

Document ID: SS-AEG-SRS-001

Document Title: Aegis-Link Software Requirements Specification (SRS)

Version: 1.0

Status: Released

Date: 13 August 2025

1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) defines the functional and non-functional requirements for the Aegis-Link Control Software. Aegis-Link is the unified human-machine interface for monitoring and controlling the complete Synthetic Systems naval communications suite, including the Hydra-C4 Comms Module and the Trident-S Antenna Array. This document serves as the primary technical baseline for the software's design, development, and testing.

1.2 Scope

This SRS applies to the Aegis-Link Control Software product line. It establishes the requirements for the software's capabilities, performance, user interface, and external interfaces. All software development activities shall be conducted in accordance with the lifecycle defined in **SS-ENG-PLAN-001: Engineering Management Plan**.

1.3 Product Perspective

Aegis-Link is an integral component of the Synthetic Systems product ecosystem. It provides operators with a single, intuitive interface to manage complex hardware, reducing cognitive load and improving mission effectiveness. The future development of Aegis-Link is a key corporate priority, driven by the strategic goal to expand our software capabilities as outlined in **SS-CORP-PLAN-001: Corporate Plan 2025-2028**. The planned growth of our software team will directly support the delivery of the enhanced feature roadmap envisioned in this SRS.

2. Applicable Documents

- **SS-CORP-PLAN-001: Corporate Plan 2025-2028**
- **SS-ENG-PLAN-001: Engineering Management Plan**
- **SS-HYD-SPEC-001: Hydra-C4 System Specification**
- **SS-TRI-SPEC-001: Trident-S Mechanical & RF Specification**

3. Functional Requirements

The following sections detail the functional requirements for the Aegis-Link software.

3.1 System Status Monitoring

- **REQ-FUN-001:** The software shall display the real-time operational status of the connected Hydra-C4 module, including power status, temperature, and BIT results.
- **REQ-FUN-002:** The software shall display the real-time operational status of the connected Trident-S antenna, including azimuth, elevation, and satellite lock status.
- **REQ-FUN-003:** The software shall provide a consolidated system health dashboard that summarizes the status of all connected hardware.
- **REQ-FUN-004:** The software shall display a visual alert to the operator if a fault is detected in any connected hardware component.

3.2 System Control

- **REQ-FUN-005:** The software shall provide controls to initiate a Built-In Test (BIT) on the Hydra-C4 module.
- **REQ-FUN-006:** The software shall provide controls to command the Trident-S antenna to acquire a specified satellite.
- **REQ-FUN-007:** The software shall allow the operator to configure the data throughput rate of the Hydra-C4 module.
- **REQ-FUN-008:** The software shall allow the operator to select the RF polarization (LHCP/RHCP) for the Trident-S antenna.

3.3 Data Management and Logging

- **REQ-FUN-009:** The software shall log all operator commands and system alerts to a local log file.
- **REQ-FUN-010:** The software shall provide a log viewer to allow operators to review historical event logs.
- **REQ-FUN-011:** The software shall provide the ability to export event logs to an external storage device.

3.4 User Management

- **REQ-FUN-012:** The software shall provide a role-based access control (RBAC) system with at least two roles: 'Operator' and 'Administrator'.
- **REQ-FUN-013:** 'Administrator' users shall have the ability to create, modify, and delete user accounts.
- **REQ-FUN-014:** All users shall be required to log in with a unique username and password.

4. Non-Functional Requirements

4.1 Performance

- **REQ-NFR-001:** The user interface shall have a response time of less than 500ms for all critical operator interactions (e.g., button clicks, menu selections).
- **REQ-NFR-002:** The system status display shall be updated with real-time data from the hardware at a rate of no less than 1 Hz.
- **REQ-NFR-003:** The software shall fully initialize and be ready for user login within 30 seconds of application launch.

4.2 Reliability

- **REQ-NFR-004:** The software shall have a Mean Time Between Critical Failure (MTBCF) of no less than 5,000 hours. A critical failure is defined as any failure that results in a loss of monitoring or control capability.

4.3 Usability

- **REQ-NFR-005:** The graphical user interface (GUI) shall be intuitive and require no more than 4 hours of training for a new operator to achieve basic proficiency.
- **REQ-NFR-006:** All critical system alerts shall be displayed in a manner that is immediately distinguishable from routine status messages (e.g., using color, flashing icons).

4.4 Security

- **REQ-NFR-007:** All user passwords shall be stored in a hashed and salted format.
- **REQ-NFR-008:** The software shall automatically log out a user after 30 minutes of inactivity.

4.5 Maintainability

- **REQ-NFR-009:** The software shall be developed using a modular architecture to facilitate future updates and feature enhancements.
- **REQ-NFR-010:** The source code shall be commented in accordance with the Synthetic Systems coding standard.

5. External Interface Requirements

- **REQ-EIR-001:** The software shall interface with the Hydra-C4 Comms Module over a TCP/IP network to exchange status and control information.
- **REQ-EIR-002:** The software shall interface with the Trident-S Antenna Array over a TCP/IP network to exchange status and control information.

6. Verification

All requirements in this SRS shall be formally verified. A Requirements Verification Traceability Matrix (RVTM) shall be created to trace each requirement to a specific

test case in the **SS-AEG-TEST-001: Software Test & IV&V Plan.**