STATEMENT OF WORK

NAS Program System Engineering Support #2

**Warning:**

The Statement of Work (SOW) paragraphs, Contract Data Requirements List (CDRL) items, and Data Item Descriptions (DIDs) identified for your type of acquisition are recommendations only. You are expected to modify or add SOW paragraphs, CDRLs, or DIDs to address the specific requirements of your program.

**Table of Contents**

[1.0 Scope 1](#_Toc393115983)

[1.1 Locations 1](#_Toc393115984)

[1.2 General Tasks 1](#_Toc393115985)

[2.0 Specific Tasks 2](#_Toc393115986)

[2.1 Program Management 3](#_Toc393115987)

[2.2 Integrated Program Planning 3](#_Toc393115988)

[2.3 Requirements Management 4](#_Toc393115989)

[2.4 Functional Analysis 4](#_Toc393115990)

[2.5 Synthesis 4](#_Toc393115991)

[2.6 Trade Studies 5](#_Toc393115992)

[2.7 Interface Management 5](#_Toc393115993)

[2.8 Specialty Engineering 6](#_Toc393115994)

[2.9 Integrity of Analysis 6](#_Toc393115995)

[2.10 Risk Management 7](#_Toc393115996)

[2.11 Configuration Management 7](#_Toc393115997)

[2.12 Validation and Verification 8](#_Toc393115998)

[2.13 Lifecycle Engineering 9](#_Toc393115999)

[2.14 Maintain the System Engineering Process 9](#_Toc393116000)

[3.0 Schedule 9](#_Toc393116001)

[4.0 Deliverables 9](#_Toc393116002)

[5.0 Travel 10](#_Toc393116003)

[6.0 Contract Administration 10](#_Toc393116004)

[7.0 Other Direct Costs 11](#_Toc393116005)

[8.0 Government Furnished Property 11](#_Toc393116006)

# Scope

This Statement of Work (SOW) specifies the Systems Engineering support and services required by the *[name of organization*], necessary to accomplish its mission.

[*name of organization*], provides aviation *[name of system(s), i.e. communication, navigation, or surveillance*] that are integral components of the National Airspace System (NAS). The NAS provides the flying public with air traffic control services designed to ensure air transportation safety. The [*name of organization*] is responsible for providing technical and engineering direction and program management for many long-term NAS [*name of system(s), i.e. communication, navigation, or surveillance*] projects through various stages of implementation. Specific FAA programs include [*name of program(s)*] programs. The individual [*name of system(s), i.e. communication, navigation, or surveillance*] projects within these areas must satisfy the requirements of the NAS as implemented by the FAA.

There is currently *[# of teams*] [*type of team*] Teams within the [*name of organization*] organization:

[*List team(s) here*]

This information is provided to establish an initial project baseline for this SOW and is subject to change.

The following programs are supported within the [*name of organization*] organization:

[*List program(s) here*]

Other programs and projects may be added at the discretion and direction of the Contracting Officer (CO) and the Contracting Officer's Technical Representative (COTR)/Delivery Order Contracting Officer's Technical Representative (DOCOTR).

## Locations

The Contractor shall perform the work activities described in this SOW on-site at FAA [*site*] and/or offsite as required. However, some tasks may require the Contractor to travel to one or more locations in support of the work effort, at the direction of the COTR/DOCOTR:

[*List site(s) here*]

## General Tasks

The contractor shall provide quality technical, engineering, analytical, planning, and management support to achieve the requirements of this SOW. The contractor shall furnish and make available all personnel, supplies, equipment, materials, data, facilities, and services necessary to assist the [*name of organization*] in accomplishing its mission. As determined by the FAA, the contractor may be required to interface with system integration contractors, equipment manufacturers, airport personnel, various FAA and U.S. Government and Military organizations, and international organizations such as Eurocontrol and NAV Canada.

The contractor shall provide support in the areas of *[name of system(s), i.e. communication, navigation, or surveillance*] systems research and development, design, development, test, production, operations, and architecture. As such, the contractor shall possess demonstrable experience in and a detailed understanding of [*name of system(s), i.e. communication, navigation, or surveillance*] systems.

