

United States Coast Guard Nationwide Automatic Identification System (NAIS) Project *Providing Vessel Identification, Tracking, and Information Exchange Capabilities to Support National Maritime Interests*



Project Overview

In response to the Maritime Transportation Security Act of 2002, the U.S. Coast Guard (USCG) is developing a two-way maritime data communication system based on Automatic Identification System (AIS) technology, referred to as the Nationwide Automatic Identification System (NAIS). AIS is a maritime digital broadcast system that continually transmits and receives voiceless exchange of vessel data. The AIS technology and communication protocol has been adopted by the International Maritime Organization as an international standard for ship-to-ship, ship-to-shore and shore-to-ship communication of navigation information. AIS users operating in proximity to each other automatically create a virtual network. Shore stations can join these virtual networks and receive shipboard AIS signals, perform network and frequency management, and send additional broadcast or individual informational messages to AIS-equipped vessels.

The NAIS Project is classified as a Department of Homeland Security (DHS) Level 1 investment and is a USCG major systems acquisition project. The goal of NAIS is to enhance Maritime Domain Awareness (MDA), with particular focus on improving maritime security, marine and navigational safety, search and rescue, and environmental protection services. AIS data (e.g., vessel location, course and speed) collected by NAIS will be combined with other government intelligence and surveillance data to form a holistic, overarching view of maritime traffic within or near U.S. and territorial waters.

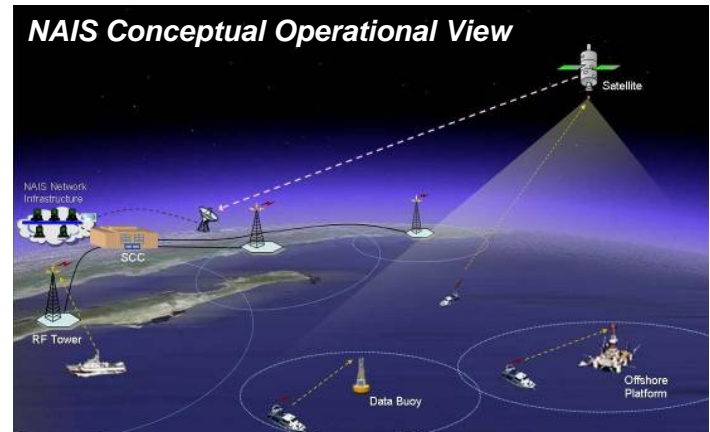
Armed with this view of our Nation's waters, operational decision-makers will be better positioned to respond to safety and security risks, improving the safety of vessels and ports through collision avoidance and the safety of the Nation through detection, identification, and classification of vessels when they are still hundreds of miles offshore. The ability to identify and track these vessels will significantly contribute to Maritime Domain Awareness by providing the ability to detect anomalies, monitor suspicious vessels, and pinpoint the location of perceived threats. As an alternative to traditional maritime voice communications, NAIS will support broadcasting of safety warnings and government coordination of safety and security operations. Command center personnel will be able to transmit AIS messages (e.g., text messages) to individual vessels or multiple vessels in defined geographic areas and perform other functions designed into the international AIS standard. Furthermore, maritime traffic planners will have access to archived vessel movement data to investigate maritime incidents, analyze risks and improve vessel traffic patterns.

NAIS will complement other surveillance and intelligence systems greatly aiding the essential process of identifying vessels requiring further investigation and action. NAIS information will be displayed in the Maritime Common Operational Picture (COP) and shared with sister DHS components and other Federal agencies. Unclassified portions of the COP will also be available to state and local government port partners in support of security and safety operations.

System Description and Implementation Overview

NAIS will consist of terrestrial, sea, and space-based AIS Radio Frequency infrastructure capable of receiving AIS information from, as well as transmitting AIS information to, AIS-equipped vessels located in U.S. ports, waterways and coastal zones. Data storage, processing and networking infrastructure will complement the AIS RF infrastructure. NAIS will send and receive AIS messages, via a very high frequency (VHF) data link, to and from AIS equipped vessels,

Aids to Navigation, and search and rescue aircraft. AIS data will be transported between system components over a wide-area network and diverse, remote site connectivity. The conceptual high-level operational view for NAIS is illustrated in the graphic below.



