.1.4.0-3 The NAS shall disseminate weather information.                      3.1.1.4.0-5 The NAS shall maintain weather information.</p>
NFU	Integrated Terminal Weather System National Weather Service Filtering Unit (ATCSCC ITWS)	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.                      3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.                      3.1.1.4.0-1 The NAS shall analyze weather information.                      3.1.1.4.0-2 The NAS shall generate weather products.                      3.1.1.4.0-2.0-1 The NAS shall generate area weather products.                      3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.                      3.1.1.4.0-3 The NAS shall disseminate weather information.                      3.1.1.4.0-5 The NAS shall maintain weather information.                      3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.</p>
NIDS	NAS Information	<p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.                      3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p>

Acronym	Sub-System Name	Related Requirements
	Display System	3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.
NODA	National Operational Data Archive	3.1.3.2.0-1 The NAS shall manage post operational data. 3.1.3.2.0-1.0-1 The NAS shall manage operational metrics. 3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.2.0-1.0-3 The NAS shall archive operational system information. 3.1.3.2.0-1.0-4 The NAS shall record voice communications 3.1.3.2.0-1.0-5 The NAS shall conduct data mining. 3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations. 3.1.3.2.0-1.0-7 The NAS shall acquire cyber security event logs. 3.1.3.2.0-2 The NAS shall perform operational analysis. 3.1.3.2.0-2.0-1 The NAS shall analyze operational performance information. 3.1.3.2.0-2.0-2 The NAS shall analyze operational trends. 3.1.3.2.0-2.0-3 The NAS shall analyze airspace security. 3.1.3.2.0-2.0-4 The NAS shall analyze environmental impacts. 3.1.3.2.0-2.0-5 The NAS shall analyze cyber security event logs 3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.
NOP	National Offload Program	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.3.0-1 The NAS shall monitor service status. 3.1.3.3.0-1.0-1 The NAS shall monitor system status. 3.1.3.3.0-1.0-2 The NAS shall monitor external system status. 3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing. 3.1.3.3.0-1.0-4 The NAS shall measure system parameters. 3.1.3.3.0-1.0-5 The NAS shall detect failures. 3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
NOTAM Tracking System	NOTAM Tracking System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-2 The NAS shall analyze NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p>
NRCS	National Radio Communications System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p> <p>3.3.2.0-9 The NAS shall assure the data integrity of data communications with stakeholders.</p>
NRS	Notice to Airmen Retrieval System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p>
OASIS	Operational and Supportability	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p>

Acronym	Sub-System Name	Related Requirements
	Implementation System	<p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for</p>

Acronym	Sub-System Name	Related Requirements
		<p>100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p>
Obstruction Evaluator	Obstruction Evaluator	<p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
ODALS	Omni directional Approach Lighting System	<p>3.2.3.0-2 The NAS shall provide visual spatial references.</p> <p>3.2.3.0-2.0-2.0-1 The NAS shall provide visual approach guidance with a visual range of 4 NM day/night, within 10 degrees of the approach.</p>
OFDPS	Offshore Flight Data Processing System (Honolulu)	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-1.0-1 The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.</p> <p>3.1.1.2.0-1.0-1.0-2 The NAS shall validate proposed flight plans and amendments</p>

Acronym	Sub-System Name	Related Requirements
		<p>within 6 seconds (99th percentile).</p> <p>3.1.1.2.0-1.0-1.0-3 The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p>
OM	Outer Marker	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p>
PAPI	Precision Approach Path Indicator	<p>3.2.3.0-2 The NAS shall provide visual spatial references.</p> <p>3.2.3.0-2.0-2 The NAS shall provide visual references for vertical descent guidance to runways.</p> <p>3.2.3.0-2.0-2.0-1 The NAS shall provide visual approach guidance with a visual range of 4 NM day/night, within 10 degrees of the approach.</p>
PDARS	Performance Data Analysis and Reporting System	<p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-4 The NAS shall record voice communications</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-2 The NAS shall perform operational analysis.</p> <p>3.1.3.2.0-2.0-1 The NAS shall analyze operational performance information.</p> <p>3.1.3.2.0-2.0-2 The NAS shall analyze operational trends.</p> <p>3.1.3.2.0-2.0-3 The NAS shall analyze airspace security.</p> <p>3.1.3.2.0-2.0-4 The NAS shall analyze environmental impacts.</p> <p>3.1.3.2.0-2.0-5 The NAS shall analyze cyber security event logs</p>

Acronym	Sub-System Name	Related Requirements
		3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.
PRM	Precision Runway Monitor	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5 The NAS shall provide control instructions.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-5.0-1 The NAS shall generate recommended avoidance instructions for separation violations and predicted separation conflicts.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.2.2.0-3.0-1 The NAS shall disseminate to users non-adherence to ATC clearance within 10 seconds of the prediction of the deviation.</p> <p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans.</p> <p>3.1.1.2.0-1.0-2.0-1 The NAS shall notify users of changes in the availability of their preferred flight routes.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.2.1.0-1 The NAS shall acquire surveillance information.</p> <p>3.2.1.0-1.0-1 The NAS shall acquire dependent surveillance information.</p> <p>3.2.1.0-1.0-2 The NAS shall acquire independent surveillance information.</p> <p>3.1.1.3.0-1.0-1.0-13.0-3 The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.</p> <p>3.1.1.3.0-1.0-1.0-15 The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-1 The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-3.0-7 The NAS shall provide the information and resources necessary for the manual entry of aircraft velocity information.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-5 The NAS shall transfer control responsibilities.</p> <p>3.1.1.3.0-1.0-6 The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-13.0-5 The NAS shall update the position of aircraft in flying closely spaced parallel approaches within a maximum time between updates of 1.125 seconds when the runways are less than 3400 feet apart.</p>
RAPTOR	Radar Audio Playback Terminal Operations Recording	<p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-4 The NAS shall record voice communications</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p>
RCE	Radio Control Equipment	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and</p>

Acronym	Sub-System Name	Related Requirements
		<p>specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p>
RCL	Radio Communication Link	<p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p>
RCLR	Low Density Radio Repeater	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists</p>

Acronym	Sub-System Name	Related Requirements
		<p>for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p>
RCLT	Low Density Radio Terminal	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p>
RCOM	Recovery Communication	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p>

Acronym	Sub-System Name	Related Requirements
	Nation Radio Communication System	<p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS.</p>
RCS	Rehost Computer System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in terminal areas at least 30 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-2.0-2 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-1 The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-2 The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-3.0-3.0-3 The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-4 The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.4.0-2.0-4 The NAS shall respond to airspace security events.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.</p>
REIL	Runway End Identification Lights	<p>3.2.3.0-2 The NAS shall provide visual spatial references.</p> <p>3.2.3.0-2.0-3 The NAS shall provide visual references for runway ends, centerlines, and edges.</p>
RID	Runway Incursion Device	<p>3.2.3.0-2 The NAS shall provide visual spatial references.</p> <p>3.2.3.0-2.0-4 The NAS shall provide visual references for airport surface navigation.</p>
RMLS	Remote Monitoring and Logging System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-1.0-3 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-3 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
RMS	Remote Maintenance System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p> <p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-5.0-1.0-3 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-3 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
RMSC	Remote Motor System Concentrator	<p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-1.0-1 The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-1.0-2 The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p> <p>3.1.3.3.0-1.0-3.0-1 The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.</p> <p>3.1.3.3.0-1.0-3.0-2 The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.</p> <p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-5.0-1 The NAS shall alert specialist of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-1 The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.</p> <p>3.1.3.3.0-1.0-5.0-1.0-2 The NAS shall alert specialists to system failures within a maximum of 16 seconds.</p> <p>3.1.3.3.0-1.0-5.0-1.0-3 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-2 The NAS shall alert users of a system failure.</p> <p>3.1.3.3.0-1.0-5.0-2.0-1 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.</p> <p>3.1.3.3.0-1.0-5.0-3 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.</p>
RMVC	Remote Maintenance VORTAC Concentrator	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-1 The NAS shall monitor service status.</p> <p>3.1.3.3.0-1.0-1 The NAS shall monitor system status.</p> <p>3.1.3.3.0-1.0-2 The NAS shall monitor external system status.</p> <p>3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.3.0-1.0-4 The NAS shall measure system parameters.</p> <p>3.1.3.3.0-1.0-5 The NAS shall detect failures.</p> <p>3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure.</p> <p>3.1.3.3.0-1.0-7 The NAS shall derive service status from system status.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-1.0-1 The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.</p> <p>3.1.3.3.0-2.0-1.0-2 The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for preventative maintenance scheduling.</p> <p>3.1.3.3.0-5 The NAS shall disseminate system updates.</p>
RRCS	Remote Radar Control System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.3.0-2 The NAS shall manage service performance.</p> <p>3.1.3.3.0-2.0-1 The NAS shall configure systems.</p> <p>3.1.3.3.0-2.0-2 The NAS shall adjust system parameters.</p> <p>3.1.3.3.0-2.0-3 The NAS shall control selected subsystems on-site.</p> <p>3.1.3.3.0-2.0-4 The NAS shall control selected subsystems off-site.</p> <p>3.1.3.3.0-3 The NAS shall provide the information and resources necessary for logistics planning.</p> <p>3.1.3.3.0-4 The NAS shall provide the information and resources necessary for</p>

Acronym	Sub-System Name	Related Requirements
		preventative maintenance scheduling. 3.1.3.3.0-5 The NAS shall disseminate system updates.
RRH	Remote Reading Hygrothermometer	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-4 The NAS shall display weather information.
RTR	Remote transmitter/receiver	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.3.2.0-1 The NAS shall provide air-ground communications within the NAS. 3.3.2.0-2 The NAS shall provide ground-to-ground communications. 3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services. 3.3.2.0-7 The NAS shall assure the data integrity of air-ground data communications within the NAS. 3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.
RVR	Runway Visual Range	3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.
RWSL	Runway Status Lights	3.2.3.0-2 The NAS shall provide visual spatial references. 3.2.3.0-2.0-4 The NAS shall provide visual references for airport surface navigation.
SAMS	Special Use Airspace Management System	3.1.2.4.0-2 The NAS shall manage airspace restrictions. 3.1.2.4.0-2.0-1 The NAS shall manage special activity airspace (SAA). 3.1.2.4.0-2.0-1.0-1 The NAS shall monitor SAA status. 3.1.2.4.0-2.0-1.0-2 The NAS shall update SAA information after collaborating with

Acronym	Sub-System Name	Related Requirements
		<p>the SAA owners.</p> <p>3.1.2.4.0-2.0-1.0-2.0-1 The NAS shall approve special use airspace reservations within 30 minutes of initial receipt of request.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a</p>

Acronym	Sub-System Name	Related Requirements
		radius of 100 miles from a specified location.
SAWS	Standalone Weather Sensor	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-4 The NAS shall display weather information.
SBS	Surveillance Broadcast Service	3.2.1.0-1 The NAS shall acquire surveillance information. 3.1.1.3.0-1 The NAS shall process surveillance information. 3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets. 3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds. 3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site. 3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site. 3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds. 3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds. 3.1.1.3.0-1.0-1.0-13.0-2 The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds. 3.1.1.3.0-1.0-1.0-13.0-3 The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds. 3.1.1.3.0-1.0-1.0-14 The NAS shall track aircraft and vehicles on the airport surface.

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p> <p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p>

Acronym	Sub-System Name	Related Requirements
		3.1.3.2.0-1.0-2 The NAS shall record operational system information.
SBSM	Surveillance Broadcast Services Monitor	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.3.0-1 The NAS shall monitor service status. 3.1.3.3.0-1.0-1 The NAS shall monitor system status. 3.1.3.3.0-1.0-2 The NAS shall monitor external system status. 3.1.3.3.0-1.0-3 The NAS shall perform diagnostic testing. 3.1.3.3.0-1.0-4 The NAS shall measure system parameters. 3.1.3.3.0-1.0-5 The NAS shall detect failures. 3.1.3.3.0-1.0-6 The NAS shall determine the cause of failure. 3.1.3.3.0-1.0-7 The NAS shall derive service status from system status. 3.1.3.3.0-2 The NAS shall manage service performance. 3.1.3.3.0-2.0-1 The NAS shall configure systems.
SDAT	Sector Design and Analysis Tool	3.1.3.1.0-1 The NAS shall support stakeholder collaboration for long term capacity management. 3.1.3.1.0-2 The NAS shall project capacity needs. 3.1.3.1.0-2.0-1 The NAS shall identify current performance shortfalls. 3.1.3.1.0-2.0-1.0-1 The NAS shall identify specific airspace that consistently has high levels of congestion based on post-operational data. 3.1.3.1.0-2.0-1.0-2 The NAS shall identify airspace that is under utilized based on post-operational data. 3.1.3.1.0-2.0-1.0-3 The NAS shall utilize operational information to improve the strategic use of airports and en route airspace. 3.1.3.1.0-2.0-2 The NAS shall provide the information and resources necessary for strategic demand forecasting. 3.1.3.1.0-2.0-3 The NAS shall evaluate capacity projections against demand projections to determine strategic system needs. 3.1.3.1.0-3 The NAS shall provide the information and resources necessary to assess

Acronym	Sub-System Name	Related Requirements
		<p>strategic capacity constraints.</p> <p>3.1.3.1.0-3.0-1 The NAS shall provide the information and resources necessary to assess the impact of proposed airspace changes to existing configurations.</p> <p>3.1.3.1.0-3.0-2 The NAS shall provide the information and resources necessary to assess environmental impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-3 The NAS shall provide the information and resources necessary to assess the security impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-4 The NAS shall provide the information and resources necessary to assess safety impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-5 The NAS shall provide the information and resources necessary to assess infrastructure impacts on proposed airspace changes.</p> <p>3.1.3.1.0-3.0-6 The NAS shall provide the information and resources necessary to assess terrain and obstacle information for proposed airspace changes.</p> <p>3.1.3.1.0-4 The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.</p> <p>3.1.3.1.0-4.0-1 The NAS shall provide the information and resources necessary for the design of airspace configurations.</p> <p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.3.1.0-4.0-3.0-1.0-1 The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.</p> <p>3.1.3.1.0-4.0-4 The NAS shall provide the information and resources necessary to assess proposed capacity improvement plans.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
SDAT-5	Sector Design Analysis Tool (SDAT)	<p>3.1.3.1.0-1 The NAS shall support stakeholder collaboration for long term capacity management.</p> <p>3.1.3.1.0-2 The NAS shall project capacity needs.</p> <p>3.1.3.1.0-2.0-1 The NAS shall identify current performance shortfalls.</p> <p>3.1.3.1.0-2.0-1.0-1 The NAS shall identify specific airspace that consistently has high levels of congestion based on post-operational data.</p> <p>3.1.3.1.0-2.0-1.0-2 The NAS shall identify airspace that is under utilized based on post-operational data.</p> <p>3.1.3.1.0-2.0-1.0-3 The NAS shall utilize operational information to improve the strategic use of airports and en route airspace.</p> <p>3.1.3.1.0-2.0-2 The NAS shall provide the information and resources necessary for strategic demand forecasting.</p> <p>3.1.3.1.0-2.0-3 The NAS shall evaluate capacity projections against demand projections to determine strategic system needs.</p> <p>3.1.3.1.0-3 The NAS shall provide the information and resources necessary to assess strategic capacity constraints.</p> <p>3.1.3.1.0-3.0-1 The NAS shall provide the information and resources necessary to assess the impact of proposed airspace changes to existing configurations.</p> <p>3.1.3.1.0-3.0-2 The NAS shall provide the information and resources necessary to assess environmental impacts of proposed airspace changes.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.3.1.0-3.0-3 The NAS shall provide the information and resources necessary to assess the security impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-4 The NAS shall provide the information and resources necessary to assess safety impacts of proposed airspace changes.</p> <p>3.1.3.1.0-3.0-5 The NAS shall provide the information and resources necessary to assess infrastructure impacts on proposed airspace changes.</p> <p>3.1.3.1.0-3.0-6 The NAS shall provide the information and resources necessary to assess terrain and obstacle information for proposed airspace changes.</p> <p>3.1.3.1.0-4 The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.</p> <p>3.1.3.1.0-4.0-1 The NAS shall provide the information and resources necessary for the design of airspace configurations.</p> <p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for the design of air traffic procedures.</p> <p>3.1.3.1.0-4.0-3 The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.</p> <p>3.1.3.1.0-4.0-3.0-1 The NAS shall provide the information and resources necessary to assess the benefits of proposed system changes.</p> <p>3.1.3.1.0-4.0-3.0-1.0-1 The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.</p> <p>3.1.3.1.0-4.0-4 The NAS shall provide the information and resources necessary to</p>

Acronym	Sub-System Name	Related Requirements
		assess proposed capacity improvement plans. 3.1.3.2.0-1.0-2 The NAS shall record operational system information.
SMS / SMA	Surface Management System / Surface Movement Advisor	3.1.2.1.0-1 The NAS shall project short term trajectories. 3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds. 3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile). 3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds. 3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration. 3.1.2.3.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management. 3.1.2.3.0-2.0-4 The NAS shall evaluate route status. 3.1.2.3.0-3.0-2.0-2 The NAS shall implement sequencing plans.
SSALR	Simplified Short Approach Lighting with Runway Alignment Indicator Lights	3.2.3.0-2 The NAS shall provide visual spatial references. 3.2.3.0-2.0-1 The NAS shall provide visual references along the extended runway centerline. 3.2.3.0-2.0-2 The NAS shall provide visual references for vertical descent guidance to runways.
SSALS	Simplified Short Approach Lighting System	3.2.3.0-2 The NAS shall provide visual spatial references. 3.2.3.0-2.0-1 The NAS shall provide visual references along the extended runway centerline. 3.2.3.0-2.0-2 The NAS shall provide visual references for vertical descent guidance

Acronym	Sub-System Name	Related Requirements
		to runways.
STARS	Standard Terminal Automation Replacement System	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p> <p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in terminal areas at least 30 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-2 The NAS shall predict airspace separation conflicts.</p> <p>3.1.2.1.0-3.0-2.0-1 The NAS shall alert specialists at least 5 nautical miles, and</p>

Acronym	Sub-System Name	Related Requirements
		<p>within 500 feet above or below, before the violation of separation with Special Use Airspace.</p> <p>3.1.2.1.0-3.0-3 The NAS shall predict terrain and obstacle separation conflicts.</p> <p>3.1.2.1.0-3.0-3.0-1 The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-3.0-2 The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.</p> <p>3.1.2.1.0-4 The NAS shall detect separation violations.</p> <p>3.1.2.1.0-4.0-1 The NAS shall detect aircraft-to-aircraft separation violations.</p> <p>3.1.2.1.0-4.0-1.0-1 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.</p> <p>3.1.2.1.0-4.0-1.0-3 The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.</p> <p>3.1.2.1.0-4.0-2 The NAS shall detect airspace separation violations.</p> <p>3.1.2.1.0-4.0-3 The NAS shall detect terrain and obstacle separation violations.</p> <p>3.1.2.1.0-5.0-2 The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-3 The NAS shall display recommended avoidance maneuvers within 1.2 seconds (99th percentile) after the detection of an aircraft-to-aircraft separation violation.</p> <p>3.1.2.1.0-5.0-4 The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-5.0-5 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.</p> <p>3.1.2.1.0-5.0-6 The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.2.2.0-2 The NAS shall monitor flight path conformance.</p> <p>3.1.2.2.0-3 The NAS shall predict flight path non-conformance.</p> <p>3.1.1.2.0-2 The NAS shall collaborate with users on flight plans.</p> <p>3.1.1.2.0-3 The NAS shall activate flight plans.</p> <p>3.1.1.2.0-4 The NAS shall disseminate flight plans.</p> <p>3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.2.0-5 The NAS shall validate flight information.</p> <p>3.1.1.2.0-5.0-1 The NAS shall update flight information within 12 seconds of receiving a flight plan.</p> <p>3.1.1.2.0-5.0-2 The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.2.0-5.0-3 The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-4 The NAS shall validate active flight plan amendments with a maximum of 3 seconds.</p> <p>3.1.1.2.0-5.0-5 The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-6 The NAS shall validate flight plan actions within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7 The NAS shall validate flight plan actions with a maximum of 6 seconds.</p> <p>3.1.1.2.0-5.0-7.0-1 The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.2.0-5.0-7.0-2 The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).</p> <p>3.1.1.2.0-5.0-7.0-3 The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.</p> <p>3.1.1.2.0-6 The NAS shall monitor aircraft status.</p> <p>3.1.1.2.0-6.0-1 The NAS shall detect aircraft non-compliance with clearances.</p> <p>3.1.1.2.0-6.0-2 The NAS shall display alternate route clearances for aircraft in non-compliance with a clearance within a maximum of 3 seconds of detection of the non-compliance.</p> <p>3.1.1.2.0-7 The NAS shall close flight plans.</p> <p>3.1.2.3.0-2.0-6 The NAS shall monitor flow constraint conformance.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace</p>