# Specific Tasks

Specific tasks for SOW activities may include, but not be limited to the following:

* Program Management
* Integrated Technical Planning
* Requirements Management
* Functional Analysis
* Synthesis
* Trade Studies
* Interface Management
* Specialty Engineering
* System Safety Engineering
* Reliability Maintainability and Availability
* Human Factors Engineering
* Electromagnetic Environmental Effects (EA)
* Quality Engineering
* Information Security Engineering
* Hazardous Materials Management/Environmental Engineering
* Integrity of Analysis
* Risk Management
* Configuration Management
* Validation and Verification
* Lifecycle Engineering
* Maintain System Engineering Process

## Program Management

The contractor shall provide a full range of program management support to [*name of organization*]. The contractor shall provide support to all projects within [*name of organization*] in the development and maintenance of schedules, process flow charts, Memorandums of Understanding/Agreements, and plans necessary to monitor and control each project. This support shall include:

* Coordinating with the appropriate FAA organizations, regions, sector offices, the FAA Logistics Center, the FAA Academy, or the William J. Hughes Technical Center
* Participating in team meetings, working groups, program reviews, senior level status reviews, and team building exercises
* Tracking and processing of actions and resolutions, NAS changes proposals, and program directives
* Tracking identified risks and documenting potential work-around and/or resolutions
* Tracking existing program configurations, issues and status
* Providing support for the development of project memos, presentations, handouts, status charts, and position papers.

## Integrated Program Planning

The contractor shall provide systems engineering support in the following Integrated Program Planning activities for all systems in [*name of organization*], including:

* Performance of system engineering, specialty, and lifecycle planning
* Development of the Master Verification Plan (MVP)
* Integration of planning into the Implementation Strategy and Planning Document (ISAP)
* Development of the System Engineering Management Plan (SEMP)and
* Planning and performance of reviews and audits.

## Requirements Management

The contractor shall provide systems engineering support for all systems in [*name of organization*] for the requirements management process which defines, collects, documents, and manages all requirements, including the complete requirements set consisting of the Service Level Mission Need (SLMN), the preliminary Program Requirements (pPR), final Program Requirements (fPR), and the system and procurement specifications for all systems in [*name of organization*]. The contractor shall support the following requirements management activities:

* Identify and capture the requirements applicable to the system
* Analyze and decompose the requirements into clear, unambiguous, traceable, and verifiable requirements
* Derive lower level requirements from higher level requirements in the system hierarchy
* Allocate the requirements to the appropriate component within the system hierarchy and/or to the appropriate organizational entities
* Establish the method of verification for each requirement
* Ensure that the product complies with the requirements
* Manage, document, and control the requirements and changes to them in a traceable manner.

## Functional Analysis

The contractor shall provide systems engineering support in the following functional analysis activities for all systems in [*name of organization*], including:

* Define top level functions
* Organize functions into logical relationships
* Decompose higher level functions into lower level functions
* Evaluate alternative decompositions and
* Document the functional analysis baseline

## Synthesis

The contractor shall provide systems engineering support in the following synthesis activities for all systems in [*name of organization*], including:

* Review of requirements and define objectives
* Identification of the potential alternative
* Definition of the solution set
* Allocation of requirements and design constraints to system elements
* Definition of the design and performance characteristics
* Definition of the physical architecture
* Analyze and define alternatives
* Assessment of requirements compliance and
* Selection of the Best Value alternative.

## Trade Studies

The contractor shall perform trade studies for all systems in [*name of organization*] to identify the most balanced technical solutions among a set of proposed viable solutions. The results shall be used in developing designs that meet stakeholder requirements in the most cost-efficient manner possible. The contractor shall identify the most desirable and practical alternatives that better combine cost and effectiveness.