To accelerate the deployment of mission-critical capability, NAIS will be implemented in three acquisition increments as follows:

- **Increment 1 (I-1)** – AIS Receive Only in Critical Ports and Coastal will provide shore-based receive-only coverage within the Nation's 55 highest priority critical ports and 9 coastal areas by 1st Quarter FY2008. I-1 will use existing Government infrastructure and will be a Government led effort. As such, the NAIS Project Office has partnered with the Naval Sea Logistics Center and other USCG Centers of Excellence for design, implementation and logistics support of Increment 1.
- **Increment 2 (I-2)** – AIS Transmit and Receive Nationwide will build on I-1, providing shore-based receive coverage out to 50 nm and transmit capability out to 24 nm along the entire coastline of the U.S., U.S. territories and along designated inland waterways. I-2 will be procured in a two-phased approach. The first procurement will be a full and open competition and will be awarded to a single contractor, selected under best-value consideration, to design, develop, integrate, test and implement the core NAIS capability to provide AIS coverage in three USCG Sectors. The second procurement is expected to be a multiple-award contract for remote site work and installations to establish nationwide AIS coverage.
- **Increment 3 (I-3)** – AIS Long-Range Receive will extend receive coverage out to 2,000 nm. I-3 capability is envisioned to be provided by a combination of satellite communication services and VHF services using offshore platforms and data buoys.

The NAIS system is expected to be fully implemented by 2014.

Key Milestones Reached to Date:

- Program Authorization Milestone approved - Jan. 2005
- Project Charter Signed – Dec. 2004
- Operational Requirements Document approved – Apr. 2006
- NAIS Acquisition Plan approved – Jul. 2006
- Programmatic Environmental Impact Statement Record of Decision Issued – Nov. 2006
- Initial Operating Capability for I-1 achieved – Dec. 2006
- Production & Deployment Milestone for I-1 approved - Jan. 2007
- Capability Development and Demonstration Milestone for I-2 and I-3 approved – Jan. 2007



Frequently Asked Questions

What is AIS?

The Automatic Identification System (AIS) is an international standard for ship-to-ship, ship-to-shore, and shore-to-ship data communication approved by the International Maritime Organization (IMO). AIS shipboard equipment consists of a transceiver that transmits and receives vessel navigational information (identity, position, course, speed, etc.) over VHF-FM maritime frequencies. AIS units operating in proximity to each other automatically create a virtual network. Shore stations can also join these virtual networks and have the ability to receive shipboard AIS signals, perform network and frequency management and send broadcast or individual messages. In 2002, the IMO began a phased program requiring vessels on international voyages to carry AIS equipment. See www.navcen.uscg.gov/enav/ais for additional AIS information.

How can Industry participate in the NAIS Project?

The USCG has released three Requests for Information to the public and completed research of AIS equipment and services available in the marketplace. In December 2006, the NAIS Project issued a draft of the I-2 Statement of Work and Performance Specification to Industry for review and comment. The USCG also held an Industry Day on January 18, 2007. In the interest of making the final RFP available as soon as possible, the Coast Guard will not be publishing a second draft of the RFP in advance of the final. The final RFP for phase 1 of Increment 2 is expected to be released in September 2007. The RFP, additional questions and answers and all associated documents will be available via the NAIS RFP website at: www.naisproject.net following release of the formal synopsis. Offerors will have approximately 90 days to prepare and submit their proposal to the Coast Guard for consideration.

Why is NAIS being produced in three increments?