Acronym	Sub-System Name	Related Requirements
		<p>capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.1.3.0-1 The NAS shall process surveillance information.</p> <p>3.1.1.3.0-1.0-1 The NAS shall determine the position for all targets.</p> <p>3.1.1.3.0-1.0-1.0-1 The NAS shall detect aircraft entering an ADIZ within 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-2 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-3 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.</p> <p>3.1.1.3.0-1.0-1.0-4 The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-1.0-5 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-6 The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-7 The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.</p> <p>3.1.1.3.0-1.0-1.0-8 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.</p> <p>3.1.1.3.0-1.0-1.0-9 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-10 The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.</p> <p>3.1.1.3.0-1.0-1.0-11 The NAS shall display position of aircraft operating within an ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-12 The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.</p> <p>3.1.1.3.0-1.0-1.0-13 The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-1 The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.</p> <p>3.1.1.3.0-1.0-1.0-13.0-4 The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.</p> <p>3.1.1.3.0-1.0-1.0-15 The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.</p> <p>3.1.1.3.0-1.0-2 The NAS shall generate flight paths.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.3.0-1.0-2.0-1 The NAS shall project each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-2.0-2 The NAS shall update each aircraft's flight path at least every 13 seconds.</p> <p>3.1.1.3.0-1.0-3 The NAS shall determine the velocity for all aircraft detected by surveillance sources.</p> <p>3.1.1.3.0-1.0-3.0-2 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.</p> <p>3.1.1.3.0-1.0-3.0-3 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-4 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.</p> <p>3.1.1.3.0-1.0-3.0-5 The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.</p> <p>3.1.1.3.0-1.0-3.0-6 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.</p> <p>3.1.1.3.0-1.0-4 The NAS shall identify all aircraft receiving air traffic services.</p> <p>3.1.1.3.0-1.0-4.0-1 The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.</p> <p>3.1.1.3.0-1.0-4.0-2 The NAS shall provide the information and resources necessary for the manual entry of identity information.</p> <p>3.1.1.3.0-1.0-5 The NAS shall transfer control responsibilities.</p> <p>3.1.1.3.0-1.0-6</p>

Acronym	Sub-System Name	Related Requirements
		<p>The NAS shall integrate surveillance information from multiple sources.</p> <p>3.1.1.3.0-1.0-6.0-1 The NAS shall generate common surveillance situation information for use by all operations.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-1 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.3.0-1.0-7.0-2 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists within 5 seconds (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-3 The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a maximum of 10 seconds.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p> <p>3.1.1.3.0-1.0-7.0-6 The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-7 The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.</p> <p>3.1.1.3.0-1.0-7.0-8 The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile).</p> <p>3.1.1.3.0-1.0-7.0-9 The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-10 The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source.</p> <p>3.1.1.3.0-1.0-7.0-11 The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight.</p> <p>3.1.1.3.0-1.0-7.0-12 The NAS shall display requested aircraft speed within plus or</p>

Acronym	Sub-System Name	Related Requirements
		minus 20 knots or less for an aircraft in constant steady-level flight.
SWIM	System Wide Information Management	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-4.0-1 The NAS shall transfer operations between safety-critical inter-facility data communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p> <p>3.3.2.0-8 The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.</p>
TACAN	Tactical Air Navigation System	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in en route airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-5 The NAS shall transmit facility identification information.</p>
TARGETS	Terminal Area Route Generation Evaluation and Traffic Simulation	<p>3.1.3.1.0-4.0-1.0-1 The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-2 The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.</p> <p>3.1.3.1.0-4.0-1.0-3 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.</p> <p>3.1.3.1.0-4.0-2 The NAS shall provide the information and resources necessary for</p>

Acronym	Sub-System Name	Related Requirements
		the design of air traffic procedures.
TARP	Traffic Analysis Review Program	3.1.3.2.0-1 The NAS shall manage post operational data. 3.1.3.2.0-1.0-1 The NAS shall manage operational metrics. 3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.1.3.2.0-1.0-3 The NAS shall archive operational system information. 3.1.3.2.0-1.0-4 The NAS shall record voice communications 3.1.3.2.0-1.0-5 The NAS shall conduct data mining. 3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations. 3.1.3.2.0-1.0-7 The NAS shall acquire cyber security event logs. 3.1.3.2.0-2 The NAS shall perform operational analysis. 3.1.3.2.0-2.0-1 The NAS shall analyze operational performance information. 3.1.3.2.0-2.0-2 The NAS shall analyze operational trends. 3.1.3.2.0-2.0-3 The NAS shall analyze airspace security. 3.1.3.2.0-2.0-4 The NAS shall analyze environmental impacts. 3.1.3.2.0-2.0-5 The NAS shall analyze cyber security event logs 3.1.3.2.0-3 The NAS shall provide the information and resources necessary for search and rescue operations.
TBFM	Time Based Flow Management	3.1.2.3.0-2 The NAS shall assess traffic flow. 3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information. 3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints. 3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints. 3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status. 3.1.2.3.0-2.0-4 The NAS shall evaluate route status. 3.1.2.3.0-2.0-5 The NAS shall predict delays. 3.1.2.3.0-3 The NAS shall manage operational capacity. 3.1.2.3.0-3.0-1 The NAS shall manage flow constraints.

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.3.0-3.0-2 The NAS shall manage sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-1 The NAS shall establish sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-1 The NAS shall establish flow sequencing plans for terminal airspace greater than or equal to two hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-2 The NAS shall establish flow sequencing plans for en route airspace greater than or equal to eight hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-2 The NAS shall implement sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-2.0-1 The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.3.0-3.0-2.0-2.0-2 The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).</p> <p>3.1.2.3.0-3.0-2.0-2.0-3 The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.</p> <p>3.1.2.3.0-3.0-2.0-3 The NAS shall update sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-4 The NAS shall disseminate sequencing plans.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to</p>

Acronym	Sub-System Name	Related Requirements
		specialists within 10 seconds of a request. 3.1.2.4.0-4.0-3 The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance. 3.1.2.4.0-4.0-4 The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance. 3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand. 3.1.2.4.0-5.0-1 The NAS shall predict congestion. 3.1.2.4.0-5.0-2 The NAS shall detect congested areas. 3.1.1.2.0-1 The NAS shall process flight plans. 3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning. 3.1.1.2.0-2 The NAS shall collaborate with users on flight plans. 3.1.1.2.0-6 The NAS shall monitor aircraft status.
TCD	Time Code Display	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.
TDLS	Tower Data Link System	3.1.1.2.0-1 The NAS shall process flight plans. 3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning. 3.1.1.2.0-1.0-2 The NAS shall provide feedback on proposed flight plans. 3.1.1.2.0-1.0-2.0-1 The NAS shall notify users of changes in the availability of their preferred flight routes. 3.1.1.2.0-4 The NAS shall disseminate flight plans. 3.1.1.2.0-4.0-1 The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds. 3.1.3.2.0-1.0-2 The NAS shall record operational system information.
TDWR	Terminal Doppler Weather Radar	3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-2 The NAS shall acquire weather aloft information. 3.1.1.4.0-1 The NAS shall analyze weather information.

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-2 The NAS shall generate weather products.</p> <p>3.1.1.4.0-2.0-1 The NAS shall generate area weather products.</p> <p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p> <p>3.1.1.4.0-5 The NAS shall maintain weather information.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
TFMS	Traffic Flow Management System	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration.</p> <p>3.1.2.3.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.</p> <p>3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.</p> <p>3.1.2.3.0-2 The NAS shall assess traffic flow.</p> <p>3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information.</p> <p>3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints.</p> <p>3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints.</p> <p>3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status.</p> <p>3.1.2.3.0-2.0-4 The NAS shall evaluate route status.</p> <p>3.1.2.3.0-2.0-5 The NAS shall predict delays.</p> <p>3.1.2.3.0-2.0-7 The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.</p> <p>3.1.2.3.0-3 The NAS shall manage operational capacity.</p> <p>3.1.2.3.0-3.0-1 The NAS shall manage flow constraints.</p> <p>3.1.2.3.0-3.0-2 The NAS shall manage sequencing plans.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.3.0-3.0-2.0-1 The NAS shall establish sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-1 The NAS shall establish flow sequencing plans for terminal airspace greater than or equal to two hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-2 The NAS shall establish flow sequencing plans for en route airspace greater than or equal to eight hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-2 The NAS shall implement sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-2.0-1 The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.3.0-3.0-2.0-2.0-2 The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).</p> <p>3.1.2.3.0-3.0-2.0-2.0-3 The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.</p> <p>3.1.2.3.0-3.0-2.0-3 The NAS shall update sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-4 The NAS shall disseminate sequencing plans.</p> <p>3.1.2.3.0-3.0-3 The NAS shall manage Traffic Management Initiatives (TMI).</p> <p>3.1.2.3.0-3.0-3.0-1 The NAS shall establish TMIs.</p> <p>3.1.2.3.0-3.0-3.0-3 The NAS shall maintain TMI schedules.</p> <p>3.1.2.3.0-3.0-3.0-4 The NAS shall disseminate TMIs.</p> <p>3.1.2.3.0-4 The NAS shall generate flow advisories.</p> <p>3.1.2.4.0-1 The NAS shall provide the information and resources necessary for short term capacity management collaboration.</p> <p>3.1.2.4.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for short term capacity management.</p> <p>3.1.2.4.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for short term capacity management.</p> <p>3.1.2.4.0-2.0-2 The NAS shall manage altitude reservations.</p> <p>3.1.2.4.0-2.0-2.0-1 The NAS shall respond to altitude reservation requests within a</p>

Acronym	Sub-System Name	Related Requirements
		<p>maximum of 10 seconds.</p> <p>3.1.2.4.0-2.0-3 The NAS shall manage airport reservations.</p> <p>3.1.2.4.0-2.0-3.0-1 The NAS shall respond to airport reservation requests within a maximum 6 seconds.</p> <p>3.1.2.4.0-2.0-5 The NAS shall respond to airspace restriction requests.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-4.0-3 The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance.</p> <p>3.1.2.4.0-4.0-4 The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.</p> <p>3.1.2.4.0-5 The NAS shall evaluate airspace capacity against demand.</p> <p>3.1.2.4.0-5.0-1 The NAS shall predict congestion.</p> <p>3.1.2.4.0-5.0-2 The NAS shall detect congested areas.</p> <p>3.1.2.4.0-6 The NAS shall manage airspace capacity.</p> <p>3.1.2.4.0-6.0-1 The NAS shall manage airspace status.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.4.0-6.0-2 The NAS shall manage route status.</p> <p>3.1.2.4.0-7 The NAS shall generate airspace advisories.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p>
TFR Builder	Temporary Flight Restriction Builder	<p>3.1.2.3.0-1 The NAS shall provide the information and resources necessary for flow contingency management collaboration.</p> <p>3.1.2.3.0-1.0-1 The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.</p> <p>3.1.2.3.0-1.0-2 The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.</p> <p>3.1.2.3.0-3.0-2.0-4 The NAS shall disseminate sequencing plans.</p> <p>3.1.2.3.0-3.0-3 The NAS shall manage Traffic Management Initiatives (TMI).</p> <p>3.1.2.3.0-3.0-3.0-1 The NAS shall establish TMIs.</p> <p>3.1.2.3.0-3.0-3.0-2 The NAS shall implement TMIs.</p> <p>3.1.2.3.0-3.0-3.0-3 The NAS shall maintain TMI schedules.</p> <p>3.1.2.3.0-3.0-3.0-4 The NAS shall disseminate TMIs.</p> <p>3.1.2.3.0-4 The NAS shall generate flow advisories.</p> <p>3.1.2.4.0-2 The NAS shall manage airspace restrictions.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
TMA	Traffic Management Advisor	<p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.2.3.0-2 The NAS shall assess traffic flow.</p> <p>3.1.2.3.0-2.0-1 The NAS shall evaluate congestion information.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.3.0-2.0-2 The NAS shall evaluate flow constraints.</p> <p>3.1.2.3.0-2.0-2.0-1 The NAS shall analyze the effectiveness of flow constraints.</p> <p>3.1.2.3.0-2.0-3 The NAS shall evaluate airspace status.</p> <p>3.1.2.3.0-2.0-4 The NAS shall evaluate route status.</p> <p>3.1.2.3.0-2.0-5 The NAS shall predict delays.</p> <p>3.1.2.3.0-2.0-7 The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.</p> <p>3.1.2.3.0-3 The NAS shall manage operational capacity.</p> <p>3.1.2.3.0-3.0-1 The NAS shall manage flow constraints.</p> <p>3.1.2.3.0-3.0-2 The NAS shall manage sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-1 The NAS shall establish sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-1 The NAS shall establish flow sequencing plans for terminal airspace greater than or equal to two hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-1.0-2 The NAS shall establish flow sequencing plans for en route airspace greater than or equal to eight hours prior to the implementation of the plans.</p> <p>3.1.2.3.0-3.0-2.0-2 The NAS shall implement sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-2.0-1 The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.3.0-3.0-2.0-2.0-2 The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).</p> <p>3.1.2.3.0-3.0-2.0-2.0-3 The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.</p> <p>3.1.2.3.0-3.0-2.0-3 The NAS shall update sequencing plans.</p> <p>3.1.2.3.0-3.0-2.0-4 The NAS shall disseminate sequencing plans.</p> <p>3.1.2.3.0-3.0-3.0-2 The NAS shall implement TMIs.</p> <p>3.1.2.4.0-3 The NAS shall determine airspace capacity.</p> <p>3.1.2.4.0-3.0-1 The NAS shall evaluate airspace status to determine airspace</p>

Acronym	Sub-System Name	Related Requirements
		<p>capacity.</p> <p>3.1.2.4.0-3.0-2 The NAS shall evaluate flow constraints to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-3 The NAS shall evaluate weather information to determine airspace capacity.</p> <p>3.1.2.4.0-3.0-4 The NAS shall evaluate NAS status information to determine airspace capacity.</p> <p>3.1.2.4.0-4 The NAS shall determine operational demand.</p> <p>3.1.2.4.0-4.0-1 The NAS shall monitor current traffic flow information.</p> <p>3.1.2.4.0-4.0-2 The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.</p> <p>3.1.2.4.0-4.0-3 The NAS shall forecast demand for terminal airspace greater than or equal to 2 hours in advance.</p> <p>3.1.2.4.0-4.0-4 The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
TML	Television Microwave Link	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.3.0-1.0-7 The NAS shall disseminate surveillance information.</p> <p>3.1.1.3.0-1.0-7.0-4 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p>
TRAMS	TCAS Resolution Advisory Monitoring System	<p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p>
TTAP	Traffic Analysis	<p>3.1.3.2.0-1 The NAS shall manage post operational data.</p> <p>3.1.3.2.0-1.0-1 The NAS shall manage operational metrics.</p>

Acronym	Sub-System Name	Related Requirements
	Review Program	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.3.2.0-1.0-3 The NAS shall archive operational system information.</p> <p>3.1.3.2.0-1.0-4 The NAS shall record voice communications</p> <p>3.1.3.2.0-1.0-5 The NAS shall conduct data mining.</p> <p>3.1.3.2.0-1.0-6 The NAS shall provide the information and resources necessary for accident/incident investigations.</p> <p>3.1.3.2.0-1.0-7 The NAS shall acquire cyber security event logs.</p> <p>3.1.3.2.0-2 The NAS shall perform operational analysis.</p> <p>3.1.3.2.0-2.0-1 The NAS shall analyze operational performance information.</p> <p>3.1.3.2.0-2.0-2 The NAS shall analyze operational trends.</p>
TVS	Terminal Voice Switch	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p>
TWEB	Transcribed Weather Broadcast	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-1 The NAS shall acquire surface weather information.</p> <p>3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.</p> <p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.2.2.0-1.0-2.0-1 The NAS shall acquire airborne weather information within 15 seconds of creation.</p> <p>3.2.2.0-1.0-3 The NAS shall acquire weather advisory information.</p> <p>3.2.2.0-1.0-3.0-1 The NAS shall acquire weather advisories within 15 seconds of creation.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-1 The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.</p> <p>3.1.1.4.0-3.0-2 The NAS shall disseminate en route area hazardous weather information to specialists within 2 minutes of detection.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories</p> <p>3.1.1.4.0-4 The NAS shall display weather information.</p>
TWIP	Terminal Weather Information for Pilots	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.2.2.0-1 The NAS shall acquire weather information.</p> <p>3.2.2.0-1.0-1 The NAS shall acquire surface weather information.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.</p> <p>3.2.2.0-1.0-2 The NAS shall acquire weather aloft information.</p> <p>3.2.2.0-1.0-2.0-1 The NAS shall acquire airborne weather information within 15 seconds of creation.</p> <p>3.2.2.0-1.0-3 The NAS shall acquire weather advisory information.</p> <p>3.2.2.0-1.0-3.0-1 The NAS shall acquire weather advisories within 15 seconds of creation.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-1 The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories</p>
TXRX	Transmitter and Receiver Equipment	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p>
URET	User Request Evaluations Tool	<p>3.1.2.1.0-1 The NAS shall project short term trajectories.</p> <p>3.1.2.1.0-1.0-1 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.</p> <p>3.1.2.1.0-1.0-2 The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.</p> <p>3.1.2.1.0-1.0-3 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.</p> <p>3.1.2.1.0-1.0-4 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).</p> <p>3.1.2.1.0-1.0-5 The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.</p> <p>3.1.2.1.0-2 The NAS shall evaluate information necessary for separation assurance.</p> <p>3.1.2.1.0-2.0-1 The NAS shall evaluate traffic information for separation assurance.</p> <p>3.1.2.1.0-2.0-2 The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.</p> <p>3.1.2.1.0-2.0-3 The NAS shall evaluate Terrain/Obstacle information for separation assurance.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.2.1.0-2.0-4 The NAS shall evaluate Flight Status for separation assurance.</p> <p>3.1.2.1.0-3 The NAS shall predict separation conflicts.</p> <p>3.1.2.1.0-3.0-1 The NAS shall predict aircraft-to-aircraft separation conflicts.</p> <p>3.1.2.1.0-3.0-1.0-2 The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.</p> <p>3.1.2.1.0-3.0-1.0-3 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.</p> <p>3.1.2.2.0-1 The NAS shall associate flight paths with flight plans.</p> <p>3.1.2.2.0-1.0-1 The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.</p> <p>3.1.2.2.0-1.0-2 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.</p> <p>3.1.2.2.0-1.0-3 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).</p> <p>3.1.2.2.0-1.0-4 The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.</p> <p>3.1.1.2.0-1 The NAS shall process flight plans.</p> <p>3.1.1.2.0-1.0-1 The NAS shall acquire flight information for flight planning.</p> <p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than</p>

Acronym	Sub-System Name	Related Requirements
		<p>or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds.</p>
USNS	United States Notice to Airmen System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.1.1.1.0-1 The NAS shall manage NAS configuration information.</p> <p>3.1.1.1.0-1.0-1 The NAS shall acquire NAS configuration information.</p> <p>3.1.1.1.0-1.0-3 The NAS shall process NAS configuration information.</p> <p>3.1.1.1.0-1.0-4 The NAS shall disseminate NAS configuration information.</p> <p>3.1.1.1.0-1.0-4.0-1 The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.1.0-1.0-4.0-2 The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-1.0-4.0-3 The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.</p> <p>3.1.1.1.0-2 The NAS shall manage NAS status information.</p> <p>3.1.1.1.0-2.0-1 The NAS shall acquire NAS status information.</p> <p>3.1.1.1.0-2.0-1.0-1 The NAS shall acquire NAS status information within 15 seconds of its creation.</p> <p>3.1.1.1.0-2.0-3 The NAS shall process NAS status information.</p> <p>3.1.1.1.0-2.0-4 The NAS shall disseminate NAS status information.</p> <p>3.1.1.1.0-2.0-4.0-1 The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-2.0-4.0-2 The NAS shall process NAS status information requests within 5 seconds (99th percentile).</p> <p>3.1.1.1.0-2.0-4.0-3 The NAS shall process NAS status information requests within a maximum of 10 seconds.</p> <p>3.1.1.1.0-2.0-4.0-4 The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.</p> <p>3.1.1.1.0-3 The NAS shall maintain air traffic advisories.</p> <p>3.1.1.1.0-3.0-1 The NAS shall maintain airspace restriction advisories.</p> <p>3.1.1.1.0-3.0-2 The NAS shall maintain route status advisories.</p> <p>3.1.1.1.0-3.0-3 The NAS shall maintain flow constraint advisories.</p> <p>3.1.1.1.0-3.0-4 The NAS shall maintain TMI advisories.</p> <p>3.1.1.1.0-4 The NAS shall disseminate air traffic advisories.</p> <p>3.1.1.1.0-4.0-1 The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.1.0-4.0-2 The NAS shall respond to air traffic advisory requests within 5</p>

Acronym	Sub-System Name	Related Requirements
		<p>seconds (99th percentile).                      3.1.1.1.0-4.0-3 The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.</p>
VASI	Visual Approach Slope Indicator	<p>3.2.3.0-2 The NAS shall provide visual spatial references.                      3.2.3.0-2.0-2 The NAS shall provide visual references for vertical descent guidance to runways.                      3.2.3.0-2.0-2.0-1 The NAS shall provide visual approach guidance with a visual range of 4 NM day/night, within 10 degrees of the approach.</p>
VFSS	Voice Frequency Signaling System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.                      3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.                      3.3.2.0-2 The NAS shall provide ground-to-ground communications.                      3.3.2.0-3 The NAS shall provide communications with stakeholders.                      3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.                      3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.                      3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.                      3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.                      3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.                      3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).                      3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p>

Acronym	Sub-System Name	Related Requirements
		<p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p> <p>3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.</p>
VOR	Very High Frequency Omnidirectional Range	<p>3.2.3.0-1 The NAS shall provide electronic spatial references.</p> <p>3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.</p> <p>3.2.3.0-1.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in en route airspace.</p> <p>3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.</p> <p>3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations.</p> <p>3.2.3.0-1.0-5 The NAS shall transmit facility identification information.</p> <p>3.2.3.0-1.0-5.0-1 The NAS shall transmit a facility identification at least once every 30 seconds, and at least six times per minute, throughout the facility's area of coverage.</p>
VOT	Very High Frequency Omnidirectional Range Test	<p>3.2.3.0-1.0-4.0-1 The NAS shall provide reference test signals on the airport surface for navigation avionics.</p> <p>3.2.3.0-1.0-4.0-1.0-1 The NAS shall provide reference test signals for navigation avionics within plus or minus 0.1 degrees.</p>
VSBP	Voice Switch Bypass System	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p>

Acronym	Sub-System Name	Related Requirements
VSCS	Voice Switching and Control System	<p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p>
VTABS	Voice Switching and Control System Training and Backup Switch	<p>3.1.3.2.0-1.0-2 The NAS shall record operational system information.</p> <p>3.3.2.0-1 The NAS shall provide air-ground communications within the NAS.</p> <p>3.3.2.0-2 The NAS shall provide ground-to-ground communications.</p> <p>3.3.2.0-3 The NAS shall provide communications with stakeholders.</p> <p>3.3.2.0-4 The NAS shall configure communication capabilities to support changes in operational conditions.</p> <p>3.3.2.0-4.0-2 The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.</p> <p>3.3.2.0-4.0-3 The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.</p> <p>3.3.2.0-5 The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.</p> <p>3.3.2.0-5.0-1 The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.</p> <p>3.3.2.0-5.0-2 The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).</p> <p>3.3.2.0-5.0-3 The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.</p> <p>3.3.2.0-6 The NAS shall establish emergency communications for providing ATC services.</p>

Acronym	Sub-System Name	Related Requirements
		3.3.2.0-6.0-1 The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.
WAAS	Wide Area Augmentation System	3.2.3.0-1 The NAS shall provide electronic spatial references. 3.2.3.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace. 3.2.3.0-1.0-1.0-1 The NAS shall provide electronic signals that enable aircraft to determine their position in en route airspace. 3.2.3.0-1.0-1.0-2 The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace. 3.2.3.0-1.0-2 The NAS shall provide electronic signals to enable Required Navigation Performance. 3.2.3.0-1.0-3 The NAS shall provide electronic signals to enable approach and landing operations. 3.2.3.0-1.0-3.0-1 The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal. 3.2.3.0-1.0-3.0-2 The NAS shall provide lateral electronic precision landing guidance to within plus or minus 35 feet for aircraft flying Category 1 approaches. 3.2.3.0-1.0-3.0-5 The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta. 3.2.3.0-1.0-3.0-6 The NAS shall provide a distance signal along electronic precision approach paths within plus or minus 0.1 NM. 3.2.3.0-1.0-4 The NAS shall provide electronic signals that enable aircraft to determine their position on the airport surface.
WARP	Weather and Radar Processor	3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-1.0-3 The NAS shall forecast weather aloft. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products.