The contractor shall conduct trade studies at the program’s different lifecycle stages to discover the best-value solution, best value to the Government, and best value to a set of requirements from technical, cost, or schedules points of view. Trade studies shall be performed for a variety of purposes, to include:

* Selection among alternative design and implementation strategies and solutions based on architecture, performance, and cost in order to meet stakeholder requirements
* Recommendations of commercial-off-the-shelf (COTS) products for acquisition
* Perform make-versus-buy analyses, or buy-versus-lease analyses (Office of Management and Budget Circular A-76, Outsourcing Decision)
* Recommendation of a supplier for services
* Document and justify the selection of a solution for a system requirement
* Risk reduction

## Interface Management

The contractor shall provide system engineering support for all systems in [*name of organization*] in the area of interface management, which includes identification, definition, and control of interfaces. The contractor shall provide analysis and documentation to ensure that all the pieces of the system work together to achieve the system’s goals and continue to operate together as changes are made during the system’s lifecycle. The contractor shall support the design and implementation of interfaces between new [*name of system(s)*] systems, [*name of system(s)*], and [*name of systems*] systems. Tasks include:

* Define and illustrate performance, physical, and functional characteristics in sufficient detail to ensure that all details on the interface can be determined solely from the information in the IRD/ICD
* Identify required interface data and monitor submission of the data
* Control the interface requirements and design to prevent any changes to characteristics that might affect compatibility with other systems and equipment and
* Communicate coordinated interface requirements and design decisions and interface requirements/design changes to program office participants.

## Specialty Engineering

The contractor shall provide system engineering support for all systems in [*name of organization*] in the area of specialty engineering, the disciplines include: System Safety Engineering (SSE); Reliability, Maintainability, and Availability (RMA); Human Factors Engineering; Electromagnetic Environmental Effects (E3); Quality Engineering; Information Security Engineering; and Hazardous Materials Management/Environmental Engineering. The contractor shall perform analyses based on these disciplines throughout the system's lifecycle. The results will be used to derive, validate, and verify requirements; evaluate system design progress and technical soundness; and manage risk.

## Integrity of Analysis

The contractor shall provide system engineering support for all systems in [*name of organization*] in the area of integrity of analysis which is an as a logical examination or study of a system to determine the nature, relationships, and interaction of its parts and environment. The Analysis shall emphasize baseline system performance and/or compare the development, production, or usage alternatives. The analysis shall be performed throughout the entire product lifecycle to support program decisions, encompassing technical performance and system acquisition considerations.

The analyses shall range from the simple to the complex, quantitative to qualitative, top-down to bottom-up, and basic formulas to sophisticated simulations. Some specific scenarios that require analyses include:

* Exploring system concepts regarding viability and technology maturity
* Determining operational system requirements and measures of system merit
* Determining key system performance relationships to cost and other acquisition parameters
* Evaluating key system quality factors, including reliability, readiness, and maintainability
* Evaluating potential changes to improve performance and reduce cost
* Assessing risks and potential risk mitigation options
* Synthesizing allocated requirements into an acceptable physical design
* Evaluating specific physical designs (components and interfaces)
* Determining system characteristics before building or integrating the system
* Verifying system, subsystem, and component performance at various stages
* Monitoring production quality
* Diagnosing observed or perceived system deficiencies
* Evaluating produced and fielded system performance
* Evaluating processes used to support and achieve results.

## Risk Management

The contractor shall provide systems engineering support for all systems in [*name of organization*] in the area of risk management. The contractor shall perform the following activities:

* Identify system risks
* Classify system risks as they apply to technical, cost, and/or schedule impacts
* Analyze and identify risk mitigation strategies
* Document all risks and track them to closure
* Provide periodic reports on risks, impacts and mitigation strategies, as required.

## Configuration Management

The contractor shall support for all systems in [*name of organization*] configuration management by providing knowledge and expertise to ensure that functional and physical characteristics of [*name of system(s)*] system configuration items meet the requirements during all phases of the systems life cycle. The contractor shall review all specifications, contracts and statements of work to ensure requirements are properly and accurately documented in all contract configuration management related data requirements.

The contractor shall provide project configuration management support as follows:

* Ensure that each project complies with FAA Order 1800.66
* Coordinate the accumulation of data configuration, cost, schedule, technical and operational impacts of proposed changes
* Review NAS Change Proposals (NCP) for impact on assigned projects, develop change summaries and make recommendations
* Review configuration changes, provide assessment of cost and schedule impact of such changes, and recommend when formal change proposals are required
* Collate data for formal changes; generate case files in the FAA status system, and follow-up resolutions of outstanding comments and
* Provide executive support for Configuration Control Boards (CCB).