The primary benefit of an incremental approach is that Maritime security stakeholders will receive useful vessel tracking capability and the Coast Guard and DHS can demonstrate progress in complying with the Maritime Transportation Security Act of 2002 more quickly than would be otherwise possible. In particular, the strategy for implementing Increment 1 will provide port security stakeholders with vessel tracking and maritime awareness capability for improved resource allocation decision making and enhanced port security two to four years sooner than would be possible if acquired under one contract action. Additionally, implementing NAIS in these three increments will aid the project in addressing technical, logistical and budgetary risks that would be more difficult to manage in a single step approach.

What are the Coast Guards plans for expanding AIS carriage requirements?

Current AIS carriage requirements are denoted in 33 CFR 164.46 and on our website at: <http://www.navcen.uscg.gov/enav/ais>. The Coast Guard has also initiated recent Federal Register announcements (70 FR 64171 & 71 FR 22676) of a forthcoming rulemaking that will amend and expand upon the current requirements to include: vessels navigating outside of Vessel Traffic Service (VTS) areas and those previously excepted, such as fishing vessels and small passenger vessels, and adds dredges and floating plants, high-speed passenger vessels, and any vessel moving certain, dangerous cargoes. A proposed rulemaking is currently in development and should be published in early 2008.

What are the coverage requirements of the NAIS Project?

NAIS operational requirements, including coverage requirements, have been finalized and are presented in the following table.

Coverage Requirements		
Coverage Area	Receive Capability From (Class A Vessels)	Transmit Capability To (Class A Vessels)
Ports & Other Specified Areas	1 message every 15 seconds (objective) 1 message per minute (threshold)	98% threshold likelihood that a message transmitted from shore will be received, the objective likelihood is 99%
Inland Navigable and Coastal Waters out to 24 nm	1 message per minute (objective) 1 message every 5 minutes (threshold)	90% (threshold) – 95% (objective)
Between 24-50 nm	1 message every 5 minutes (objective) 1 message every 2 hours (threshold)	0% (threshold) – 66% (objective)
Between 50 – 300 nm	1 message per hour (objective) 1 message every 2 hours (threshold)	0% (threshold) – 33% (objective)
Between 300 – 2000 nm	1 message per hour (objective) 1 message every 4 hours (threshold)	0% (threshold) – 25 % (objective)

Will other government agencies participate in NAIS?

Information available from NAIS will support missions of a variety of Federal, State, and local entities. Within DHS, it is anticipated that CBP, ICE, and TSA will immediately benefit from access to this information. Outside of DHS, the USCG is working with the National Oceanic and Atmospheric Administration (NOAA) and the St. Lawrence Seaway Authority on coordinating AIS efforts in support of their missions. NAIS must be capable of providing AIS data to any agency or organization that is responsible for maintaining an operational picture within a port, waterway, or coastal zone.

Which channels will be used by NAIS?

In 1997, the International Telecommunication Union's World Radio Conference allocated two (2) maritime channels, 87B (161.975MHz) and 88B (162.025 MHz), for AIS. These channels are designated as AIS1 and AIS2, respectively, and are the default frequencies for AIS. The Federal Communications Commission (FCC) concluded a rulemaking in the summer of 2006 that allocated these channels for AIS use in the U.S. AIS2 has been allocated for exclusive AIS use throughout the U.S., and AIS1 has been allocated for exclusive AIS use in all areas of the U.S. with the exception of an area roughly equivalent to the Mountain Time Zone. There is a rulemaking currently pending at FCC proposing to expand the exclusive AIS allocation for AIS1 to include the entire U.S.

What is the status of the base station standard?

The international standard for AIS Base Stations, describing the minimum operational and performance requirements, is still under development. The final standard is expected to be published and made available through the International Electrotechnical Commission (IEC). The USCG will require that Increment 2 transceivers comply with this standard. The NAIS Project Office is considering using a competitive acquisition strategy to procure the system or the system's major components. No decisions have been made regarding specific equipment manufacturers.

Contact Information

NAIS Project website,
www.uscg.mil/hq/g-3/ais/
You may contact the NAIS
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