Acronym	Sub-System Name	Related Requirements
		<p>3.1.1.4.0-2.0-2 The NAS shall generate weather advisories.</p> <p>3.1.1.4.0-2.0-2.0-3 The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-4 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.</p> <p>3.1.1.4.0-2.0-2.0-5 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.</p> <p>3.1.1.4.0-2.0-2.0-5.0-1 The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.</p> <p>3.1.1.4.0-3 The NAS shall disseminate weather information.</p> <p>3.1.1.4.0-3.0-6 The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.</p> <p>3.1.1.4.0-3.0-7 The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).</p> <p>3.1.1.4.0-3.0-8 The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.</p> <p>3.1.1.4.0-3.0-9 The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-11 The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.</p> <p>3.1.1.4.0-3.0-12 The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.</p> <p>3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories</p> <p>3.1.1.4.0-3.0-13.0-1 The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.</p> <p>3.1.1.4.0-3.0-13.0-2 The NAS shall respond to weather advisory requests within 5</p>

Acronym	Sub-System Name	Related Requirements
		seconds (99th percentile). 3.1.1.4.0-3.0-13.0-3 The NAS shall respond to weather advisory requests within a maximum of 10 seconds. 3.1.1.4.0-4 The NAS shall display weather information. 3.1.1.4.0-5 The NAS shall maintain weather information. 3.1.1.4.0-5.0-1 The NAS shall maintain airspace weather advisories. 3.1.1.4.0-5.0-2 The NAS shall maintain route weather advisories. 3.1.1.4.0-5.0-3 The NAS shall maintain terminal weather advisories. 3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.
WDS	Weather Display Subsystem	3.1.1.4.0-4 The NAS shall display weather information.
WEF	Weather Equipment F-400 Series	3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.2.2.0-1.0-1.0-1 The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.
WHDE	Wind Hazard Detection Equipment	3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-2 The NAS shall acquire weather aloft information. 3.2.2.0-1.0-3 The NAS shall acquire weather advisory information. 3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories 3.1.1.4.0-5 The NAS shall maintain weather information. 3.1.1.4.0-5.0-1 The NAS shall maintain airspace weather advisories.

Acronym	Sub-System Name	Related Requirements
		3.1.1.4.0-5.0-2 The NAS shall maintain route weather advisories. 3.1.1.4.0-5.0-3 The NAS shall maintain terminal weather advisories. 3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.
WME	Wind Measurement Equipment	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories 3.1.1.4.0-5 The NAS shall maintain weather information.
WMSCR	Weather Message Switching Center Replacement	3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-4 The NAS shall display weather information. 3.1.1.4.0-5.0-1 The NAS shall maintain airspace weather advisories. 3.1.1.4.0-5.0-2 The NAS shall maintain route weather advisories. 3.1.1.4.0-5.0-3 The NAS shall maintain terminal weather advisories. 3.3.1.1.0-3 Essential NAS Services shall have a minimum availability of .999.
WSP	Weather System Processor	3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-2 The NAS shall acquire weather aloft information. 3.2.2.0-1.0-3 The NAS shall acquire weather advisory information. 3.1.1.4.0-1 The NAS shall analyze weather information. 3.1.1.4.0-1.0-3 The NAS shall forecast weather aloft. 3.1.1.4.0-2 The NAS shall generate weather products. 3.1.1.4.0-2.0-1 The NAS shall generate area weather products.

Acronym	Sub-System Name	Related Requirements
		3.1.1.4.0-2.0-2 The NAS shall generate weather advisories. 3.1.1.4.0-3 The NAS shall disseminate weather information. 3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories 3.1.1.4.0-4 The NAS shall display weather information. 3.1.1.4.0-5 The NAS shall maintain weather information. 3.1.1.4.0-5.0-1 The NAS shall maintain airspace weather advisories. 3.1.1.4.0-5.0-2 The NAS shall maintain route weather advisories. 3.1.1.4.0-5.0-3 The NAS shall maintain terminal weather advisories. 3.1.1.4.0-5.0-4 The NAS shall maintain weather forecasts.
Wx CAM	Weather Camera	3.1.3.2.0-1.0-2 The NAS shall record operational system information. 3.2.2.0-1 The NAS shall acquire weather information. 3.2.2.0-1.0-1 The NAS shall acquire surface weather information. 3.1.1.4.0-3.0-13 The NAS shall disseminate weather advisories

## Appendix C: Enterprise Requirements to NAS Sub-Systems Mapping

### BACKGROUND

This document presents National Airspace System (NAS) Requirements Document (RD) requirements mapping to the sub-systems represented on the NAS EA SV-1 Hierarchy. These are enterprise-level requirements that represent capabilities that have already been implemented. The requirements presented in this document serve as the highest-level source of requirements that represent the “As-is” state of NAS at the time these requirements were approved. This is a working document and changes as more systems achieve the “in-service” state and improve NAS functionality over time.

### Documents Layout and Contents

Table 1, presented below, consists of three columns. Column 1 is the requirement number as it is listed in the NAS-RD-2013 document. Column 2 is the requirement “shall” statement. Column 3 lists all NAS operational systems that map to (or associated) with that particular requirement. These are systems currently included in the SV-1 hierarchy.

It should be understood that the sub-systems mapped to the requirements may fulfill the requirement completely, or the sub-system may only contribute to requirement. In most cases, systems will only contribute to part of a requirement. The contribution of each system to the requirements is part of the design of the system, and is determined by the program offices.

Dictating which requirements require interfaces by mapping communication systems to them could restrict design. Therefore any requirement that relies on an interface between multiple systems to accomplish is also contributed by the appropriate communication requirements and systems.

Object Number	Requirement	Contributing Sub-Systems
3.1	Mission Services	
3.1.1	Information Services	
3.1.1.1	<i>Aeronautical Information Management</i>	
3.1.1.1.0-1	The NAS shall manage NAS configuration information.	AISR ASPM ATCSCC (NDS)

Object Number	Requirement	Contributing Sub-Systems
		DUATS FNS FS-21 NASR NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-1.0-1	The NAS shall acquire NAS configuration information.	AISR ASPM ATCSCC (NDS) DUATS EDDS FNS FS-21 NASR NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-1.0-2	The NAS shall analyze NAS configuration information.	NASR NOTAM Tracking System
3.1.1.1.0-1.0-3	The NAS shall process NAS configuration information.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASR

Object Number	Requirement	Contributing Sub-Systems
		NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-1.0-4	The NAS shall disseminate NAS configuration information.	AFTechNet AISR ASPM ATCSCC (NDS) DINS DUATS FNS FS-21 NASR NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-1.0-4.0-1	The NAS shall respond to NAS configuration information requests with a mean of less than or equal to 3 seconds.	AISR ATCSCC (NDS) DUATS FNS FS-21 NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-1.0-4.0-2	The NAS shall respond to NAS configuration information requests within 5 seconds (99th percentile).	AISR ATCSCC (NDS)

Object Number	Requirement	Contributing Sub-Systems
		DUATS FNS FS-21 OASIS SAMS USNS
3.1.1.1.0-1.0-4.0-3	The NAS shall respond to NAS configuration information requests with a maximum of 10 seconds.	AISR ATCSCC (NDS) DUATS FNS FS-21 OASIS SAMS USNS
3.1.1.1.0-2	The NAS shall manage NAS status information.	ACE-IDS AISR ASPM ATCSCC (NDS) DSP DUATS ERIDS FNS FS-21 IDS-4 NASR NASSI NRS OASIS

Object Number	Requirement	Contributing Sub-Systems
		SAMS USNS
3.1.1.1.0-2.0-1	The NAS shall acquire NAS status information.	AIDAP AISR ASPM ATCSCC (NDS) DUATS EDDS FNS FS-21 NASR NASSI NOTAM Tracking System NRS OASIS SAMS USNS
3.1.1.1.0-2.0-1.0-1	The NAS shall acquire NAS status information within 15 seconds of its creation.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASSI NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-2.0-2	The NAS shall analyze NAS status information.	FNS

Object Number	Requirement	Contributing Sub-Systems
		NASR NASSI
3.1.1.1.0-2.0-3	The NAS shall process NAS status information.	ACE-IDS AISR ATCSCC (NDS) DUATS ERIDS FNS FS-21 IDS-4 NASR NASSI NOTAM Tracking System NRS OASIS SAMS USNS
3.1.1.1.0-2.0-4	The NAS shall disseminate NAS status information.	ACE-IDS AFTechNet AIDAP AISR ASPM ATCSCC (NDS) DataComm DUATS ERIDS FNS FS-21

Object Number	Requirement	Contributing Sub-Systems
		IDS-4 NASR NASSI NOTAM Tracking System NRS OASIS SAMS USNS
3.1.1.1.0-2.0-4.0-1	The NAS shall process NAS status information requests with a mean of less than or equal to 3 seconds.	AIDAP AISR ATCSCC (NDS) DUATS FNS FS-21 NASSI NOTAM Tracking System OASIS SAMS USNS
3.1.1.1.0-2.0-4.0-2	The NAS shall process NAS status information requests within 5 seconds (99th percentile).	AIDAP AISR ATCSCC (NDS) DUATS FNS FS-21 NASSI OASIS SAMS

Object Number	Requirement	Contributing Sub-Systems
		USNS
3.1.1.1.0-2.0-4.0-3	The NAS shall process NAS status information requests within a maximum of 10 seconds.	AIDAP AISR ATCSCC (NDS) DUATS FNS FS-21 NASSI OASIS SAMS USNS
3.1.1.1.0-2.0-4.0-4	The NAS shall provide requested NAS status information within a radius of 100 miles from a specified location.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASSI OASIS SAMS USNS
3.1.1.1.0-3	The NAS shall maintain air traffic advisories.	AISR ATCSCC (NDS) DUATS EDDS FNS FS-21 NASR OASIS

Object Number	Requirement	Contributing Sub-Systems
		USNS
3.1.1.1.0-3.0-1	The NAS shall maintain airspace restriction advisories.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASR NOTAM Tracking System OASIS USNS
3.1.1.1.0-3.0-2	The NAS shall maintain route status advisories.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASR NOTAM Tracking System OASIS USNS
3.1.1.1.0-3.0-3	The NAS shall maintain flow constraint advisories.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASR NOTAM Tracking System OASIS USNS

Object Number	Requirement	Contributing Sub-Systems
3.1.1.1.0-3.0-4	The NAS shall maintain TMI advisories.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASR NOTAM Tracking System OASIS USNS
3.1.1.1.0-4	The NAS shall disseminate air traffic advisories.	AISR ATCSCC (NDS) DUATS FNS FS-21 NASR NOTAM Tracking System OASIS USNS
3.1.1.1.0-4.0-1	The NAS shall respond to air traffic advisory requests with a mean of less than or equal to 3 seconds.	AISR ATCSCC (NDS) DUATS FNS FS-21 OASIS USNS
3.1.1.1.0-4.0-2	The NAS shall respond to air traffic advisory requests within 5 seconds (99th percentile).	AISR ATCSCC (NDS) DUATS

Object Number	Requirement	Contributing Sub-Systems
		FNS FS-21 OASIS USNS
3.1.1.1.0-4.0-3	The NAS shall respond to air traffic advisory requests within a maximum of 10 seconds.	AISR ATCSCC (NDS) DUATS FNS FS-21 OASIS USNS
3.1.1.2	<i>Flight and State Data Management</i>	
3.1.1.2.0-1	The NAS shall process flight plans.	AEFS ASPM DUATS EDDS ERAM FDIO FDIOC FDIOR FS-21 OASIS OFDPS PRM TBFM TDLS TFMS TMA

Object Number	Requirement	Contributing Sub-Systems
		URET
3.1.1.2.0-1.0-1	The NAS shall acquire flight information for flight planning.	AEFS DUATS EDDS ERAM FDIO FDIOC FDIOR FS-21 HCS MEARTS OASIS OFDPS PRM TBFM TDLS TFMS TMA URET
3.1.1.2.0-1.0-1.0-1	The NAS shall validate proposed flight plans and amendments with a mean of less than or equal to 4 seconds.	ERAM FDIO FDIOC FDIOR FDPS FS-21 HCS MEARTS OASIS

Object Number	Requirement	Contributing Sub-Systems
		OFDPS
3.1.1.2.0-1.0-1.0-2	The NAS shall validate proposed flight plans and amendments within 6 seconds (99th percentile).	ERAM FDIO FDIOC FDIOR FDPS FS-21 HCS MEARTS OASIS OFDPS
3.1.1.2.0-1.0-1.0-3	The NAS shall validate proposed flight plans and amendments with a maximum of 12 seconds.	ERAM FDIO FDIOC FDIOR FDPS FS-21 HCS MEARTS OASIS OFDPS
3.1.1.2.0-1.0-2	The NAS shall provide feedback on proposed flight plans.	AEFS ERAM FDIO FDIOC FDIOR FDPS FS-21

Object Number	Requirement	Contributing Sub-Systems
		HCS MEARTS OASIS OFDPS PRM TDLS
3.1.1.2.0-1.0-2.0-1	The NAS shall notify users of changes in the availability of their preferred flight routes.	MEARTS PRM TDLS
3.1.1.2.0-2	The NAS shall collaborate with users on flight plans.	AEFS CARTS DSP EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS PRM RCS STARS

Object Number	Requirement	Contributing Sub-Systems
		TBFM
3.1.1.2.0-3	The NAS shall activate flight plans.	AEFS CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS PRM RCS STARS
3.1.1.2.0-4	The NAS shall disseminate flight plans.	AEFS ASPM CARTS DSP DUATS EBUS ECG

Object Number	Requirement	Contributing Sub-Systems
		EDDS EFSTS ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS PRM RCS STARS TDLS
3.1.1.2.0-4.0-1	The NAS shall respond to flight plan requests from specialists with a maximum of 10 seconds.	ASPM CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR

Object Number	Requirement	Contributing Sub-Systems
		FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS PRM RCS STARS TDLS
3.1.1.2.0-5	The NAS shall validate flight information.	AEFS CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OFDPS

Object Number	Requirement	Contributing Sub-Systems
		PRM RCS STARS
3.1.1.2.0-5.0-1	The NAS shall update flight information within 12 seconds of receiving a flight plan.	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OFDPS RCS STARS
3.1.1.2.0-5.0-2	The NAS shall validate active flight plan amendments with a mean of less than or equal to 0.6 seconds.	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR

Object Number	Requirement	Contributing Sub-Systems
		FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-3	The NAS shall validate active flight plan amendments within 1.2 seconds (99th percentile).	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS

Object Number	Requirement	Contributing Sub-Systems
3.1.1.2.0-5.0-4	The NAS shall validate active flight plan amendments with a maximum of 3 seconds.	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-5	The NAS shall validate flight plan actions with a mean of less than or equal to 1.5 seconds.	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS

Object Number	Requirement	Contributing Sub-Systems
		GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-6	The NAS shall validate flight plan actions within 3 seconds (99th percentile).	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-7	The NAS shall validate flight plan actions with a maximum of 6 seconds.	CARTS EBUS

Object Number	Requirement	Contributing Sub-Systems
		ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-7.0-1	The NAS shall detect amended flight plan conflicts with a mean of less than or equal to 1.5 seconds.	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS

Object Number	Requirement	Contributing Sub-Systems
		HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-7.0-2	The NAS shall detect amended flight plan conflicts within 3 seconds (99th percentile).	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-5.0-7.0-3	The NAS shall detect amended flight plan conflicts with a maximum of 6 seconds.	CARTS EBUS ECG ERAM

Object Number	Requirement	Contributing Sub-Systems
		FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.2.0-6	The NAS shall monitor aircraft status.	CARTS DSP EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS

Object Number	Requirement	Contributing Sub-Systems
		MEARTS PRM RCS STARS TBFM
3.1.1.2.0-6.0-1	The NAS shall detect aircraft non-compliance with clearances.	CARTS EBUS ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS PRM RCS STARS
3.1.1.2.0-6.0-2	The NAS shall display alternate route clearances for aircraft in non-compliance with a clearance within a maximum of 3 seconds of detection of the non-compliance.	CARTS STARS
3.1.1.2.0-7	The NAS shall close flight plans.	CARTS DUATS EBUS

Object Number	Requirement	Contributing Sub-Systems
		ECG ERAM FDAT FDIO FDIOC FDIOR FDPS FDRS GPS GS HCS MEARTS OASIS OFDPS RCS STARS
3.1.1.3	<i>Surveillance Information Management</i>	
3.1.1.3.0-1	The NAS shall process surveillance information.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASDE-3 ASDE-X ASR - 8 ASR - 11 ASR - 9 ASSC ATCBI-5

Object Number	Requirement	Contributing Sub-Systems
		ATCBI-6 CARTS CARSR CD-2 CV-4400 ERAM FPS-20 FPS-60 LCGS MEARTS Mode-S SBS STARS
3.1.1.3.0-1.0-1	The NAS shall determine the position for all targets.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASDE-3 ASDE-X ASR - 8 ASR - 11 ASR - 9 ASSC ATCBI-5 ATCBI-6 CARSR CARTS CD-2

Object Number	Requirement	Contributing Sub-Systems
		CV-4400 FPS-20 FPS-60 LCGS Mode-S SBS
3.1.1.3.0-1.0-1.0-1	The NAS shall detect aircraft entering an ADIZ within 13 seconds.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 8 ASR - 11 ASR- 9 ATCBI-5 ATCBI-6 ATOP CARSR CARTS CD-2 CV-4400 EBUS ERAM FPS-20 FPS-60 HCS MEARTS Mode S SBS

Object Number	Requirement	Contributing Sub-Systems
		STARS
3.1.1.3.0-1.0-1.0-2	The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 8 ASR - 11 ASR- 9 ATCBI-5 ATCBI-6 ATOP CARSR CARTS CD-2 CV-4400 EBUS ERAM FPS-20 FPS-60 HCS MEARTS Mode S SBS STARS
3.1.1.3.0-1.0-1.0-3	The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 NM, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.	ARSR-1 ARSR-2 ARSR-3 ARSR-4

Object Number	Requirement	Contributing Sub-Systems
		ATCBI-5 ATCBI-6 ATOP CARSR CARTS CD-2 CV-4400 EBUS ERAM FPS-20 FPS-60 HCS MEARTS Mode S SBS STARS
3.1.1.3.0-1.0-1.0-4	The NAS shall display aircraft position in en route environments to within a 2.04 NM (99th percentile) of the actual position over the ground.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-5	The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile) of the actual position over the ground.	CARTS DSR ERAM HCS MEARTS STARS

Object Number	Requirement	Contributing Sub-Systems
3.1.1.3.0-1.0-1.0-6	The NAS shall display the position of aircraft on the airport surface within plus or minus 20 feet.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-7	The NAS shall display the position of aircraft in precision runway approach airspace within plus or minus 20 feet.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-8	The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-9	The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-10	The NAS shall display the reported altitude for each controlled aircraft to within 103 feet (68th percentile) of their actual pressure altitude.	CARTS DSR ERAM HCS

Object Number	Requirement	Contributing Sub-Systems
		MEARTS STARS
3.1.1.3.0-1.0-1.0-11	The NAS shall display position of aircraft operating within an ADIZ within plus or minus 0.176 degrees azimuth of the actual position over the ground.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-12	The NAS shall display the position of aircraft operating within an ADIZ with plus or minus 0.125 NM of the actual position over the ground.	CARTS DSR ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-1.0-13	The NAS shall update the position of aircraft in NAS controlled airspace within a maximum time between updates of 13 seconds.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 8 ASR - 11 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CV-4400 DSR ERAM