## Validation and Verification

The contractor shall provide system engineering support in the area of validation and verification activities for all systems in [*name of organization*]. The contractor shall support the following activities:

* Development of a Validation Table for inclusion into the Validation Report.
* Verification planning and documentation in the joint SE and Test and Evaluation (T&E) Master Verification Plan (MVP).
* Development of a specification/approach for verifying system requirements and document in the Validation Table.
* Development of the Verification Requirements Traceability Matrix (VRTM).
* Development of the Requirements Verification Compliance Document (RVCD).

## Lifecycle Engineering

The FAA lifecycle acquisition management process described in the Acquisition Management System policy (for more information go to http://fast.faa.gov) is organized into a series of phases and decision points. The contractor shall provide systems engineering support for the lifecycle management process for each lifecycle phase for each program in [*name of organization*], including needs identification, technical assessment, technology insertion, operational assessment, performance analysis, and establishment of service. The contractor shall also provide system engineering support for the preparation of any reports and/or Joint Resource Council briefings

## Maintain the System Engineering Process

The contractor shall provide system engineering support in the area of maintenance of the system engineering process. The tasks include: maintenance and improvement of the system engineering processes contained in the System Engineering Manual (SEM), management of system engineering training, and incorporation of process improvement.

# Schedule

The period of performance of this requirement is estimated to be [*x*] years. The Government will assign a maximum of [*insert labor hours ceiling here*] labor hours to this effort.

(If you have attachments for schedule and labor categories/skill level spreadsheets include the following statement).

See attached spreadsheet for schedules and labor categories/skill levels.

# Deliverables

The contractor shall provide a monthly status report to the COTR and Contracting Office electronically and in hardcopy. The report shall describe the work accomplished during the reporting period and work planned for the next period, discuss problems encountered and corrective actions taken, and identify pending issues. In particular, the report shall address the extent to which any problems or circumstances could cause conflicts in [*name of system(s)*] program schedules.

Some due dates may be dependent on system development contractor milestones. All references to days are in calendar days.

**ITEM DUE DATE**

Reports on Reviews/Meetings/Trips [*x*]days after Review/Meeting/Trip

Oral/Written Status Reports Weekly

Monthly Status Report Monthly

Comments on CDRL documentation As per project CDRL

Reports on Reviews/Meetings/Trips [*x*] days after review/meeting

Special Reports (as needed) [*x*] days after completion

Work Breakdown Plan [*x*] days after initiation

Acquisition Strategy Papers As required

Integrated Program Plan As required

Requirements Documents As required

Acquisition Program Baseline As required

Process Improvement Status Reports Monthly

Program/Project Management Schedules Monthly

Management Status Reports Monthly

Training Plans As required

Training Curriculum As required

Training Courseware As required

Process Area/Process Description Documents As required

Simulation Scenarios As required

Simulation Reports As required

Simulation Scenario Schedules As required

Some due dates may be dependent on program office milestones. The COTR/ DOCOTR will advise the contractor when dates require adjustment.

All documents prepared by the Contractor shall be on the behalf of the FAA and the Contractor may not independently publish or distribute any document without prior written permission from the COTR/DOCOTR. The Contractor shall review and provide written comments on the technical accuracy and completeness of each document. No documents, reports, information, etc. may be released to the public or provided to any party other than the FAA and it's contractors without written approval of the COTR/DOCOTR.

# Travel

Travel shall be required as defined in 1.1. All travel shall have prior authorization of the FAA Supervisor and the DOCOTR/COTR. The contractor is reminded that this further defines Part I, Section G.6 (Travel) of the contract award document.

# Contract Administration

The contractor shall submit invoices to the government as specified in Part I - Section G.2 (Invoice and Billing Instructions) of the contract award document with the original directed to ACX-32, one copy to the COTR, one copy to the DOCOTR and one copy to Administrative Contract Officer (ACO). All submitted invoices shall contain information as specified in Section G.2. Paragraph a.

The contractor shall submit a monthly progress report as defined in Part I - Section F.5 Monthly Progress Reports and Financial Summary Report of the contract award document.

Any change in subcontractor support shall be coordinated with the CO and the COTR/DOCOTR prior to implementation.

# Other Direct Costs

The contractor shall bill for ODCs as defined in Part I - Section G.7 Other Direct Costs.

# Government Furnished Property

The contractor shall administer all Government property as defined in Part I, Section G.13 Government Property Reports.