Object Number	Requirement	Contributing Sub-Systems
		HCS MEARTS Mode S SBS STARS
3.1.1.3.0-1.0-1.0-13.0-1	The NAS shall update the position of aircraft in terminal airspace within a maximum time between updates of 5.33 seconds.	ASR - 8 ASR - 11 ASR - 9 ATCBI-5 ATCBI-6 CARTS CV-4400 DSR ERAM HCS MEARTS Mode S SBS STARS
3.1.1.3.0-1.0-1.0-13.0-2	The NAS shall update the position of aircraft in en route airspace within a maximum time between updates of 12.1 seconds.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 CARSR DSR ERAM HCS MEARTS

Object Number	Requirement	Contributing Sub-Systems
		SBS
3.1.1.3.0-1.0-1.0-13.0-3	The NAS shall update the position of aircraft on the airport surface area within a maximum time between updates of 1.1 seconds.	ASDE-3 ASDE-X ASSC ATCBI-5 PRM SBS
3.1.1.3.0-1.0-1.0-13.0-4	The NAS shall update the position of aircraft in precision runway approach airspace within a maximum time between updates of 2.4 seconds.	ASR - 8 ASR - 11 ASR- 9 ATCBI-5 CARTS CV-4400 MEARTS STARS
3.1.1.3.0-1.0-1.0-13.0-5	The NAS shall update the position of aircraft in flying closely spaced parallel approaches within a maximum time between updates of 1.125 seconds when the runways are less than 3400 feet apart.	PRM
3.1.1.3.0-1.0-1.0-14	The NAS shall track aircraft and vehicles on the airport surface.	ASDE-3 ASDE-X ASSC LCGS SBS
3.1.1.3.0-1.0-1.0-15	The NAS shall provide the information and resources necessary for the manual entry of aircraft position information.	CARTS ERAM HCS MEARTS STARS

Object Number	Requirement	Contributing Sub-Systems
3.1.1.3.0-1.0-2	The NAS shall generate flight paths.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ASSC ATCBI-5 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM STARS
3.1.1.3.0-1.0-2.0-1	The NAS shall project each aircraft's flight path at least every 13 seconds.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6

Object Number	Requirement	Contributing Sub-Systems
		CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM SBS STARS
3.1.1.3.0-1.0-2.0-2	The NAS shall update each aircraft's flight path at least every 13 seconds.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S

Object Number	Requirement	Contributing Sub-Systems
		PRM SBS STARS
3.1.1.3.0-1.0-3	The NAS shall determine the velocity for all aircraft detected by surveillance sources.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ASSC ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM SBS STARS
3.1.1.3.0-1.0-3.0-1	The NAS shall determine the ground speed of aircraft entering an ADIZ within 20 knots (99th percentile) of its actual ground speed.	ARSR-1 ARSR-2 ARSR-3 ARSR-4

Object Number	Requirement	Contributing Sub-Systems
		ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S STARS
3.1.1.3.0-1.0-3.0-2	The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots of the aircraft's true speed during steady-level flight.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM

Object Number	Requirement	Contributing Sub-Systems
		HCS MEARTS Mode-S SBS STARS
3.1.1.3.0-1.0-3.0-3	The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the true speed during aircraft acceleration in level flight.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S SBS STARS
3.1.1.3.0-1.0-3.0-4	The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 10 knots of the aircraft's true speed during straight-line-and-level flight at constant speed.	ARSR-1 ARSR-2 ARSR-3 ARSR-4

Object Number	Requirement	Contributing Sub-Systems
		ASR - 11 ASR - 7 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S SBS STARS
3.1.1.3.0-1.0-3.0-5	The NAS shall determine the ground speed of each controlled aircraft in terminal areas to within 30 knots of its true speed during aircraft acceleration in level flight.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2

Object Number	Requirement	Contributing Sub-Systems
		CV-4400 ERAM HCS MEARTS Mode-S SBS STARS
3.1.1.3.0-1.0-3.0-6	The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 11 ASR-8 ASR - 9 ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM STARS SBS

Object Number	Requirement	Contributing Sub-Systems
3.1.1.3.0-1.0-3.0-7	The NAS shall provide the information and resources necessary for the manual entry of aircraft velocity information.	CARTS ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-4	The NAS shall identify all aircraft receiving air traffic services.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASDE-3 ASDE-X ASR - 11 ASR-8 ASR - 9 ASSC ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM SBS STARS

Object Number	Requirement	Contributing Sub-Systems
3.1.1.3.0-1.0-4.0-1	The NAS shall provide aircraft-supplied identity information when the information is available from the aircraft.	ASR-8 ASR-9 ASR-11 ATCBI-5 ATCBI-6 CD-2 CV-4400 Mode-S SBS
3.1.1.3.0-1.0-4.0-2	The NAS shall provide the information and resources necessary for the manual entry of identity information.	ASDE-X ASSC CARTS ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-5	The NAS shall transfer control responsibilities.	CARTS ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-6	The NAS shall integrate surveillance information from multiple sources.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASDE-3 ASDE-X ASR - 11

Object Number	Requirement	Contributing Sub-Systems
		ASR-8 ASR - 9 ASSC ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM STARS SBS
3.1.1.3.0-1.0-6.0-1	The NAS shall generate common surveillance situation information for use by all operations.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASDE-3 ASDE-X ASR - 11 ASR-8 ASR - 9 ASSC ATCBI-5 ATCBI-6

Object Number	Requirement	Contributing Sub-Systems
		CARSR CARTS CD-2 CV-4400 ERAM HCS MEARTS Mode-S PRM SBS STARS
3.1.1.3.0-1.0-7	The NAS shall disseminate surveillance information.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASDE-3 ASDE-X ASR - 8 ASR - 11 ASR - 9 ASSC ATCBI-5 ATCBI-6 CARSR CARTS CD-2 CV-4400 DSR

Object Number	Requirement	Contributing Sub-Systems
		DVC ERAM FPS-20 FPS-60 LCGS MEARTS Mode-S PRM SBS STARS TML
3.1.1.3.0-1.0-7.0-1	The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a mean of less than or equal to 3 seconds.	CARTS ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-7.0-2	The NAS shall respond to current aircraft position, altitude, and speed requests from specialists within 5 seconds (99th percentile).	CARTS ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-7.0-3	The NAS shall respond to current aircraft position, altitude, and speed requests from specialists with a maximum of 10 seconds.	CARTS ERAM HCS MEARTS STARS
3.1.1.3.0-1.0-7.0-4	The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.	CARTS DSR

Object Number	Requirement	Contributing Sub-Systems
		DVC ERAM MEARTS STARS TML
3.1.1.3.0-1.0-7.0-5	The NAS shall display en route area surveillance data to specialists within a maximum of 3.0 seconds of its detection.	DSR DVC ERAM TML
3.1.1.3.0-1.0-7.0-6	The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.	CARTS DSR DVC ERAM MEARTS STARS TML
3.1.1.3.0-1.0-7.0-7	The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.	CARTS DSR DVC ERAM MEARTS STARS TML
3.1.1.3.0-1.0-7.0-8	The NAS shall display the position of aircraft in terminal environments within plus or minus 0.28 NM (99th percentile).	CARTS DSR DVC ERAM MEARTS

Object Number	Requirement	Contributing Sub-Systems
		STARS TML
3.1.1.3.0-1.0-7.0-9	The NAS shall display horizontal position information within plus or minus 2.04 (99th percentile) NM for target ranges greater than 100 NM of the primary surveillance source.	CARTS DSR DVC ERAM MEARTS STARS TML
3.1.1.3.0-1.0-7.0-10	The NAS shall display horizontal position information within plus or minus 1.0 (99th percentile) NM for target ranges less than 100 NM of the primary surveillance source.	CARTS DSR DVC ERAM MEARTS STARS TML
3.1.1.3.0-1.0-7.0-11	The NAS shall display requested aircraft track within plus or minus 5 degrees for aircraft in steady-level flight.	CARTS DSR DVC ERAM MEARTS STARS TML
3.1.1.3.0-1.0-7.0-12	The NAS shall display requested aircraft speed within plus or minus 20 knots or less for an aircraft in constant steady-level flight.	CARTS DSR DVC ERAM MEARTS

Object Number	Requirement	Contributing Sub-Systems
		STARS TML
3.1.1.4	<i>Weather Information Management</i>	
3.1.1.4.0-1	The NAS shall analyze weather information.	ADAS ASI ASOS AWIPS AWOS AWSS CIWS DASI DUATS FBWTG JAWS NEXRAD NFU TDWR WARP WHDE WSP
3.1.1.4.0-1.0-1	The NAS shall analyze the impact of weather on operational capacity.	CIWS
3.1.1.4.0-1.0-2	The NAS shall forecast surface weather.	ATIS CIWS ITWS
3.1.1.4.0-1.0-2.0-1	The NAS shall forecast hazardous surface weather phenomenon in the terminal environment greater than or equal to 1 minute prior to the occurrence of the phenomenon.	CIWS ITWS
3.1.1.4.0-1.0-3	The NAS shall forecast weather aloft.	CIWS

Object Number	Requirement	Contributing Sub-Systems
		DUATS ITWS WARP WSP
3.1.1.4.0-1.0-3.0-1	The NAS shall update storm cell predictions every 5 minutes for flight planning.	
3.1.1.4.0-2	The NAS shall generate weather products.	ADAS ASI ASOS AWIPS AWOS AWSS CIWS ITWS JAWS NEXRAD NFU TDWR WARP WHDE WME WMSCR WSP
3.1.1.4.0-2.0-1	The NAS shall generate area weather products.	ADAS ASI ASOS AWIPS CIWS

Object Number	Requirement	Contributing Sub-Systems
		ITWS JAWS NEXRAD NFU RRH SAWS TDWR WARP WHDE WMSCR WSP
3.1.1.4.0-2.0-1.0-1	The NAS shall update en route weather conditions aloft every 5 minutes for flight planning.	
3.1.1.4.0-2.0-1.0-2	The NAS shall update terminal weather conditions aloft every 5 minutes for flight planning.	
3.1.1.4.0-2.0-2	The NAS shall generate weather advisories.	ADAS ASI ASOS ASPM AWIPS AWIS AWOS AWSS CIWS DASI FBWTG FS-21 ITWS

Object Number	Requirement	Contributing Sub-Systems
		JAWS LLWAS NEXRAD NFU RRH SAWS TDWR WARP WHDE WME WSP
3.1.1.4.0-2.0-2.0-1	The NAS shall update hazardous weather information within 2 minutes of receipt.	ADAS
3.1.1.4.0-2.0-2.0-2	The NAS shall update terminal area hazardous flight planning weather information within one minute of receiving an update.	ASPM
3.1.1.4.0-2.0-2.0-3	The NAS shall update national hazardous flight planning weather information at least once every 30 minutes.	ATOP CIWS DUATS ERAM FS-21 HCS ITWS OASIS URET WARP
3.1.1.4.0-2.0-2.0-4	The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.	ATOP CIWS DUATS

Object Number	Requirement	Contributing Sub-Systems
		ERAM FS-21 HCS ITWS OASIS URET WARP
3.1.1.4.0-2.0-2.0-5	The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.	ATOP CIWS DUATS ERAM FS-21 HCS ITWS OASIS URET WARP
3.1.1.4.0-2.0-2.0-5.0-1	The NAS shall update hazardous weather advisories less than or equal to 20 minutes ahead of sustained wind shifts that could affect airport planning operations.	ATOP CIWS DUATS ERAM FS-21 HCS ITWS OASIS URET WARP
3.1.1.4.0-3	The NAS shall disseminate weather information.	ADAS

Object Number	Requirement	Contributing Sub-Systems
		ASI ASOS ASPM ARSR-4 ASR-11 AWIPS AWIS AWOS AWSSCIWS DASI DataComm DUATS FBWTG FS-21 IFST ITWS JAWS LLWAS NEXRAD NFU NIDS OASIS TDWR TWEB TWIP WARP WHDE WME

Object Number	Requirement	Contributing Sub-Systems
		WMSCR WSP
3.1.1.4.0-3.0-1	The NAS shall disseminate terminal area hazardous weather information to specialists within 1 minute of detection.	ADAS ASOS ASPM AWSS TWEB TWIP
3.1.1.4.0-3.0-2	The NAS shall disseminate en route area hazardous weather information to specialists within 2 minutes of detection.	ADAS TWEB
3.1.1.4.0-3.0-3	The NAS shall respond to weather information request with a mean of less than or equal to 3 seconds.	ASPM
3.1.1.4.0-3.0-4	The NAS shall respond to weather information request within 5 seconds (99th percentile).	ASPM
3.1.1.4.0-3.0-5	The NAS shall respond to weather information request with a maximum of 10 seconds.	ASPM
3.1.1.4.0-3.0-6	The NAS shall respond to hazardous weather information requests for 100 NM area with a mean of less than or equal to 1.5 seconds.	ATOP CIWS ERAM HCS ITWS OASIS URET WARP
3.1.1.4.0-3.0-7	The NAS shall respond to hazardous weather information requests for 100 NM area within 3 seconds (99th percentile).	ATOP CIWS ERAM HCS

Object Number	Requirement	Contributing Sub-Systems
		ITWS OASIS URET WARP
3.1.1.4.0-3.0-8	The NAS shall respond to hazardous weather information requests for 100 NM area with a maximum of 6 seconds.	ATOP CIWS ERAM HCS ITWS OASIS URET WARP
3.1.1.4.0-3.0-9	The NAS shall respond to hazardous weather information requests for the continental US with a mean of less than or equal to 3 seconds.	ATOP CIWS ERAM HCS ITWS OASIS URET WARP
3.1.1.4.0-3.0-10	The NAS shall respond to hazardous weather information requests for the continental US within 5 seconds (99th percentile).	AWIPS
3.1.1.4.0-3.0-11	The NAS shall respond to hazardous weather information requests for the continental US within a maximum of 10 seconds.	ATOP CIWS ERAM HCS ITWS OASIS

Object Number	Requirement	Contributing Sub-Systems
		URET WARP
3.1.1.4.0-3.0-12	The NAS shall respond to weather information requests for less than or equal to 200 miles around a specified route of flight.	ATOP CIWS ERAM HCS ITWS OASIS URET WARP
3.1.1.4.0-3.0-13	The NAS shall disseminate weather advisories	ASPM CIWS FS-21 IFST TWEB TWIP WARP WHDE WME WSP Wx CAM
3.1.1.4.0-3.0-13.0-1	The NAS shall respond to weather advisory requests with a mean of less than or equal to 3 seconds.	ATOP CIWS ERAM HCS ITWS OASIS URET

Object Number	Requirement	Contributing Sub-Systems
		WARP
3.1.1.4.0-3.0-13.0-2	The NAS shall respond to weather advisory requests within 5 seconds (99th percentile).	ATOP CIWS ERAM HCS ITWS OASIS URET WARP
3.1.1.4.0-3.0-13.0-3	The NAS shall respond to weather advisory requests within a maximum of 10 seconds.	ATOP CIWS ERAM HCS ITWS OASIS URET WARP
3.1.1.4.0-4	The NAS shall display weather information.	ACE-IDS ASOS ASPM AWIPS CIWS DSR ERIDS IDS-4 ITWS OASIS RRH

Object Number	Requirement	Contributing Sub-Systems
		SAWS TDWR TWEB WARP WDS WMSCR WSP
3.1.1.4.0-5	The NAS shall maintain weather information.	ADAS ASI ASOS AWIPS CIWS DUATS FS-21 ITWS JAWS NEXRAD NFU OASIS TDWR WARP WHDE WME WSP
3.1.1.4.0-5.0-1	The NAS shall maintain airspace weather advisories.	CIWS WARP WHDE WMSCR

Object Number	Requirement	Contributing Sub-Systems
		WSP
3.1.1.4.0-5.0-2	The NAS shall maintain route weather advisories.	WARP WHDE WMSCR WSP
3.1.1.4.0-5.0-3	The NAS shall maintain terminal weather advisories.	WARP WHDE WMSCR WSP
3.1.1.4.0-5.0-4	The NAS shall maintain weather forecasts.	CIWS FBWTG ITWS JAWS NFU WARP WHDE WSP
3.1.2	Traffic Services	
3.1.2.1	<i>Separation Management</i>	
3.1.2.1.0-1	The NAS shall project short term trajectories.	ARTS ASDE-3 ASDE-X ASPM CTAS DSR EBUS ECG ERAM

Object Number	Requirement	Contributing Sub-Systems
		FDMSAW HCS MEARTS PRM RCS SMS / SMA STARS URET
3.1.2.1.0-1.0-1	The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.	ASPM CTAS DSR EBUS ECG ERAM FDMSAW HCS MEARTS RCS STARS URET
3.1.2.1.0-1.0-2	The NAS shall generate short term trajectories for each aircraft at least once every 13 seconds.	CTAS DSR EBUS ECG ERAM FDMSAW HCS MEARTS

Object Number	Requirement	Contributing Sub-Systems
		PRM RCS STARS URET
3.1.2.1.0-1.0-3	The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request with a mean of less than or equal to 3 seconds.	CARTS CTAS DSR EBUS ECG ERAM FDMSAW MEARTS PRM RCS SMS / SMA STARS URET
3.1.2.1.0-1.0-4	The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within 5 seconds (99th percentile).	CARTS CTAS DSR EBUS ECG ERAM FDMSAW MEARTS PRM RCS SMS / SMA

Object Number	Requirement	Contributing Sub-Systems
		STARS URET
3.1.2.1.0-1.0-5	The NAS shall display short term predictions for aircraft position, altitude, speed and trajectory upon specialist request within a maximum of 10 seconds.	CARTS CTAS DSR EBUS ECG ERAM FDMSAW MEARTS PRM RCS STARS URET
3.1.2.1.0-2	The NAS shall evaluate information necessary for separation assurance.	ATOP CARTS CTAS EBUS ECG ERAM FDMSAW HCS MEARTS PRM RCS STARS URET
3.1.2.1.0-2.0-1	The NAS shall evaluate traffic information for separation assurance.	ATOP

Object Number	Requirement	Contributing Sub-Systems
		CARTS CTAS EBUS ECG ERAM FDMSAW HCS MEARTS PRM RCS STARS URET
3.1.2.1.0-2.0-2	The NAS shall evaluate Protected Airspace/Surface Volumes information for separation assurance.	ATOP CARTS CTAS EBUS ECG ERAM ETARS HCS MEARTS PRM RCS STARS URET
3.1.2.1.0-2.0-3	The NAS shall evaluate Terrain/Obstacle information for separation assurance.	CARTS CTAS EBUS

Object Number	Requirement	Contributing Sub-Systems
		ECG ERAM FDMSAW HCS MEARTS PRM RCS STARS URET
3.1.2.1.0-2.0-4	The NAS shall evaluate Flight Status for separation assurance.	ATOP CARTS CTAS EBUS ECG ERAM HCS MEARTS PRM RCS STARS URET
3.1.2.1.0-3	The NAS shall predict separation conflicts.	ATOP CARTS EBUS ECG ERAM FDMSAW HCS

Object Number	Requirement	Contributing Sub-Systems
		MEARTS PRM RCS STARS URET
3.1.2.1.0-3.0-1	The NAS shall predict aircraft-to-aircraft separation conflicts.	ACD\VRS ACE ATOP CARTS EBUS ECG ERAM HCS MEARTS PRM RCS STARS URET
3.1.2.1.0-3.0-1.0-1	The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in terminal areas at least 30 seconds prior to the violation.	CARTS MEARTS RCS STARS
3.1.2.1.0-3.0-1.0-2	The NAS shall alert specialists of aircraft-to-aircraft separation conflicts in en route airspace at least 80 seconds prior to the violation.	EBUS ECG ERAM HCS MEARTS RCS

Object Number	Requirement	Contributing Sub-Systems
		STARS URET
3.1.2.1.0-3.0-1.0-3	The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.	EBUS ECG ERAM HCS MEARTS RCS STARS URET
3.1.2.1.0-3.0-1.0-4	The NAS shall alert participating aircraft of separation conflicts with other aircraft within 10 seconds of making the prediction.	
3.1.2.1.0-3.0-1.0-5	The NAS shall alert users of separation conflicts in terminal airspace at least 30 seconds prior to the violation.	
3.1.2.1.0-3.0-1.0-6	The NAS shall alert users of separation conflicts in en route airspace at least 65 seconds prior to the violation.	
3.1.2.1.0-3.0-2	The NAS shall predict airspace separation conflicts.	ACES CARTS EBUS ECG ERAM HCS MEARTS PRM RCS STARS
3.1.2.1.0-3.0-2.0-1	The NAS shall alert specialists at least 5 nautical miles, and within 500 feet	CARTS

Object Number	Requirement	Contributing Sub-Systems
	above or below, before the violation of separation with Special Use Airspace.	EBUS ECG ERAM HCS MEARTS RCS STARS
3.1.2.1.0-3.0-2.0-2	The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.	EBUS ECG ERAM HCS MEARTS RCS STARS
3.1.2.1.0-3.0-2.0-3	The NAS shall alert participating aircraft to predicted conflicts with Special Use Airspace within 10 seconds of making the prediction.	DataComm ECG
3.1.2.1.0-3.0-3	The NAS shall predict terrain and obstacle separation conflicts.	CARTS DataComm EBUS ECG ERAM FDMSAW HCS MEARTS RCS STARS
3.1.2.1.0-3.0-3.0-1	The NAS shall alert specialists of aircraft-terrain separation conflicts in terminal airspace at least 40 seconds prior to the violation.	CARTS EBUS

Object Number	Requirement	Contributing Sub-Systems
		ECG FDMSAW MEARTS RCS STARS
3.1.2.1.0-3.0-3.0-2	The NAS shall alert specialists of aircraft-obstacle separation conflicts in terminal airspace at least 40 seconds prior to the violation.	CARTS EBUS ECG FDMSAW MEARTS RCS STARS
3.1.2.1.0-3.0-3.0-3	The NAS shall alert specialists of aircraft-terrain separation conflicts in en route airspace at least 75 seconds prior to the violation.	EBUS ECG ERAM FDMSAW HCS MEARTS RCS STARS
3.1.2.1.0-3.0-3.0-4	The NAS shall alert specialists of aircraft-obstacle separation conflicts in en route airspace at least 75 seconds prior to the violation.	EBUS ECG ERAM FDMSAW HCS MEARTS RCS STARS

Object Number	Requirement	Contributing Sub-Systems
3.1.2.1.0-3.0-3.0-5	The NAS shall alert users to separation conflicts with obstructions within 10 seconds of making the prediction.	DataComm FDMSAW
3.1.2.1.0-3.0-3.0-6	The NAS shall alert users of aircraft-terrain separation conflicts in terminal airspace at least 30 seconds prior to the violation.	DataComm FDMSAW
3.1.2.1.0-3.0-3.0-7	The NAS shall alert users of aircraft-obstacle separation conflicts in terminal airspace at least 30 seconds prior to the violation.	DataComm FDMSAW
3.1.2.1.0-3.0-3.0-8	The NAS shall alert users of aircraft-terrain separation conflicts in en route airspace at least 65 seconds prior to the violation.	DataComm FDMSAW
3.1.2.1.0-3.0-3.0-9	The NAS shall alert users of aircraft-obstacle separation conflicts in en route airspace at least 65 seconds prior to the violation.	DataComm FDMSAW
3.1.2.1.0-4	The NAS shall detect separation violations.	CARTS EBUS ECG ERAM FDMSAW HCS MEARTS PRM RCS STARS
3.1.2.1.0-4.0-1	The NAS shall detect aircraft-to-aircraft separation violations.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS

Object Number	Requirement	Contributing Sub-Systems
3.1.2.1.0-4.0-1.0-1	The NAS shall alert specialists of aircraft-to-aircraft separation violations with a mean of less than or equal to 0.6 seconds after the violation is detected.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS
3.1.2.1.0-4.0-1.0-2	The NAS shall alert specialists of aircraft-to-aircraft separation violations within 1.2 seconds (99th percentile) after the violation is detected.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS
3.1.2.1.0-4.0-1.0-3	The NAS shall alert specialists of aircraft-to-aircraft separation violations with a maximum of 3 seconds after the violation is detected.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS
3.1.2.1.0-4.0-1.0-4	The NAS shall alert appropriately equipped users to the collision danger within 10 seconds after the prediction is made.	ECG
3.1.2.1.0-4.0-2	The NAS shall detect airspace separation violations.	CARTS EBUS

Object Number	Requirement	Contributing Sub-Systems
		ECG ERAM HCS MEARTS PRM RCS STARS
3.1.2.1.0-4.0-3	The NAS shall detect terrain and obstacle separation violations.	CARTS EBUS ECG ERAM FDMSAW HCS MEARTS PRM RCS STARS
3.1.2.1.0-5	The NAS shall provide control instructions.	PRM
3.1.2.1.0-5.0-1	The NAS shall generate recommended avoidance instructions for separation violations and predicted separation conflicts.	PRM
3.1.2.1.0-5.0-2	The NAS shall display recommended avoidance instructions with a mean of less than or equal to 0.6 seconds after the detection of an aircraft-to-aircraft separation violation.	CARTS ECG ERAM HCS MEARTS STARS
3.1.2.1.0-5.0-3	The NAS shall display recommended avoidance maneuvers within 1.2 seconds	CARTS

Object Number	Requirement	Contributing Sub-Systems
	(99th percentile) after the detection of an aircraft-to-aircraft separation violation.	ECG ERAM HCS MEARTS STARS
3.1.2.1.0-5.0-4	The NAS shall display recommended avoidance maneuvers with a maximum of 3 seconds after the detection of an aircraft-to-aircraft separation violation.	CARTS ECG ERAM HCS MEARTS STARS
3.1.2.1.0-5.0-5	The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds of detection of an aircraft-terrain separation violation.	CARTS ERAM HCS MEARTS STARS
3.1.2.1.0-5.0-6	The NAS shall disseminate recommended collision avoidance instructions to specialists within 5 seconds detection of an aircraft-obstacles separation violation.	CARTS ERAM HCS MEARTS STARS
3.1.2.2	<i>Trajectory Management</i>	
3.1.2.2.0-1	The NAS shall associate flight paths with flight plans.	CARTS EBUS ECG ERAM HCS MEARTS

Object Number	Requirement	Contributing Sub-Systems
		RCS STARS URET
3.1.2.2.0-1.0-1	The NAS shall associate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS URET
3.1.2.2.0-1.0-2	The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a mean of less than or equal to 0.6 seconds.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS URET
3.1.2.2.0-1.0-3	The NAS shall alert specialists of aircraft that cannot be associated with a flight plan within 1.2 seconds (99th percentile).	CARTS EBUS ECG ERAM HCS MEARTS RCS

Object Number	Requirement	Contributing Sub-Systems
		STARS URET
3.1.2.2.0-1.0-4	The NAS shall alert specialists of aircraft that cannot be associated with a flight plan with a maximum of 3 seconds.	CARTS EBUS ECG ERAM HCS MEARTS RCS STARS URET
3.1.2.2.0-2	The NAS shall monitor flight path conformance.	CARTS EBUS ECG ERAM HCS MEARTS PRM RCS STARS
3.1.2.2.0-3	The NAS shall predict flight path non-conformance.	CARTS DataComm EBUS ECG ERAM HCS MEARTS PRM

Object Number	Requirement	Contributing Sub-Systems
		RCS STARS
3.1.2.2.0-3.0-1	The NAS shall disseminate to users non-adherence to ATC clearance within 10 seconds of the prediction of the deviation.	DataComm PRM
3.1.2.3	<i>Flow Contingency Management</i>	
3.1.2.3.0-1	The NAS shall provide the information and resources necessary for flow contingency management collaboration.	DSP DUATS EDDS TFMS TFR Builder
3.1.2.3.0-1.0-1	The NAS shall provide the information and resources necessary for stakeholder collaboration for flow contingency management.	DSP DUATS TFMS TFR Builder
3.1.2.3.0-1.0-2	The NAS shall provide the information and resources necessary for user collaboration for flow contingency management.	ACE-IDS DataComm DSP DUATS ERIDS IDS-4 TFMS TFR Builder
3.1.2.3.0-2	The NAS shall assess traffic flow.	CAPER DSP ERAM ETAP TBFM TFMS

Object Number	Requirement	Contributing Sub-Systems
		TMA
3.1.2.3.0-2.0-1	The NAS shall evaluate congestion information.	CAPER ERAM ETAP TBFM TFMS TMA
3.1.2.3.0-2.0-2	The NAS shall evaluate flow constraints.	CAPER DSP ERAM ETAP TBFM TFMS TMA
3.1.2.3.0-2.0-2.0-1	The NAS shall analyze the effectiveness of flow constraints.	CAPER ERAM ETAP TBFM TFMS TMA
3.1.2.3.0-2.0-3	The NAS shall evaluate airspace status.	CAPER DSP ERAM ETAP TBFM TFMS TMA
3.1.2.3.0-2.0-4	The NAS shall evaluate route status.	CAPER

Object Number	Requirement	Contributing Sub-Systems
		DSP ERAM ETAP TBFM TFMS TMA
3.1.2.3.0-2.0-5	The NAS shall predict delays.	CAPER ERAM ETAP TBFM TFMS TMA
3.1.2.3.0-2.0-6	The NAS shall monitor flow constraint conformance.	CAPER CARTS DOTS EBUS ECG ERAM ETAP FDPS HCS MEARTS RCS STARS
3.1.2.3.0-2.0-7	The NAS shall display the traffic flow evaluation results with a maximum of 10 seconds of the request.	CAPER DOTS DSR TFMS

Object Number	Requirement	Contributing Sub-Systems
		TMA
3.1.2.3.0-3	The NAS shall manage operational capacity.	CAPER TBFM TFMS TMA
3.1.2.3.0-3.0-1	The NAS shall manage flow constraints.	TBFM TFMS TMA
3.1.2.3.0-3.0-2	The NAS shall manage sequencing plans.	DOTS TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-1	The NAS shall establish sequencing plans.	DOTS TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-1.0-1	The NAS shall establish flow sequencing plans for terminal airspace greater than or equal to two hours prior to the implementation of the plans.	DOTS TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-1.0-2	The NAS shall establish flow sequencing plans for en route airspace greater than or equal to eight hours prior to the implementation of the plans.	DOTS TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-2	The NAS shall implement sequencing plans.	DOTS DSP TBFM TFMS

Object Number	Requirement	Contributing Sub-Systems
		TMA
3.1.2.3.0-3.0-2.0-2.0-1	The NAS shall process sequencing and spacing inputs from specialists with a mean of less than or equal to 0.6 seconds.	DOTS DSP TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-2.0-2	The NAS shall process sequencing and spacing inputs from specialists within 1.2 seconds (99th percentile).	DOTS DSP TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-2.0-3	The NAS shall process sequencing and spacing inputs from specialists with a maximum of 3 seconds.	DOTS DSP TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-3	The NAS shall update sequencing plans.	DOTS TBFM TFMS TMA
3.1.2.3.0-3.0-2.0-4	The NAS shall disseminate sequencing plans.	DOTS TBFM TFMS TFR Builder TMA
3.1.2.3.0-3.0-3	The NAS shall manage Traffic Management Initiatives (TMI).	DSP TFMS TFR Builder

Object Number	Requirement	Contributing Sub-Systems
3.1.2.3.0-3.0-3.0-1	The NAS shall establish TMIs.	TFMS TFR Builder
3.1.2.3.0-3.0-3.0-2	The NAS shall implement TMIs.	ERAM HCS TFR Builder TMA
3.1.2.3.0-3.0-3.0-3	The NAS shall maintain TMI schedules.	DSP TFMS TFR Builder
3.1.2.3.0-3.0-3.0-4	The NAS shall disseminate TMIs.	ACE-IDS ERIDS IDS-4 TFMS TFR Builder
3.1.2.3.0-4	The NAS shall generate flow advisories.	DOTS DUATS TFMS TFR Builder
3.1.2.4	<i>Short Term Capacity Management</i>	
3.1.2.4.0-1	The NAS shall provide the information and resources necessary for short term capacity management collaboration.	e-CVRS TFMS
3.1.2.4.0-1.0-1	The NAS shall provide the information and resources necessary for stakeholder collaboration for short term capacity management.	e-CVRS TFMS
3.1.2.4.0-1.0-2	The NAS shall provide the information and resources necessary for user collaboration for short term capacity management.	DataComm e-CVRS TFMS
3.1.2.4.0-2	The NAS shall manage airspace restrictions.	SAMS TFR Builder

Object Number	Requirement	Contributing Sub-Systems
3.1.2.4.0-2.0-1	The NAS shall manage special activity airspace (SAA).	SAMS
3.1.2.4.0-2.0-1.0-1	The NAS shall monitor SAA status.	SAMS
3.1.2.4.0-2.0-1.0-2	The NAS shall update SAA information after collaborating with the SAA owners.	SAMS
3.1.2.4.0-2.0-1.0-2.0-1	The NAS shall approve special use airspace reservations within 30 minutes of initial receipt of request.	e-CVRS SAMS
3.1.2.4.0-2.0-2	The NAS shall manage altitude reservations.	DOTS e-CVRS ERAM TFMS
3.1.2.4.0-2.0-2.0-1	The NAS shall respond to altitude reservation requests within a maximum of 10 seconds.	DOTS e-CVRS ERAM TFMS
3.1.2.4.0-2.0-3	The NAS shall manage airport reservations.	DOTS ERAM TFMS
3.1.2.4.0-2.0-3.0-1	The NAS shall respond to airport reservation requests within a maximum 6 seconds.	DOTS ERAM TFMS
3.1.2.4.0-2.0-4	The NAS shall respond to airspace security events.	RCS
3.1.2.4.0-2.0-5	The NAS shall respond to airspace restriction requests.	DOTS ERAM TFMS
3.1.2.4.0-3	The NAS shall determine airspace capacity.	ATOP CAPER CARTS ERAM

Object Number	Requirement	Contributing Sub-Systems
		HCS TBFM TFMS TMA
3.1.2.4.0-3.0-1	The NAS shall evaluate airspace status to determine airspace capacity.	ATOP CAPER CARTS ERAM TBFM TFMS TMA
3.1.2.4.0-3.0-2	The NAS shall evaluate flow constraints to determine airspace capacity.	ATOP CAPER CARTS ERAM TBFM TFMS TMA
3.1.2.4.0-3.0-3	The NAS shall evaluate weather information to determine airspace capacity.	ATOP CAPER CARTS ERAM TBFM TFMS TMA
3.1.2.4.0-3.0-4	The NAS shall evaluate NAS status information to determine airspace capacity.	ATOP CAPER CARTS

Object Number	Requirement	Contributing Sub-Systems
		ERAM TBFM TFMS TMA
3.1.2.4.0-4	The NAS shall determine operational demand.	ATOP CAPER CARTS ERAM ETAP TBFM TFMS TMA
3.1.2.4.0-4.0-1	The NAS shall monitor current traffic flow information.	ATOP CAPER CARTS ERAM ETAP TBFM TFMS TMA
3.1.2.4.0-4.0-2	The NAS shall disseminate current traffic flow information to specialists within 10 seconds of a request.	ATOP CAPER CARTS ERAM TBFM TFMS TMA
3.1.2.4.0-4.0-3	The NAS shall forecast demand for terminal airspace greater than or equal to 2	CAPER

Object Number	Requirement	Contributing Sub-Systems
	hours in advance.	ERAM TBFM TFMS TMA
3.1.2.4.0-4.0-4	The NAS shall forecast demand for en route airspace greater than or equal to 8 hours in advance.	CAPER ERAM TBFM TFMS TMA
3.1.2.4.0-5	The NAS shall evaluate airspace capacity against demand.	ATOP CAPER CARTS ERAM ETAP TBFM TFMS
3.1.2.4.0-5.0-1	The NAS shall predict congestion.	ATOP CAPER ERAM TBFM TFMS
3.1.2.4.0-5.0-2	The NAS shall detect congested areas.	ATOP CAPER CARTS ERAM ETAP TBFM TFMS

Object Number	Requirement	Contributing Sub-Systems
3.1.2.4.0-6	The NAS shall manage airspace capacity.	ERAM TFMS
3.1.2.4.0-6.0-1	The NAS shall manage airspace status.	ERAM TFMS
3.1.2.4.0-6.0-2	The NAS shall manage route status.	ERAM TFMS
3.1.2.4.0-6.0-3	The NAS shall coordinate planned outages.	ERAM
3.1.2.4.0-7	The NAS shall generate airspace advisories.	ERAM TFMS
3.1.3	<b>Mission Support Services</b>	
3.1.3.1	<i>Long Term Capacity Management</i>	
3.1.3.1.0-1	The NAS shall support stakeholder collaboration for long term capacity management.	NACG SDAT SDAT-5
3.1.3.1.0-2	The NAS shall project capacity needs.	NACG SDAT SDAT-5
3.1.3.1.0-2.0-1	The NAS shall identify current performance shortfalls.	AFTechNet NACG SDAT SDAT-5
3.1.3.1.0-2.0-1.0-1	The NAS shall identify specific airspace that consistently has high levels of congestion based on post-operational data.	NACG SDAT SDAT-5
3.1.3.1.0-2.0-1.0-2	The NAS shall identify airspace that is under utilized based on post-operational data.	NACG SDAT SDAT-5
3.1.3.1.0-2.0-1.0-3	The NAS shall utilize operational information to improve the strategic use of	NACG

Object Number	Requirement	Contributing Sub-Systems
	airports and en route airspace.	SDAT SDAT-5
3.1.3.1.0-2.0-2	The NAS shall provide the information and resources necessary for strategic demand forecasting.	AFTechNet NACG SDAT SDAT-5
3.1.3.1.0-2.0-3	The NAS shall evaluate capacity projections against demand projections to determine strategic system needs.	NACG SDAT SDAT-5
3.1.3.1.0-3	The NAS shall provide the information and resources necessary to assess strategic capacity constraints.	AFTechNet NACG SDAT SDAT-5
3.1.3.1.0-3.0-1	The NAS shall provide the information and resources necessary to assess the impact of proposed airspace changes to existing configurations.	NACG SDAT SDAT-5
3.1.3.1.0-3.0-2	The NAS shall provide the information and resources necessary to assess environmental impacts of proposed airspace changes.	NACG SDAT SDAT-5
3.1.3.1.0-3.0-3	The NAS shall provide the information and resources necessary to assess the security impacts of proposed airspace changes.	NACG SDAT SDAT-5
3.1.3.1.0-3.0-4	The NAS shall provide the information and resources necessary to assess safety impacts of proposed airspace changes.	NACG SDAT SDAT-5
3.1.3.1.0-3.0-5	The NAS shall provide the information and resources necessary to assess infrastructure impacts on proposed airspace changes.	AFTechNet NACG SDAT

Object Number	Requirement	Contributing Sub-Systems
		SDAT-5
3.1.3.1.0-3.0-6	The NAS shall provide the information and resources necessary to assess terrain and obstacle information for proposed airspace changes.	NACG SDAT SDAT-5
3.1.3.1.0-4	The NAS shall provide the information and resources necessary for the establishment of capacity improvement plans.	AIPA DPIMS EPIMS NACG SDAT SDAT-5
3.1.3.1.0-4.0-1	The NAS shall provide the information and resources necessary for the design of airspace configurations.	AIPA DPIMS DSR EPIMS NACG SDAT SDAT-5
3.1.3.1.0-4.0-1.0-1	The NAS shall display geographical structure information to within .26 NM (99th percentile) of its actual position.	AIPA DPIMS DSR EPIMS Obstruction Evaluator SDAT SDAT-5 TARGETS
3.1.3.1.0-4.0-1.0-2	The NAS shall display airspace structure information to within .26 NM (99th percentile) of its actual position.	AIPA DPIMS DSR

Object Number	Requirement	Contributing Sub-Systems
		EPIMS SDAT SDAT-5 TARGETS
3.1.3.1.0-4.0-1.0-3	The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.	AIPA DPIMS DSR EPIMS SDAT SDAT-5 TARGETS
3.1.3.1.0-4.0-2	The NAS shall provide the information and resources necessary for the design of air traffic procedures.	AIPA APIMS DPIMS EPIMS IFPA NACG SDAT SDAT-5 TARGETS
3.1.3.1.0-4.0-3	The NAS shall provide the information and resources necessary for the planning of strategic infrastructure.	AFTechNet AIPA DPIMS EPIMS NACG SDAT SDAT-5
3.1.3.1.0-4.0-3.0-1	The NAS shall provide the information and resources necessary to assess the	AFTechNet

Object Number	Requirement	Contributing Sub-Systems
	benefits of proposed system changes.	AIPA DPIMS EPIMS NACG SDAT SDAT-5
3.1.3.1.0-4.0-3.0-1.0-1	The NAS shall provide the information and resources necessary to generate business cases for proposed system changes.	AIPA DPIMS EPIMS NACG SDAT SDAT-5
3.1.3.1.0-4.0-4	The NAS shall provide the information and resources necessary to assess proposed capacity improvement plans.	NACG SDAT SDAT-5
3.1.3.2	<i>System and Service Analysis</i>	
3.1.3.2.0-1	The NAS shall manage post operational data.	ATOP CARTS DOTS ERAM HCS MEARTS NASPAS NODA PDARS RCS STARS TARP

Object Number	Requirement	Contributing Sub-Systems
		TFMS TRAMS TTAP
3.1.3.2.0-1.0-1	The NAS shall manage operational metrics.	ARMT ATOP CARTS DOTS ERAM HCS MEARTS NASPAS NODA OASIS PDARS RAPTOR RCS STARS TARP TFMS TTAP
3.1.3.2.0-1.0-2	The NAS shall record operational system information.	ACARS ACD\VRS AFTN AIDAP AIPA AISR ARBAC ARFAS

Object Number	Requirement	Contributing Sub-Systems
		ARMT ASCCL ASDE-3 ASDE-X ASI ASPM ASR-8 ASR-9 ASR-11 ASSC ATCBI-5 ATCBI-6 ATCSCC (NDS) ATIS ATM ATOP AWIPS AWIS AWOS BUEC CARSR CARTS CD-2 CIWS CSS CTAS CV-4400 DASI

Object Number	Requirement	Contributing Sub-Systems
		DataComm DCS DPIMS DSR DUATS DVC DVRS EBUS e-CVRS EDDS EPIMS ERAM ERIDS ETR FBWTG FDAT FDIOC FDIOR FDPS FDRS FOTS FPS-20 FPS-60 FS-21 FTI HCS ICE-MAN IDS-4

Object Number	Requirement	Contributing Sub-Systems
		ITWS JAWS MASS MDR MDS MDT MEARTS Mobile Mission Support MPS NACG NAPRS NAS AIS DataBase NAS CGW NAS SA NASPAS NASR NASSI NAVMN NEXCOM NEXRAD NFU NODA NOP NOTAM Tracking System NRCS NRS Obstruction Evaluator PDARS

Object Number	Requirement	Contributing Sub-Systems
		RAPTOR RCE RCLR RCLT RCOM RCS RMLS RMS RMVC RRCS RRH RTR SAMS SAWS SBS SBSM SDAT SDAT-5 STARS SWIM TARP TCD TDWR TFMS TFR Builder TMA TML TRAMS

Object Number	Requirement	Contributing Sub-Systems
		TTAP TVS TWEB TWIP TXRX URET USNS VFSS VSBP VTABS WME Wx CAM
3.1.3.2.0-1.0-3	The NAS shall archive operational system information.	ARMT ATOP CARTS DOTS EDDS ERAM HCS MEARTS NASPAS NODA PDARS RAPTOR RCS STARS TARP TFMS

Object Number	Requirement	Contributing Sub-Systems
		TTAP
3.1.3.2.0-1.0-4	The NAS shall record voice communications	HCVR NASPAS NODA PDARS RAPTOR TARP TTAP
3.1.3.2.0-1.0-5	The NAS shall conduct data mining.	ATM DOTS HCS MEARTS NASPAS NODA PDARS RAPTOR RCS STARS TARP TFMS TTAP
3.1.3.2.0-1.0-6	The NAS shall provide the information and resources necessary for accident/incident investigations.	ATM ERAM HCS MEARTS NASPAS NODA OASIS

Object Number	Requirement	Contributing Sub-Systems
		PDARS RCS TARP TTAP
3.1.3.2.0-1.0-7	The NAS shall acquire cyber security event logs.	ERAM NASPAS NODA TARP TTAP
3.1.3.2.0-2	The NAS shall perform operational analysis.	ATM NASPAS NODA PDARS TARP TTAP
3.1.3.2.0-2.0-1	The NAS shall analyze operational performance information.	ATM NASPAS NODA PDARS TARP TTAP
3.1.3.2.0-2.0-2	The NAS shall analyze operational trends.	ATM NASPAS NODA PDARS TARP TTAP
3.1.3.2.0-2.0-3	The NAS shall analyze airspace security.	NASPAS

Object Number	Requirement	Contributing Sub-Systems
		NODA PDARS TARP
3.1.3.2.0-2.0-4	The NAS shall analyze environmental impacts.	ATM NASPAS NODA PDARS TARP
3.1.3.2.0-2.0-5	The NAS shall analyze cyber security event logs	ATM NASPAS NODA PDARS TARP
3.1.3.2.0-3	The NAS shall provide the information and resources necessary for search and rescue operations.	DUATS ERAM HCS MEARTS NASPAS NODA PDARS RCS TARP
3.1.3.3	<i>System and Service Management</i>	
3.1.3.3.0-1	The NAS shall monitor service status.	ARBAC ARFAS ERMS FOTS ICE-MAN

Object Number	Requirement	Contributing Sub-Systems
		ICMS MASS MB MDR MDS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NCIME NOP RMLS RMS RMSC RMVC SBSM
3.1.3.3.0-1.0-1	The NAS shall monitor system status.	ARBAC ARFAS EDDS ERIDS ERMS ICE-MAN ICMS IDS-4 MASS MDT

Object Number	Requirement	Contributing Sub-Systems
		Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NCIME NIDS NOP RMLS RMS RMSC RMVC SBSM
3.1.3.3.0-1.0-1.0-1	The NAS shall notify specialists when the status of a system changes with a mean time of 14 seconds.	ARBAC ARFAS ERMS ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-1.0-2	The NAS shall notify specialists when the status of a system changes within a maximum time of 16 seconds.	ARBAC ARFAS ERMS ICE-MAN NASSI NCIME

Object Number	Requirement	Contributing Sub-Systems
		RMLS RMS RMSC
3.1.3.3.0-1.0-2	The NAS shall monitor external system status.	ICE-MAN MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NOP RMLS RMS RMSC RMVC SBSM
3.1.3.3.0-1.0-3	The NAS shall perform diagnostic testing.	ARBAC ARFAS ERIDS ICE-MAN IDS-4 MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase

Object Number	Requirement	Contributing Sub-Systems
		NASSI NCIME NIDS NOP RMLS RMS RMSC RMVC SBSM
3.1.3.3.0-1.0-3.0-1	The NAS shall respond to requests for diagnostic test information with a mean time of less than or equal to 30 seconds.	ARBAC ARFAS ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-3.0-2	The NAS shall respond to requests for diagnostic test information within a maximum time of 32 seconds.	ARBAC ARFAS ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-4	The NAS shall measure system parameters.	ICE-MAN MASS MDT

Object Number	Requirement	Contributing Sub-Systems
		Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NCIME NOP RMLS RMS RMSC RMVC SBSM
3.1.3.3.0-1.0-5	The NAS shall detect failures.	ARBAC ARFAS EDDS ERIDS FDIO FOTS ICE-MAN IDS-4 MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NCIME

Object Number	Requirement	Contributing Sub-Systems
		NIDS NOP RMLS RMS RMSC RMVC SBSM
3.1.3.3.0-1.0-5.0-1	The NAS shall alert specialist of a system failure.	ACE-IDS ARBAC ARFAS ERIDS FDIO ICE-MAN IDS-4 NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-5.0-1.0-1	The NAS shall alert specialists to system failures within a mean time less than or equal to 14 seconds after the failure.	ARBAC ARFAS ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-5.0-1.0-	The NAS shall alert specialists to system failures within a maximum of 16	ARBAC

Object Number	Requirement	Contributing Sub-Systems
2	seconds.	ARFAS ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-5.0-1.0-3	The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.	ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-5.0-2	The NAS shall alert users of a system failure.	ACE-IDS ARBAC ARFAS DataComm ERIDS ICE-MAN IDS-4 NASSI NCIME NIDS RMLS RMS RMSC
3.1.3.3.0-1.0-5.0-2.0-1	The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.	ARBAC ARFAS

Object Number	Requirement	Contributing Sub-Systems
		ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-5.0-3	The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.	ICE-MAN NASSI NCIME RMLS RMS RMSC
3.1.3.3.0-1.0-6	The NAS shall determine the cause of failure.	ERIDS ICE-MAN IDS-4 MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NOP RMLS RMS RMVC SBSM
3.1.3.3.0-1.0-7	The NAS shall derive service status from system status.	ICE-MAN

Object Number	Requirement	Contributing Sub-Systems
		MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NCIME NOP RMLS RMS RMVC SBSM
3.1.3.3.0-2	The NAS shall manage service performance.	ARBAC ARFAS ICE-MAN ICMS MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NAS SA NASSI NOP RMLS RMS

Object Number	Requirement	Contributing Sub-Systems
		RMVC RRCS SBSM
3.1.3.3.0-2.0-1	The NAS shall configure systems.	ARBAC ARFAS ICE-MAN ICMS MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NAS SA NASSI NOP RMLS RMS RMVC RRCS SBSM
3.1.3.3.0-2.0-1.0-1	The NAS shall provide automatic track initiation and flight plan correlation in the backup facility within 60 seconds of an ARTCC failure.	ICE-MAN MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase

Object Number	Requirement	Contributing Sub-Systems
		NASSI NOP RMLS RMS RMVC
3.1.3.3.0-2.0-1.0-2	The NAS shall implement operational services at backup facilities in less than or equal to two minutes of the failure of an ARTCC.	ICE-MAN MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NOP RMLS RMS RMVC
3.1.3.3.0-2.0-2	The NAS shall adjust system parameters.	ACES ARBAC ARFAS ICE-MAN ICMS MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase

Object Number	Requirement	Contributing Sub-Systems
		NAS SA NASSI NOP RMLS RMS RMVC RRCS
3.1.3.3.0-2.0-3	The NAS shall control selected subsystems on-site.	ACES ARBAC ARFAS ICE-MAN ICMS MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NAS SA NASSI NOP RMLS RMS RMVC RRCS
3.1.3.3.0-2.0-4	The NAS shall control selected subsystems off-site.	ACES ARBAC ARFAS

Object Number	Requirement	Contributing Sub-Systems
		EM ICE-MAN ICMS MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NAS SA NASSI NOP RMLS RMS RMVC RRCS
3.1.3.3.0-3	The NAS shall provide the information and resources necessary for logistics planning.	EM ICE-MAN MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NOP RMLS RMS

Object Number	Requirement	Contributing Sub-Systems
		RMVC RRCS
3.1.3.3.0-4	The NAS shall provide the information and resources necessary for preventative maintenance scheduling.	ACE-IDS ARBAC ARFAS EM ERIDS ICE-MAN IDS-4 MASS MDT Mobile Mission Support MPS NAPRS NAS AIS DataBase NASSI NOP RMLS RMS RMVC RRCS
3.1.3.3.0-5	The NAS shall disseminate system updates.	ACES ERIDS ICE-MAN IDS-4 MASS MDT Mobile Mission Support

Object Number	Requirement	Contributing Sub-Systems
		MPS NAPRS NAS AIS DataBase NAS SA NASSI NOP RMLS RMS RMVC RRCS
3.1.3.4	<i>Safety Management</i>	
3.1.3.4.0-1	The NAS shall provide the information and resources necessary to manage the safe provision of Air Traffic Services.	ASIAS
3.1.3.4.0-1.0-1	The NAS shall provide the information and resources necessary to operate a Safety Management System (SMS) in accordance with International Civil Aviation Organization (ICAO) Annex 11, FAA Order 1100.161, and any other pertinent FAA orders, policies, guidance documents, and standards that govern the safe provision of Air Traffic Services.	ASIAS
3.1.3.4.0-1.0-1.0-1	The NAS shall provide the information and resources necessary to develop metrics to monitor levels of safety.	ASIAS
3.1.3.4.0-1.0-1.0-2	The NAS shall monitor conformance to safety metrics.	ASIAS
3.1.3.4.0-1.0-1.0-3	The NAS shall analyze safety trends.	ASIAS
3.1.3.4.0-1.0-1.0-4	The NAS shall provide the information and resources necessary to determine operational risks.	ASIAS
3.1.3.4.0-1.0-1.0-5	The NAS shall provide the information and resources necessary to mitigate operational risks.	ASIAS
3.1.3.4.0-1.0-2	The NAS shall manage safety data.	ASIAS
3.1.3.4.0-1.0-2.0-1	The NAS shall integrate safety data.	ASIAS

Object Number	Requirement	Contributing Sub-Systems
3.1.3.4.0-1.0-2.0-2	The NAS shall accept requests for safety data.	ASIAS
3.1.3.4.0-1.0-2.0-3	The NAS shall respond to requests for safety data.	ASIAS
3.1.3.4.0-1.0-2.0-4	The NAS shall disseminate response to safety data request.	ASIAS
3.1.3.4.0-1.0-3	The NAS shall conduct Safety Risk Management (SRM) on all proposed NAS changes.	ASIAS
3.2	Technical Infrastructure Services	
3.2.1	Surveillance Data Collection	
3.2.1.0-1	The NAS shall acquire surveillance information.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR-8 ASR-9 ASR-11 ASSC ATCBI-5 ATCBI-6 CARSR CD-2 CV-4400 LCGS Mode-S PRM SBS
3.2.1.0-1.0-1	The NAS shall acquire dependent surveillance information.	SBS ATCBI-6 ASR-11
3.2.1.0-1.0-2	The NAS shall acquire independent surveillance information.	ARSR-1

Object Number	Requirement	Contributing Sub-Systems
		ARSR-2 ARSR-3 ARSR-4 ASR-8 ASR-11 ASR-8 ASR-9 ASR-11 ASSC CARSR CD-2 CV-4400 Mode-S PRM
3.2.1.0-1.0-2.0-1	The NAS shall detect aircraft with an area radar cross section of greater than or equal to 1 square meter at a range of less than or equal to 60 NM.	ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASR - 8 ASR - 11 ASR- 9 CARSR
3.2.1.0-1.0-2.0-2	The NAS shall detect aircraft and vehicles on the airport surface with an area radar cross section of greater than or equal to 3 square meters.	ASDE-3 ASDE-X ASSC PRM
3.2.1.0-1.0-3	The NAS shall acquire cooperative surveillance information.	ATCBI-5 Mode-S

Object Number	Requirement	Contributing Sub-Systems
		SBS
3.2.2	Weather Data Collection	
3.2.2.0-1	The NAS shall acquire weather information.	ADAS ARSR-1 ARSR-2 ARSR-3 ARSR-4 ASI ASOS ASR-11 ASR-8 ASR-9 ATIS CARSR DUATS FDIO LLWAS NIDS RRH SAWS TDWR TWEB TWIP WEF WHDE WME WSP Wx CAM

Object Number	Requirement	Contributing Sub-Systems
3.2.2.0-1.0-1	The NAS shall acquire surface weather information.	ADAS ASI ASOS AWIPS DUATS LLWAS NIDS RRH RVR SAWS TWEB TWIP WEF WME Wx CAM
3.2.2.0-1.0-1.0-1	The NAS shall acquire current surface weather conditions at selected airports less than or equal to once per minute.	ASI ASOS AWIPS DUATS RVR TWEB TWIP WEF
3.2.2.0-1.0-2	The NAS shall acquire weather aloft information.	ADAS ASOS AWIPS CIWS ITWS

Object Number	Requirement	Contributing Sub-Systems
		JAWS NEXRAD NFU NIDS TDWR TWEB TWIP WHDE WSP
3.2.2.0-1.0-2.0-1	The NAS shall acquire airborne weather information within 15 seconds of creation.	ADAS TWEB TWIP
3.2.2.0-1.0-3	The NAS shall acquire weather advisory information.	ADAS ASOS FDIO NIDS TWEB TWIP WHDE WSP
3.2.2.0-1.0-3.0-1	The NAS shall acquire weather advisories within 15 seconds of creation.	ADAS TWEB TWIP
3.2.3	Navigation Support	
3.2.3.0-1	The NAS shall provide electronic spatial references.	DME GS ILS IM

Object Number	Requirement	Contributing Sub-Systems
		LAAS LMM LOC LOM MB MLS NAVMN NDB OM TACAN VOR WAAS
3.2.3.0-1.0-1	The NAS shall provide electronic signals that enable aircraft to determine their position in the airspace.	DME GS ILS LAAS LOC MB NDB OM TACAN VOR WAAS
3.2.3.0-1.0-1.0-1	The NAS shall provide electronic signals that enable aircraft to determine their position in en route airspace.	DME NDB TACAN VOR WAAS

Object Number	Requirement	Contributing Sub-Systems
3.2.3.0-1.0-1.0-2	The NAS shall provide electronic signals that enable aircraft to determine their position in terminal airspace.	DME GS ILS LAAS LOC MB NDB OM TACAN VOR WAAS
3.2.3.0-1.0-2	The NAS shall provide electronic signals to enable Required Navigation Performance.	LAAS WAAS
3.2.3.0-1.0-3	The NAS shall provide electronic signals to enable approach and landing operations.	DME GS ILS LAAS LOC MB VOR WAAS
3.2.3.0-1.0-3.0-1	The NAS shall provide electronic precision approach and landing guidance throughout a minimum sector equal to that of the lateral signal.	DME GS ILS LAAS LOC WAAS
3.2.3.0-1.0-3.0-2	The NAS shall provide lateral electronic precision landing guidance to within	ILS

Object Number	Requirement	Contributing Sub-Systems
	plus or minus 35 feet for aircraft flying Category 1 approaches.	LAAS LOC WAAS
3.2.3.0-1.0-3.0-3	The NAS shall provide lateral electronic precision landing guidance to within plus or minus 25 feet for aircraft flying Category 2 approaches.	ILS LAAS LOC
3.2.3.0-1.0-3.0-4	The NAS shall provide lateral electronic precision landing guidance to within plus or minus 10 feet for aircraft flying Category 3 approaches.	ILS LAAS LOC
3.2.3.0-1.0-3.0-5	The NAS shall provide vertical electronic precision landing guidance to within plus or minus 0.075 theta.	GS ILS LAAS WAAS
3.2.3.0-1.0-3.0-6	The NAS shall provide a distance signal along electronic precision approach paths within plus or minus 0.1 NM.	DME LAAS WAAS
3.2.3.0-1.0-3.0-7	The NAS shall provide lateral guidance to the runway from line-of-site to a designated reference point up to an altitude of 3000 feet and out to a maximum of 30 miles from the reference point for non-precision approaches.	LOC
3.2.3.0-1.0-4	The NAS shall provide electronic signals that enable aircraft to determine their position on the airport surface.	LAAS WAAS
3.2.3.0-1.0-4.0-1	The NAS shall provide reference test signals on the airport surface for navigation avionics.	VOT
3.2.3.0-1.0-4.0-1.0-1	The NAS shall provide reference test signals for navigation avionics within plus or minus 0.1 degrees.	VOT
3.2.3.0-1.0-5	The NAS shall transmit facility identification information.	DME TACAN VOR

Object Number	Requirement	Contributing Sub-Systems
3.2.3.0-1.0-5.0-1	The NAS shall transmit a facility identification at least once every 30 seconds, and at least six times per minute, throughout the facility's area of coverage.	DME VOR
3.2.3.0-2	The NAS shall provide visual spatial references.	ALS LDIN ODALS PAPI REIL RID RVR RWSL SSALR SSALS VASI
3.2.3.0-2.0-1	The NAS shall provide visual references along the extended runway centerline.	ALS LDIN SSALR SSALS
3.2.3.0-2.0-2	The NAS shall provide visual references for vertical descent guidance to runways.	ALS PAPI SSALR SSALS VASI
3.2.3.0-2.0-2.0-1	The NAS shall provide visual approach guidance with a visual range of 4 NM day/night, within 10 degrees of the approach.	ALS ODALS PAPI VASI
3.2.3.0-2.0-3	The NAS shall provide visual references for runway ends, centerlines, and edges.	REIL

Object Number	Requirement	Contributing Sub-Systems
3.2.3.0-2.0-4	The NAS shall provide visual references for airport surface navigation.	RID RWSL
3.3	Support Requirements	
3.3.1	RMA requirements	
3.3.1.1	<i>Service Availability</i>	
3.3.1.1.0-1	Safety-Critical NAS Services shall have a minimum availability of .99999.	
3.3.1.1.0-2	Efficiency-Critical NAS Services shall have a minimum availability of .9999.	
3.3.1.1.0-3	Essential NAS Services shall have a minimum availability of .999.	
3.3.1.1.0-4	Routine NAS Services shall have a minimum availability of .99.	
3.3.1.1.0-5	The NAS shall restore efficiency-critical services within 6 seconds of failure.	
3.3.1.1.0-6	The NAS shall restore essential services within 10 minutes of failure.	
3.3.1.1.0-7	The NAS shall restore routine services within 72 hours of failure.	
3.3.1.2	<i>Service Thread Availability</i>	
3.3.1.2.0-1	Safety-Critical Service threads shall be accomplished by greater than or equal to two service threads.	
3.3.1.2.0-2	Efficiency-Critical Service threads shall have availability equal to or greater than .9999.	
3.3.1.2.0-3	Essential Service threads shall have availability equal to or greater than .999.	
3.3.1.2.0-4	Routine Service threads shall have availability equal to or greater than .99.	
3.3.1.2.0-5	The Mean Time to Restore (MTTR) for non-routine service thread components shall be less than or equal to 0.5 hours.	
3.3.1.2.0-6	The Mean Time Between Failure (MTBF) for efficiency-critical service threads shall be equal to or greater than 50,000 hours.	
3.3.1.2.0-7	The MTBF for essential service threads shall be equal to or greater than 5,000 hours.	
3.3.1.2.0-8	The MTBF for routine service threads shall be equal to or greater than 500 hours.	
3.3.2	Communications	

Object Number	Requirement	Contributing Sub-Systems
3.3.2.0-1	The NAS shall provide air-ground communications within the NAS.	ACARS AFM ATTV BCS BUEC DataComm DVRS ETR FOTS FTI MDR NEXCOM NRCS RCE RCL RCLR RCLT RCOM RTR TVS TXRX VFSS VSCS VTABS
3.3.2.0-2	The NAS shall provide ground-to-ground communications.	AFM AFTN ASCCL ATTV

Object Number	Requirement	Contributing Sub-Systems
		BCS BUEC BWM CCS CCSP CSS DataComm DMN DVC ECG FOTS FTI ICSS MDS NADIN NAS CGW NRCS RTR SWIM TML TVS TXRX VFSS VSCS VTABS
3.3.2.0-3	The NAS shall provide communications with stakeholders.	ACARS AFM AFTN

Object Number	Requirement	Contributing Sub-Systems
		ASCCL ATTV BCS DCS ECG FTI NADIN NAS CGW NRCS TVS TXRX VFSS VTABS
3.3.2.0-4	The NAS shall configure communication capabilities to support changes in operational conditions.	AFM ASCCL FTI NAS CGW RCE RCL RCLR RCLT RCOM TVS TXRX VFSS VSCS VTABS
3.3.2.0-4.0-1	The NAS shall transfer operations between safety-critical inter-facility data	AFM

Object Number	Requirement	Contributing Sub-Systems
	communication systems within a maximum time of 6 seconds to support changes in operational conditions.	AFTN ASCCL CSS DMN FTI NADIN SWIM
3.3.2.0-4.0-2	The NAS shall transfer operations between safety-critical inter-facility voice communication systems within a maximum time of 6 seconds to support changes in operational conditions.	AFM BUEC FTI TVS TXRX VFSS VTABS
3.3.2.0-4.0-3	The NAS shall synchronize the internal clocks of all voice and data communication systems with a precise time source.	AFM CTS DataComm FTI RCE RCL RCLR RCLT RCOM TCD TVS TXRX VFSS VTABS

Object Number	Requirement	Contributing Sub-Systems
3.3.2.0-5	The NAS shall provide override and antiblocking capabilities to specialists for voice communication with users.	AFM BUEC RCE RCL RCLR RCLT RCOM TVS TXRX VFSS VSBP VSCS VTABS
3.3.2.0-5.0-1	The NAS shall have a voice communication delay between users and specialists with a mean less than or equal to 250 ms.	BUEC FOTS FTI RCE RCL RCLR RCLT RCOM TVS TXRX VFSS VTABS
3.3.2.0-5.0-2	The NAS shall have a voice communication delay between users and specialists less than or equal to 300 ms (99th percentile).	BUEC FOTS FTI

Object Number	Requirement	Contributing Sub-Systems
		RCE RCL RCLR RCLT RCOM TVS TXRX VFSS VTABS
3.3.2.0-5.0-3	The NAS shall have a voice communication delay between users and specialists within a maximum of 350 ms.	BUEC FOTS FTI RCE RCL RCLR RCLT RCOM TVS TXRX VFSS VTABS
3.3.2.0-6	The NAS shall establish emergency communications for providing ATC services.	AFM BUEC CSS ETR FTI NRCS RTR

Object Number	Requirement	Contributing Sub-Systems
		SWIM TVS TXRX VFSS VSBP VTABS
3.3.2.0-6.0-1	The NAS shall establish independent emergency data communication within a maximum time of 1 minute of an emergency being declared.	AFM AFTN ASTI CSS DataComm FTI NADIN SWIM TVS TXRX VFSS VTABS
3.3.2.0-7	The NAS shall assure the data integrity of air-ground data communications within the NAS.	ACARS AFM ASTI ATTV BCS DataComm DLP FTI NEXCOM NRCS

Object Number	Requirement	Contributing Sub-Systems
		RCE RCL RCLR RCLT RCOM RTR
3.3.2.0-8	The NAS shall assure the data integrity of ground-to-ground data communications within the NAS.	AFM AFTN ASCCL ASTI ATTV BCS BWM CCSP CSS DataComm DLP DMN ECG FOTS FTI IDAT MDR NADIN NAS CGW NRCS RTR SWIM

Object Number	Requirement	Contributing Sub-Systems
3.3.2.0-9	The NAS shall assure the data integrity of data communications with stakeholders.	ACARS AFM AFTN ASCCL ASTI ATTV BCS DataComm DLP ECG EDDS FTI MDS NADIN NAS CGW NRCS
3.3.3	Security	
3.3.3.0-1	The NAS shall control physical access to equipment and facilities.	
3.3.3.0-2	The NAS shall manage access to information.	EDDS FTI
3.3.3.0-3	The NAS shall protect against cyber security events.	EDDS FTI
3.3.3.0-3.0-1	The NAS shall monitor cyber security information.	FTI
3.3.3.0-3.0-1.0-1	The NAS shall detect cyber security events.	FTI
3.3.3.0-3.0-2	The NAS shall deter cyber security events.	FTI
3.3.3.0-3.0-3	The NAS shall respond to cyber security events.	FTI
3.3.3.0-4	The NAS shall manage security audit logs during all operational states.	EDDS FTI

Object Number	Requirement	Contributing Sub-Systems
3.3.4	Spectrum Management	
3.3.4.0-1	The NAS shall coordinate national spectrum allocation programs.	AFM
3.3.4.0-2	The NAS shall comply with international standards to avoid interference of new systems with existing systems.	AFM
3.3.4.0-3	The NAS shall coordinate international spectrum allocation programs.	AFM

## Appendix D: References used for NAS Sub-Systems to Enterprise Requirements and Enterprise Requirements to NAS Sub-Systems Mapping

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## Appendix E: Glossary

Term	Definition
<b>A</b>	
Actual Pressure Altitude	The actual altitude as defined by measuring static pressure.
Advisory	Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement.
Aeronautical Information	The establishment, condition, or change in a component of the NAS, boundaries and time restriction for special use airspace, preferred, fuel-efficient, and/or low altitude routes, traffic management information, and alternate routing to avoid conditions precluding original route availability.
Aeronautical Information Management	Aeronautical Information Management is the means to ensure that all stakeholders have access to critical information about system resources, procedures, constraints, and other factors impacting the use of the airspace system. It is the authoritative source for information produced by other functions and external entities.
Air Traffic	Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.
Air Traffic Procedures	Describes the standardized process by which air traffic control is implemented.

<p>Air Traffic Services</p>	<p>a. Flight Information Service.                  b. Alerting Service.                  c. Air Traffic Advisory Service.                  d. Air Traffic Control Service.</p> <p>Provides for:</p> <ol style="list-style-type: none"> <li>1. Preventing collisions between                         <ol style="list-style-type: none"> <li>a. Two Aircraft and,</li> <li>b. An Aircraft and an obstruction on the maneuvering area.</li> </ol> </li> <li>2. Expediting and maintaining a safe orderly and efficient flow of air traffic.</li> <li>3. Minimizing Delays.</li> </ol>
<p>Aircraft</p>	<p>Device(s) that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew.</p>
<p>Aircraft Position</p>	<p>The location of the aircraft in relation to VOR, TACAN, ADF, Approach Markers, airways, trajectories transmitted by the pilot or observed on surveillance equipment.</p>
<p>Aircraft Status</p>	<p>Whether an aircraft is under control, has communications and operational avionics, and is conforming to a cleared route of flight.</p>
<p>Air-Ground Communications</p>	<p>Communications between in-flight aircraft and ground based facilities.</p>
<p>Airport</p>	<p>An area on land or water that is used or intended to be used for the landing and takeoff of aircraft, including its buildings and facilities, if any.</p>
<p>Airport Configuration</p>	<p>The operational arrangement of airport assets, such as active runways and taxiway usage, which have an overall effect on the flow of air traffic in and out of the airport.</p>
<p>Airspace/Airspace Volume</p>	<p>The designed three-dimensional constraints as defined by references on and an altitude above the Earth's surface that create a volume of airspace.</p>
<p>Airspace Advisories</p>	<p>Information Provided to assist pilots in the safe conduct of flight and aircraft movement.</p>
<p>Airspace Configuration</p>	<p>A volume of airspace with assigned properties known to air traffic control entities.</p>
<p>Airspace Design</p>	<p>The configuration of airspace to satisfy operational needs.</p>
<p>Airspace Restriction</p>	<p>Airspace with limited use possible due to weather, security initiatives, traffic density, complexity, aircraft capabilities, or air navigation systems infrastructure requirements.</p>

Airspace Status	The condition of an airspace volume including whether the airspace is active, the existing design, current and projected traffic use, radio frequency, congestion, etc.
Airway/Route Usage	The procedure or conduct of a control area or portion thereof established in the form of a corridor, the centerline of which is defined by navigational aids.
Altitude Reservations	Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished.
Antiblocking Action	A function that reduces the probability of blocking a voice message in transit.
Application Service	Considered basic service type that is referred to as supporting services. These concrete services are usually fine-grained and are associated with a specific application. Application Services are typically identified and defined by application developers. Application Services are specific to the application scope that the service is defined under and are generally used to perform fine-grained application-specific functions such as validation, data collection and data transfer.
Area Weather Products	Weather information for a particular region/location.
Area Radar Cross Section	The area of reflected energy produced when a radar signal is reflected off of a target.
ARTCC Failure	The occurrence of an ARTCC no longer being able to effectively provide air traffic control services.
Authoritative Source	A source of data or information that is recognized by member of a COI to be valid or trusted because it is considered to be highly reliable or accurate, or is from an official publication or reference (e.g., the United States (U.S.) Postal Service is the official source of U.S. mailing ZIP codes).
Automatic Recovery Requirements	Where recovery times have been specified in the body of a requirement, the number provided will be identified as a mean, 99th percentile, or maximum value, either explicitly or from the context.
Automatic Recovery Time	The goal for a single loss of service to a user/specialist shall not exceed the duration set forth in the recovery requirement.
Availability	The probability that a system or constituent piece may be operational during any randomly selected instant of time or, alternately, the fraction of the total available operating time that the system or constituent piece is operational. A fraction whose numerator is the Mean Time Between Failures (MTBF) and whose denominator is the sum of the MTBF plus the Mean Time To Restore (MTTR) the service.

Azimuth	The angle of horizontal deviation, measured clockwise, of a bearing from a standard direction.
<b>B</b>	
Backup Operational Plan	An ATC contingency plan used when the normal function of an ATC facility fails.
<b>C</b>	
Cancel Flight Plan	Request from pilots to terminate ATC services for their proposed or active flight.
Capacity	The number of aircraft that can be accommodated in a given time period by the system or one of its components.
Capacity Improvement Plans	Strategic enhancements of system capacity.
Capacity Projections	The predicted number of aircraft that an airspace volume can accommodate.
Client/Client Application	The client component of a client-server relationship. Alternatively, a client is an application on an end-system that accesses a remote service on another computer system, known as a server, by way of a network. A client application also provides user interfaces with display and keyboard services.
Collaboration	A process to allow multiple users to group and collaborate, share and negotiate.
Collaborative Decision Making	The means by which the NAS interacts with its stakeholders in a cooperative effort between the various components of aviation transportation, both government and industry, to exchange information for better decision making.
Collision Avoidance Instruction	A system generated conflict alert message provided to the user in time to prevent unintentional contact with other aircraft, obstacles, or the ground.
Communication Delay	Combinations of delays induced by electromagnetic radiation, voice switching, radio, transmission equipment, media, and distance.
Conflict	The recognition of the predicated loss of separation minima.
Conformance	Techniques in applying or complying with the rules.
Congested Area	An area where demand exceeds the capacity for the area.
Congestion Information	Information pertaining to the areas where the volume of traffic exceeds the capacity.
Control Instructions	Instructions for safe movement of aircraft.
Controlled Aircraft	Aircraft under ATC control.
Cyber Security	Measures taken to protect a computer or computer system (as on the Internet) against unauthorized access or attack.

Cyber Security Event	The occurrence of unauthorized access, malicious activity, or an attack against a computer or computer system.
<b>D</b>	
Data	A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by human or automated means. Data are the fundamental components of information.
Data Environment	A shared file that other programs and even other applications can retrieve information (data) via a name.
Data Integrity	The property that data has not been changed, destroyed, or lost in an unauthorized or accidental manner.
Data Management	The functions of managing data used in manual or automated information systems. It includes the activities of strategic data planning, data element standardization, information management control, and data synchronization (e.g., arranging data to indicate coincidence or coexistence, data quality assurance, and database development and maintenance).
Data Mining	The process of extracting patterns from data.
Demand	The number of aircraft currently in the system requiring services either in the air or on the airport surface.
Demand Projections	The predicted number of aircraft that an airspace volume is expected to incur.
Dependent Surveillance Environment	The environment in which aircraft position information is detected via means reliant on the aircraft.
Designated Hazardous Areas	Areas established to expedite search and rescue where regularly traveled VFR routes cross large bodies of water swamps, and mountains.
Diagnostic Testing	The process through which the cause of faults, failures or errors is determined.
Domain Name System (DNS) Service	A service that resolves queries for domain names into Internet Protocol (IP) addresses for the purpose of locating computer services and devices.
<b>E</b>	
Efficiency-Critical	A key service that is used in present operation of the NAS. Loss of an Efficiency-Critical Service has a major impact in the present operational capacity.
Efficient	Competent, capable, that which is suitable to satisfy the requirement.

Electronic Signals	A propagating wave made to carry information by varying a combination of the amplitude, frequency, and phase of the wave within a frequency band.
Electronic Spatial References	Navigational guidance information propagated throughout a given airspace transmitted within the limits of the radio frequency spectrum.
Emergency	A safety condition of being threatened by serious and/or imminent danger that requires immediate or timely assistance.
En Route	One of the three phases of flight services. En route is provided outside of terminal airspace and is exclusive of oceanic control.
Enterprise-Wide Net-Centric Data	The elements of a robust globally interconnected network environment in which information (data) is shared in a timely and consistent manner among users, applications, and platforms. This includes Shared Situational Awareness, Security Management, Safety Management, Environmental Management, and Performance Management Services.
Enterprise-Wide Situational Awareness	Information systems that allow the agency to integrate information across operations, user and applications on an agency-wide basis to assure a common awareness of the system.
Equipment	Hardware, software, or systems tools and/or apparatus.
Essential	A service that if lost would significantly raise the risk associated with providing safe and efficient NAS operations.
Essential Information	The data or information that is pertinent to facilitate an action.
Extended Runway Centerline	An extension of the runway center line beyond the runway threshold.
<b>F</b>	
Failure	The event or inoperable state in which any item or part of any item does not perform as specified.
Flight & State Data Management	Flight & State Data Management is the means through which the NAS maintains and distributes all flight information, including, aircraft characteristics and capabilities, flight plans and trajectories, flight status, and clearance delivery status.
Flight Information	Data relevant to a specific flight including: the aircraft identification/call sign, aircraft type, current and projected location (position), altitude of aircraft, clearance limit, speed of aircraft, track for each controlled aircraft in controlled airspace, track for each controlled aircraft expected to enter controlled airspace (e.g., terminal, En Route, oceanic), and the ETA at reported fixes.

<p>Flight Information (examples)</p>	<p>Examples of Flight Information are:</p> <ul style="list-style-type: none"> <li>- Aircraft identification.</li> <li>- Current position.</li> <li>- Altitude.</li> <li>- Speed.</li> <li>- Heading.</li> <li>- Vertical Velocity.</li> <li>- Horizontal Acceleration.</li> <li>- Vertical Acceleration.</li> <li>- Actual or reported Altitude.</li> <li>- Assigned altitude.</li> <li>- Source of altitude information.</li> <li>- Aircraft Velocity.</li> <li>- Aircraft Type.</li> <li>- Altitude conformance.</li> <li>- Handoff status.</li> <li>- Track status.</li> <li>- Ground speed.</li> <li>- Beacon code.</li> <li>- Computer identification information.</li> <li>- Conflict resolution advisory.</li> <li>- Source of altitude information.</li> <li>- Heavy jet indicator.</li> <li>- Remarks.</li> <li>- Alert special aircraft status.</li> <li>- Conflict alert.</li> <li>- Minimum safe altitude warning.</li> <li>- Conflict probe violation.</li> <li>- Failure of attempted data transmission indication.</li> </ul>
<p>Flight Path</p>	<p>A course along which an aircraft is flying or intended to be flown.</p>

Flight Plan	Specified information relating to the intended flight of an aircraft that is filed orally or in writing with and ATC facility.
Flight Plan Correlation	The correlation of a flight plan to its associated position-tracking file (track file)
Flight Risk Profile	The dynamic and static summarization of the security characteristics of flights. It is the integration of information from the flight object with information from security partners that is an assessment of the risk of a flight based on established rules.
Flight Status	The operational status of an aircraft.
Flow Advisories	Information on any constraint on the movement of traffic through the NAS.
Flow Constraint	A maximum number of aircraft that can be accommodated in a given time period by the system or one of its components. These constraints come as a result of situations such as large demand, capacity imbalance, congestion, high degree of complexity, blocked or constrained airspace, or other off-normal conditions.
Flow Constraint Advisory	A message information users of an unavailable flow patterns due to weather, capacity shortfalls, etc.
Flow Contingency Management	Flow Contingency Management is the means through which demand is adjusted to meet system resource capacity constraints. Such adjustments are accomplished through the establishment of temporary flow constraints, traffic management initiatives, and the shifting of flights from one flow to another, matching aircraft capabilities to the performance requirements of specific airspace segments and routes. It works in coordination with Short Term Capacity Management to resolve predicted congestion by identifying potential airspace and route configurations that could support specific flow initiatives.
Flow Management	The monitoring and management of traffic.
Forecast Weather	The predicted atmospheric conditions.
Function	A set of organized actions that produce a defined automated output when given specific data inputs.
<b>G</b>	
Governance	Accountability for consistent, cohesive policies, processes, and decision rights.
Ground Speed	The speed of an aircraft relative to the surface of the earth.
Ground-Ground Communications	Communications between ground facilities, within ground facilities, and between ground vehicles.

<b>H</b>	
Hazardous Weather	Weather conditions that have the potential to significantly increase the likelihood of aviation accidents. Hazardous weather conditions include moderate to severe icing, moderate to severe turbulence, moderate to severe precipitation, wind shear, thunderstorms, sustained high winds near the surface, or wide spread areas of low visibility.
Horizontal Position Information	The 2-D position of an aircraft that does not include its altitude.
<b>I</b>	
Identity and Key Management	The capabilities for managing a Public Key Infrastructure (PKI) and managing information about identities of NAS specialist, users, and systems to support Information System Security (ISS) functions throughout the NAS. At a minimum, device and user identity and key management capabilities will support authentication, confidentiality (encryption) and integrity (signing). More sophisticated capabilities (single sign-on, centralized policy decision point) may or may not be available in future configurations.
Identity Information	The callsign or designation of a flight based upon the operator, purpose, and equipage.
Independent Emergency Data Communication	Provides Data Communication independent of the primary, main, or standby data communication equipment.
Information	Any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphical, cartographical, narrative, or audiovisual form. Data process in such a way that it can increase the knowledge of the person who receives it. Information is the output, or finished goods of information systems.
Information Assurance	Measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and nonrepudiation. These measures include providing for restoration of information systems by incorporating protection, detection, and reaction capabilities.
Information Management	The planning, structuring, describing, and controlling of the collection of data from one or more sources within a business process and the distribution of that information to one or more audiences.
Information Systems	Information systems receive inputs from one or more external inputs, processes that information, and prepare it for output on one or more output devices.

Inherent Availability	A mathematic calculation of availability that includes only the effects of an item’s hardware design and its application. It assumes an ideal operation and support environment functioning with Human and software availability of "1"
Interface Management	The systematic control of all communications that support a process operation.
International Civil Aviation Organization/ICAO	A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.
International Spectrum Allocation Program	An international program responsible for coordinating the shared global use of the radio spectrum and promote international cooperation in assigning satellite orbits.
<b>J</b>	
<b>K</b>	
<b>L</b>	
Local Exception Event Data	The information needed to support the exception to adapted parameters (i.e., waivers that are approved for reduced separation for a fly-in at an airport need to be adapted to the system to maintain the situational awareness).
Long Term Capacity Management	Means through which new system capacity is generated or developed. It provides the tools that support the management of capacity during operations, including airspace configurations, predefined routes and fixes, procedures, airport infrastructure improvements, and staffing structures. Long Term Capacity Management solutions requiring the development of new operational procedures, design of airspace, or implementation of a new technology require the ANSP to perform pre-implementation activities including R&D, environmental impact assessment and mitigation, and safety and security analysis. The solutions typically also involve external collaboration with manufactures, flight operators, regulators, or other stakeholders.
Long Term Trajectory	An ordered union of all converted fixes and route segments for a Flight Plan or Trial Plan.
Loss of Service	The condition in which a service is considered to be unavailable, or when a service cannot be provided at the required performance levels.
<b>M</b>	
Maintainability	A characteristic of design and installation that is express as the probability that an item will be retained in, or restored to a specific condition within a given period of time, when the maintenance is performed in accordance with prescribed procedures and resources.

Maintenance	<p>All actions necessary for retaining an item in, or restoring it to a specified condition.</p> <p>Types of maintenance are:</p> <ul style="list-style-type: none"> <li>- Corrective - Actions performed as a result of failure to restore an item to a specified condition.</li> <li>- Preventive - Actions performed in an attempt to retain an item in a specified condition by providing systematic inspection, detection, and prevention of incipient failure.</li> </ul>
Malicious Activity	Set of actions intended to harm another person, organization, or state.
Metrics	A qualitative or quantitative measurement of an objective or desired outcome.
Military Operations	<p>Military Operation: Any sanctioned DoD activity within the NAS. This can include:</p> <ul style="list-style-type: none"> <li>- Reservation of airspace for special use, including both permanently dedicated areas and areas allocated temporarily to support special military missions.</li> <li>- Permanently delegated approach control airspace.</li> <li>- En route training refueling, and deployment missions.</li> <li>- Aircraft surge launch and recovery missions.</li> <li>- Logistic support and administrative missions.</li> <li>- Supersonic operations.</li> <li>- Remotely piloted vehicle operations.</li> <li>- Artillery missile operations.</li> <li>- Other military operations requiring NAS support.</li> </ul>
Minimum Availability	An availability value that a service must equal or exceed.
Mission Critical	Services that provide the NAS the capability to exercise safe separation and control over aircraft.
Mission Services	The application services which provide mission business logic. They are residing in the NAS systems that support air traffic operations. Mission Services subscribe information provided by Support Services such as single authoritative source weather information or Flight and State Data.
Monitoring	Certain aeronautical advisory services made available by the NAS to airborne aircraft. Service consists of VFR flight following and the providing of various degrees of traffic and weather information to requesting pilots.
<b>N</b>	

NAS Configuration Information	The status of a specific number and type of major components and peripheral devices which make up a computer system. This may be information on an operational configuration or non-operational configuration. Data regarding the arrangement of NAS elements.
NAS Status Information	The state or set of descriptors that describe the current capabilities of air navigation and air traffic control encompassing facilities, airways, controlled airspace, special use airspace, etc.
National	The United States and its territories.
National Airspace System/NAS	The NAS as used herein describes the FAA facilities, hardware and software that are a predominant part of the NAS infrastructure and the personnel who operate and maintain that equipment to provide services to the user.
National Spectrum Allocation Programs	A national program responsible for assigning frequencies and maintaining spectrum use databases.
Navigation Aid/NAVAID	Any visual or electronic device, airborne or on the surface which provides guidance information or position data to aircraft in flight.
Navigation Guidance	Information or position data to aircraft in flight.  Navigation Guidance Information can include: <ul style="list-style-type: none"> <li>- Horizontal (azimuth) guidance.</li> <li>- Vertical (glide slope) guidance.</li> <li>- Distance/range.</li> <li>- Bearing.</li> <li>- Latitude.</li> <li>- Longitude.</li> <li>- Altitude.</li> <li>- Rho/Theta coordinates.</li> </ul>
Navigation Services	Providing point-to-point guidance information or positron data using electronic devices (airborne or on the surface) to aircraft in flight.
Navigation Support	Navigation Support includes functions performed by navigation and landing systems that provide electronic reference signals to assist an aircraft in determining its position relative to a navigational fix or runway. It also includes the provision of visual reference to flight crews.
<b>O</b>	

Obstacle	An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.
Operational Analysis	The process by which the NAS assesses its performance.
Operational Capacity	The capability of performing a service at this moment or a future time or day.
Operational Metrics	The measure for quantitatively assessing the air traffic system for the interpretation of the assessment in the light of previous or comparable assessments.
Operational Performance Information	Quantitative information on how well a system or service meets design requirements.
Operational Procedures	A sequence of activities, task, steps, decision, calculations and processes, that when undertaken in the sequence laid down produces the described result, product or outcome.
Operational Risk	Potential hazard to the system.
Operational System Information	Data generation about NAS equipment and interfaces.
Operational Trends	Patterns in conditions or processes within an operational environment.
<b>P</b>	
Participating Aircraft	An aircraft that meets the conditions for receiving some assistance or service from Air Traffic Control. Alternatively, and aircraft that is participating in the operations of special uses airspace.
Physical Phenomenon	Any event that is an observable feature of matter, energy, or space-time that requires the use of instrumentation to observe, record, or compile data concerning the event.
Position Information	The location of the aircraft including altitude.
Precise Time Source	A system that provides timing information accurate to less than .9 seconds of the longitudinal shift corrected time of the rotation of the Earth (Universal Time 1)
Precision Approach	A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; e.g., ILS, MLS, and PAR.
Predicted	That which is expected at some future time, postulated on analysis of experience and test.
Proposed Flight Plan	The state of a plan of flight proposed by a pilot to the NAS prior to the time the flight plan becomes active.
Protected Airspace	The airspace on either side of a route, track, or maneuvering area that assures separation.

<b>Q</b>	
<b>R</b>	
Real-Time	Of or relating to computer systems that update information at the same rate as they received data, enabling them to direct or control a process.
Recommended Avoidance Maneuvers	Automatically generated maneuvers to avoid separation conflicts and separation violations.
Reference Point	Any defined point or place on the ground used for reference in navigating, defining a flight path, or determining a procedure for an aircraft.
Reliability	The probability that an item can perform its intended function for a specified interval under stated conditions.
Remote Control	Control of an operation from a distance, involving a link, usually electrical, between the control device and the apparatus to be operated.
Required Navigation Performance	A statement of the navigation performance necessary for the operation within a defined airspace.
Route	A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.
Route Status	The availability of a route.
Route Usage	Route usage, airspace that may be the most desirable for a safe and expeditious transition free of hazardous weather and volumes of aircraft.
Routine	A service which, if lost, would have a minor impact on the risk associated with providing safe and efficient NAS operations.
Runway	A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees.
<b>S</b>	
Safety	General term connoting an acceptable level of risk, relative freedom from, and low probability of harm. The associated risks that have been identified have been accepted provided that identified controls are implemented and enforced.
Safety Management	Safety Management is the means through which safety information is collected, derived from other system data, and analyzed to determine relative risk and appropriate means for mitigation.

Safety Management System (SMS)	A systematic and integrated method for managing the safety of air traffic control (ATC) and navigation services in the NAS. It integrates current FAA safety-related operational policies, processes, and procedures, as well as introduces new elements necessary for a systems approach to managing safety risk.
Safety Risk Management (SRM)	A methodology that assures all hazards are identified and all associated safety risk are mitigated to an acceptable level prior to a NAS change being made.
Safety-Critical	A key service in the protection of human life. Loss of a Safety-Critical service increases the risk in the loss of human life.
Search and Rescue/SAR	A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies.
Secure/Security	<ol style="list-style-type: none"> <li>1. Measures taken to protect the NAS from all acts designed to, or that may, impair its effectiveness.</li> <li>2. A condition that results from the establishment and maintenance of measures to protect designated information, personnel, equipment, and installations.</li> <li>3. A condition that prevents unauthorized disclosure of information that is safeguarded as NAS-sensitive (designated operational/administrative) or is classified in the interest of national security.</li> </ol>
Secure Communication Protocol	A communication protocol that provides the appropriate confidentiality, authentication and content integrity protection.

<p>Security Partners</p>	<p><u>National Airspace System (NAS) customers</u>: This group includes the commercial airlines, cargo airlines, general aviation, and other elements of the flying public. The Department of Defense (DoD) entities that transit the NAS, or use the NAS to conduct training in airspace designated for special use area are also included in this category.</p> <p><u>U.S. Department of Transportation (DOT)</u>: Key stakeholders within the Department of Transportation included the Department of Transportation itself; and the Federal Aviation Administration's Air Traffic Organization (ATO), the Office of Security and Hazardous Materials (ASH), and the Aviation Safety Organization (AVS).</p> <p><u>Department of Defense</u>: Department of Defense stakeholders include the North American Air Defense Command (NORAD) with its subordinate Regional Commands, Air Defense Sectors, and alert sites that are involved in surveillance and interdiction of potential airspace security threats. The US Northern Command (NORTHCOM) and its subordinate elements responsible for responding to threats to the homeland are also included among DoD stakeholders.</p> <p><u>Department of Homeland Security (DHS)</u>: Key stakeholders under DHS include the Transportation Security Administration (TSA), the United States Coast Guard (USCG), the US Customs and Border Protection (CBP) Agency, the Federal Emergency Management Agency (FEMA), and the United States Secret Service (USSS).</p> <p><u>Department of Justice (DOJ)</u>: The primary stakeholder in DOJ is the Federal Bureau of Investigation (FBI).</p>
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<p>Security Partners (continued)</p>	<p><u>Office of the Director of National Intelligence (ODNI)</u>: The ODNI is a key stakeholder in providing early indication of potential airspace threats. An important stakeholder within the ODNI is the National Counter Terrorism Center (NCTC).</p> <p><u>State, Local, and Tribunal Governments</u>: This category includes local and state law enforcement organizations and their assets. These organizations frequently play an important role in the investigation and interrogation of airspace security violators.</p> <p><u>National Aeronautics and Space Administration (NASA)</u>: NASA is largely a stakeholder due to airspace security required during space launches and space recovery operations.</p> <p><u>Other organizations</u>: These include the Department of State (DOS), Department of Energy (DOE), Department of Health and Human Services (HHS), and Department of Commerce (DOC).</p>
<p>Security Services</p>	<p>Approved measures adapted to the system to assure an acceptable level of security.</p>
<p>Separation</p>	<p>In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.</p>
<p>Separation Assurance</p>	<p>This service ensures that aircraft maintain a safe distance from other aircraft, terrain, obstacles, and certain airspace not designated for routine air travel.</p>
<p>Separation Conflict</p>	<p>Prediction of a Separation Violation or less than standard separation.</p>
<p>Separation Management</p>	<p>Tactical response to violations or projected violations of separation standards. It generates tactical variations of flight trajectories to resolve projected conflicts between aircraft and between an aircraft and an aviation hazard, such as obstacles to flight, restricted airspace, or severe weather.</p>
<p>Separation Violation</p>	<p>An event in which the distance between an aircraft and either another aircraft, an obstacle, the ground, or specified airspace is less than prescribed standards.</p>
<p>Sequencing Plans</p>	<p>The ordering of aircraft for arrival and departure</p>
<p>Service</p>	<p>A mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description.</p>

Service Oriented Architecture Environment	A comprehensive framework that provides all the software technology that an enterprise might need to build and run an SOA, including both the design-time and run-time environments.
Service Status	The current quality of a delivered service as compared to its predefined optimal behavior.
Service Threads	Service threads are strings of systems that support one or more service/capabilities to a user/specialist.
Short Term Capacity Management	Short Term Capacity Management is the means through which strategic planning is performed for applying available assets to adjust system capacity to meet the demand. It involves the assessment of demand within an operational timeframe, and the allocation of available resource to provide sufficient capacity to meet that demand. It works in coordination with Flow Contingency Management to resolve predicted congestion by adjusting airspace and route configurations to match the needs of specific flow initiatives.
Short Term Prediction	An estimate of specific information up to two hours in the future.
Short Term Trajectory Management	A route base separation handled by air traffic controllers using radar screens to visualize aircraft flight path and make cognitive operational judgments, with some automation decision support to help identify and resolve aircraft conflicts, manage specific aircraft movements and to manage the overall flow of all aircraft.
Special Activity Airspace (SAA)	Any airspace with defined dimensions within the National Airspace System wherein limitations may be imposed upon aircraft operations. This airspace may be restricted areas, prohibited areas, military operations areas, air ATC assigned airspace, and any other designated airspace areas.
Specialist	An internal stakeholder who is an expert in providing Air Traffic Control services.
Stakeholders	A group or individual that is affected by, or is in some way accountable for the outcome of an undertaking; an interested party having a right, share or claim in a product or service, or in its success in processing qualities that meet that party's needs and/or expectations.
Steady-Level Flight	A flight characteristic of an aircraft that is operating under the following conditions: 1) The aircraft is maintaining a constant altitude and its wings are level to the horizon. (Level Flight) 2) The aircraft has constant speed and direction (Steady Flight)
Storm Cell	An air mass that contains up and down drafts in convective loops, moves and reacts as a single entity, and functions as the smallest unit of a storm-producing system.

Surface Volume	Also known as surface capacity; refers to the number of aircraft that can move about the airport surface area (taxiways, runways, gates, staging areas, etc.).
Surveillance	<p>The detection, location, and tracking of aircraft within NAS airspace for the purposes of control, separation, and identification. Surveillance systems are electronic in nature; visual methods are purposely excluded. In the case of dependent surveillance, the aircraft provides all flight information. Surveillance systems are differentiated as independent, independent cooperative, and dependent:</p> <ol style="list-style-type: none"> <li>1. Independent Surveillance - A system which requires no airborne compatible equipment.</li> <li>2. Independent Cooperative Surveillance - A system which requires airborne compatible equipment (e.g., ATRBS, Mode S).</li> <li>3. Dependent Surveillance - A system that requires input from navigation equipment aboard the aircraft either via a data link (e.g., LOFF) or via voice (transmission pilot reports).</li> </ol>
Surveillance Information Management	<p>Means for processing raw surveillance information and transforming it into an integrated, comprehensive, and authoritative source for all consumers and service providers. The processing includes correlating surveillance information with flight data to provide continuous identification and tracking of flight. It also involves the derivation of information from the surveillance data, such as velocity and intent.</p> <p>Surveillance Information Services are derived from integrated cooperative and noncooperative surveillance systems to permit the creation of real-time situational awareness (the capability to detect, identify, and monitor air vehicles) on the surface of an airport and in the air.</p> <p>To enable the operational improvements envision in NextGen, Surveillance Services must be able to detect, monitor, track and identify all airborne objects — anything that could present a safety risk to the community of airspace users or could be a risk to national security.</p>
System and Services Analysis	System & Services Analysis includes both real-time and off-line analysis of information gathered throughout the system and from external entities. It is used to assess system performance and to support investigations of accidents, incidents, and criminal activity. It also includes the recording of operational information (including voice communications) for analysis and archival purposes.

System and Services Management	System & Services Management represents the enterprise-wide maintenance and system management function. It Monitors the health of all system elements, identifies the impact of system issues on operational services, responds to failures and degradation of service, and provides logistics and preventative maintenance support to minimize system outages and degradation of services. It also monitors the health of external entities critical to the success of collaborative operations.
System Parameters	The selectable options for a set of components functions as a single entity.
System Security	Degree to which a system is protected against attack or unauthorized disclosure.
System Status	The current performance quality of a set of infrastructure components as compared to their predefined optimal behavior.
<b>T</b>	
Taxiway	A movement area on an airport.
Terrain and Obstacle Information	An existing object, object of natural growth, or terrain at a fixed position.
Time Horizon	Time Horizons account for all current and future defined states of a flight necessary to support NextGen services. Expectation is that many states will exist for flights that have filed plans leading up to clearance delivery and that many new states will exist for surface management as well as airborne flights. New specific states are expected to be defined as data and services are available that are actionable by humans or automation. It is expected that predictive states that are utilized in the pre-clearance delivery time horizon will be processed utilizing the same functions used for active flights with modeled or projected NAS environmental data will be replaced in different time horizons by policy or as a result of actionable real data as it becomes available and meets any quality metrics that are required.
Track Initiation	The creation of a recorded history of an aircraft's location.

Traffic	<p>a) A term used by specialist to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:</p> <ol style="list-style-type: none"> <li>1. In response to a handoff or point out,</li> <li>2. In anticipation of a handoff or point out, or</li> <li>3. In conjunction with a request for control of an aircraft.</li> </ol> <p>b) A term used by ATC to refer to one or more aircraft.</p>
Traffic Flow	The state of aircraft movement throughout the NAS.
Traffic Information	The relative position of other aircraft.
Traffic Management Advisories	<p>Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:</p> <ol style="list-style-type: none"> <li>a. Visual observation.</li> <li>b. Observation of radar identified and non-identified aircraft targets on an ATC radar display, or</li> <li>c. Verbal reports from pilots or other facilities.</li> </ol>
Traffic Management Initiative (TMI)	A plan put in place to accommodate flow restrictions and relieve congestion, such as ground holds or decisions to split a flow among multiple routes.
Trajectory	The projected path of an aircraft as a function of time.
Trajectory Management	<p>Means through which 4-D trajectories are generated, assessed, and modified for use in trajectory-based operations. It supports the implementation of flow management strategies by managing changes to trajectories required by localized changes in capacity and demand. This function includes two levels of scope — national and local. Both levels support plans developed by STCM and FCM and respond to changing situations, including flow contingency plans, traffic management initiatives, security-related airspace restrictions, severe weather, and changes in demand for airspace resources. The local level focuses on small, localized variations in trajectories, and adjustment related to the sequencing and space of flight through specific airspace resources. the national level focuses on end-to-end trajectory management in support of STCM and FCM</p>
U	

User	The external individual or group that receives services from the NAS (e.g., Pilot, Air Carrier, General Aviation, Military, Law Enforcement Agencies).
<b>V</b>	
Vehicle	A conveyance, other than an aircraft, that transports people or objects.
Velocity	The ground speed and current heading of an aircraft or vehicle.
Vertical Descent Guidance or Visual Descent Point	A defined point on the final approach course of a non-precision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided the approach threshold of that runway, or approach lights, or other markings identifiable with the approach end of that runway are clearly visible to the pilot.
Visual Spatial References	A collection of lights or markings configured to provide visual guidance and information to pilots approaching/departing a runway. These configurations can be used to identify the extended centerline of a runway, or mark the approach edge/end of the runway, etc.
<b>W</b>	
Weather	A category of atmospheric phenomena that includes tornadoes, funnel clouds, waterspouts, thunderstorms, squalls, precipitation, and obscurations.
Weather Advisory	In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the area forecast, as they affect the operation of air traffic and as prepared by the National Weather Service.
Weather Aloft	Weather conditions aloft include: <ol style="list-style-type: none"> <li>1. Wind speed and direction.</li> <li>2. Temperature.</li> <li>3. Clear air turbulence.</li> <li>4. Thunderstorms.</li> <li>5. Thunderstorm associated with turbulence.</li> <li>6. Hail.</li> <li>7. Icing.</li> <li>8. Mountain wave turbulence.</li> </ol>

<p>Weather Information Management</p>	<p>Means for processing raw weather information and transforming it into an integrated, comprehensive, and authoritative source for all consumers and service providers. The process includes interpolation between sources to provide complete lateral and vertical coverage, and probabilistic extrapolation from current conditions into the future so as to provide a 4-D representation of the weather situation that can be used for decision making related to the current traffic situation and for planning to accommodate projected demand. It also includes the derivation of products and data that can be applied to decision support tools, support trajectory-based operations, and provide advisories of hazardous weather to consumers.</p> <p>This function includes two levels of scope – national and local. The local level integrates raw data from local sources and provides time-sensitive data to critical local functions, such as Separation Management. The national level integrates the output from the various local-level functions into a single, authoritative source for all consumers and service providers. It also provides an extended forecast capability that integrates climatology into the projection process that supports capacity management operations.</p>
<p><b>X</b></p>	
<p><b>Y</b></p>	
<p><b>Z</b></p>	

## Appendix F: Action Verbs

Action Verbs	Definitions
<b>A</b>	
Accept	To take or receive something offered.
Acquire	Gain possession of, obtain.
Activate	To put into operation or effect.
Adjust	1. To change so as to match or fit; cause to correspond. 2. To notify someone of a condition that may require action.
Alert	To advise or warn; cause to be on guard.
Analyze	Examine methodically so as to determine the nature and components of a matter via categorization, calculation, itemization, comparison, or tabulation.
Apply	To make use of as relevant, suitable, or pertinent.
Approve	To confirm or sanction formally; ratify.
Archive	To place or store in a place where public records or other historical documents are kept.
Assess	To examine a situation for the purposes of characterizing it or identifying specific events or conditions.
Associate	To connect or bring into relation.
Assure	To secure or confirm; render safe or stable.
<b>B</b>	
Be	To exist in a state
<b>C</b>	
Close	To bring to an end; cease.
Collaborate	To work, one with another; cooperate.
Comply	To act or be in accordance with requirements.
Conduct	To direct or take part in the operation or management of.
Configure	To design or adapt to form a specific configuration for some specific purpose.
Control	To exercise direction over.

Coordinate	To bring into common action, movement, or condition. The exchange information and the participation in the planning of a common or joint action that requires consensus or cooperation.
<b>D</b>	
Derive	To reach or obtain by reasoning; deduce; infer.
Detect	To discover or discern the existence of something, to become aware of something.
Deter	To prevent.
Determine	A process that uses information in order to establish some fact, happening, or event.
Display	To show or exhibit; make visible.
Disseminate	The act of providing information to one or more users.
<b>E</b>	
Establish	To bring into existence.
Evaluate	To examine and judge carefully; appraise. Assigning a status based on set criteria.
<b>F</b>	
Forecast	To predict (a future condition or occurrence); calculate in advance.
<b>G</b>	
Generate	To bring into being; to create.
<b>H</b>	
Have	To possess as a characteristic, quality, or function.
<b>I</b>	
Identify	To recognize or establish as being a particular person or thing.
Implement	To put into practical effect; carry out.
Integrate	To bring together or incorporate (parts) into a whole.
<b>J</b>	
<b>K</b>	
<b>L</b>	
<b>M</b>	

Maintain	To gather/receive information, to validate information and its sources when generated by external stakeholders, to maintain the currency of information (including purging expired information), to produce products that result from filtering and combining different pieces of information, to provide persistence of information at various points of use, and to distribute information either on demand or according to business rules.
Manage	To direct or control the use of; handle.
Measure	To ascertain the extent, dimensions, quantity, capacity, etc., of, especially by comparison with a standard.
Monitor	To keep track of systematically with a view to collecting information. To keep close watch over.
<b>N</b>	
Notify	To give notice to; inform.
<b>O</b>	
Operate	To work or use.
<b>P</b>	
Perform	To carry out; execute.
Predict	To make known in advance, especially on the basis of special knowledge.
Process	To treat or prepare by a defined set of steps.
Project	To set forth or calculate.
Provide	To make available.
Publish	To issue and prepare for public distribution, to print to public notice or issue a publication.
<b>Q</b>	
<b>R</b>	
Record	To register information for preservation.
Respond	To reply or answer
Restore	To bring back to a former, original, or normal condition.
<b>S</b>	
<b>T</b>	
Terminate	To bring to an end; put an end to.
Track	To observe or monitor the course or path of.
Transfer	To convey our cause to pass from one place, person, or thing to another.

Transmit	Send out a message, such as a call, acknowledgment, response, suggestion, direction, information, instruction, message, or request.
<b>U</b>	
Update	Replace some information or data with information or data that is more current.
Use	To put into service or action; to employ.
Utilize	To put to use.
<b>V</b>	
Validate	To confirm the authenticity or correctness of.
<b>W</b>	
<b>X</b>	
<b>Y</b>	
<b>Z</b>	

## Appendix G: Acronyms

Acronym	Meaning
#	
2-D	Two Dimensional
4-D	Four Dimensional
<b>A</b>	
ADIZ	Air Defense Identification Zone
ADF	Automatic Direction Finder
ANSP	Air Navigation Service Provider
ARTCC	Air Route Traffic Control Center
ASH	Office of Security and Hazardous Materials
ATC	Air Traffic Control
ATCRBS	Air Traffic Control Radar Beacon System
ATO	Air Traffic Organization
AVS	Aviation Safety Organization
<b>B</b>	
<b>C</b>	
CONOPS	Concept of Operations
CBP	U.S. Customs and Border Protection
COI	Community of Interest
<b>D</b>	
DHS	Department of Homeland Security
DNS	Domain Name System
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice

DOS	Department of State
DOT	Department of Transportation
<b>E</b>	
EA	Enterprise Architecture
ETA	Estimated Time of Arrival
<b>F</b>	
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FCM	Flow Contingency Management
FEMA	Federal Emergency Management Agency
FIPS	Federal Information Processing Standards
<b>G</b>	
<b>H</b>	
HHS	Department of Health and Human Services
<b>I</b>	
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
IP	Internet Protocol
IPv6	Internet Protocol version 6
ISSO	Information System Security Officer
<b>J</b>	
<b>K</b>	
<b>L</b>	
LOFF	LORAN C Offshore Flight Following
<b>M</b>	
MDA	Minimum Descent Altitude
MLS	Microwave Landing System
ms	Millisecond
MSL	Mean Sea Level
MTBF	Mean Time Between Failure

MTTR	Mean Time to Restore
<b>N</b>	
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NAVAID	Navigational Aid
NCTC	National Counter Terrorism Center
NextGen	Next Generation Air Transportation System
NIST	National Institute of Standards and Technology
NM	Nautical Mile
NORAD	North American Air Defense Command
NORTHCOM	The U.S. Northern Command
<b>O</b>	
ODNI	Office of the Director of National Intelligence
OMB	Office of Management and Budget
<b>P</b>	
PAR	Precision Approach Radar
<b>Q</b>	
<b>R</b>	
R&D	Research and Development
RMA	Reliability, Maintainability, and Availability
<b>S</b>	
SAA	Special Activity Airspace
SAR	Search and Rescue
SEM	Systems Engineering Manual
SMS	Safety Management System
SOA	Service Oriented Architecture
SRM	Safety Risk Management
STCM	Short Term Capacity Management
SV-4	System View - 4, System/Services Functionality Description
<b>T</b>	

TACAN	Tactical Air Navigation System
TMI	Traffic Management Initiative
TV-1	Technical View - 1, Technical Standards Profile
TSA	Transportation Security Administration
<b>U</b>	
U.S.	United States
USCG	United States Coast Guard
USSS	United States Secret Service
<b>V</b>	
VFR	Visual Flight Rules
VOR	VHF Omni-directional Radio Range
<b>W</b>	
<b>X</b>	
<b>Y</b>	
<b>Z</b>	