

Introduction

Learning Objectives

Upon successful completion of this lesson, the student will be able to:

- Understand an overview of the SeaVision (SV) application
- Understand the capabilities of SV
- Identify SV development and support
- Understand the role of the SeaVision Technical Assistance Field Team (SV-TAFT)
- Identify SV data sources
 - Automatic Identification System (AIS)
 - Fairplay by IHS Markit
 - Visible Infrared Radiometer Suite (VIIRS)
 - Satellite Synthetic Aperture Radar (SAT-SAR)
 - Coastal Radar

SeaVision Overview

- Web-based, unclassified Maritime Domain Awareness (MDA) tool:
 - View and share a broad array of maritime information
 - Enhance maritime safety and security
 - Build partnerships with participating countries

SEA VISION
UNITED STATES DEPARTMENT OF TRANSPORTATION

Home Communities Data Sources Releases FAQ User Guide

Our Mission
SeaVision provides a web-based unclassified maritime information sharing and management environment that enables both Public Key Infrastructure (PKI) and non-PKI users to share a broad array of unclassified maritime information to increase maritime security and build partnerships within the maritime community.

SeaVision Team

- PEO C4I/PMW 120, Maritime Domain Awareness Program Office (MDA) SeaVision Office of Primary Responsibility, ensures development and improvement of the tool.
- Commander, U.S. Fleet Forces Command (COMUSFLTFORCOM) Requirements owner/manager for all Fleet Maritime Operations Centers (MOCs).
- Naval Information Warfare Center Pacific (NIWC PAC) Project/Technical manager and responsible for the technical oversight of the SeaVision development teams.
- Department of Transportation (DoT) Volpe Center and NIWC PAC Development teams making enhancements to SeaVision based on COMUSFLTFORCOM requirements.

Welcome to the Information Website for SeaVision!

Guidance Documents

- [United States Fleet Forces Command Request for non-PKI MDA Solution](#)
- [Naval Oceanographer Response Letter to USFF Command](#)
- [MOC Baseline Requirements](#)
- [SeaVision Rules Guidance](#)
- [SeaVision Project Description](#)
- [System Requirements Specifications \(SRS\)](#)

Participating Nations

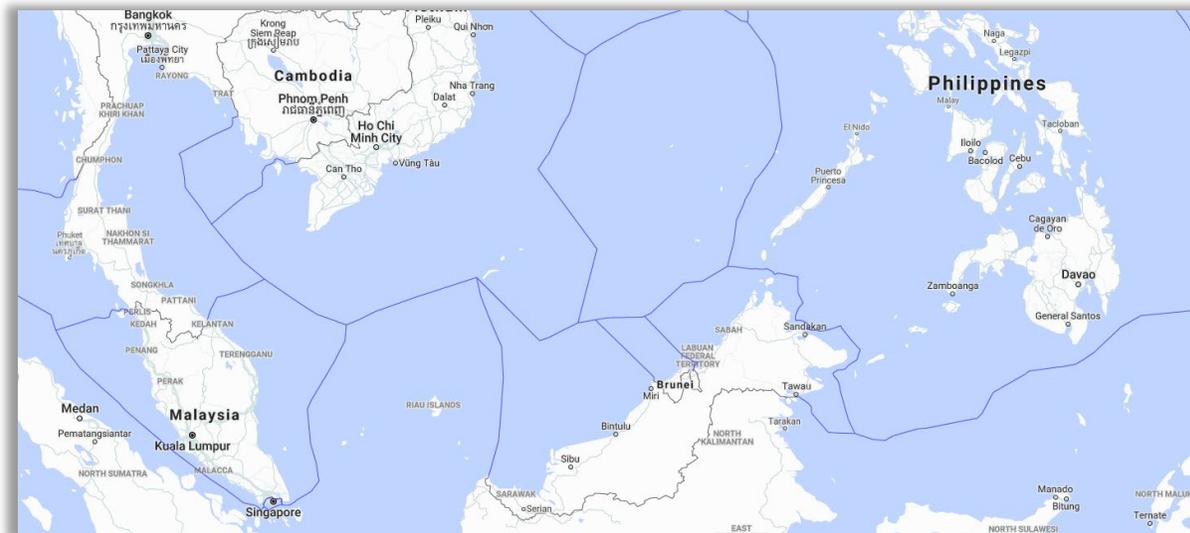
Overview
SeaVision is a web-based maritime situational awareness tool that enables users to view and share a broad array of maritime information to improve maritime operations. To assist the user in managing the information, SeaVision provides user defined rules based analytics to evaluate and notify the user of defined maritime activities or events. SeaVision is a low cost visualization and management tool that has the ability to quickly add and correlate multiple data sources to meet various mission needs.

What SeaVision Can Do

- View & track position & movement information for tens of thousands of ships around the world with advanced filtering & search capabilities.
- Provide users the ability to develop a standardized set of user-defined queries and automated business rules to integrate and correlate data necessary for conducting risk assessments, highlight anomalies, and generate alerts and warnings that automatically notify users.
- Enable users to easily share advanced searches, rules, alerts, shapes and vessel lists with other users within their Community and Persona.
- Query large amounts of data & see where a vessel has been and/or its expected destination.
- Allow users to import & export data products, layers, shapes etc. into the system.
- Monitor Exclusive Economic Zone (EEZ) transits & port visits.

SeaVision Capabilities

- View and track tens of thousands of ships around the world
- Share searches, rules, alerts, shapes, and vessel lists with other SV users
- Monitor Exclusive Economic Zone (EEZ) transits and port visits



SeaVision Development and Support

- Codeveloped and managed by U.S. Department of Transportation (DOT) Volpe and U.S. Naval Information Warfare Center (NIWC) Pacific
- Designed to take advantage of the Maritime Safety and Security Information System (MSSIS) network
- Field training and support provided by NIWC Pacific's SV-TAFT



SeaVision Technical Assistance Field Team

- SV-TAFT is a group of technical experts from NIWC Pacific, San Diego, California that support MDA and information-sharing capabilities between partner nations
- Possess technical expertise in tools, sensors, applications and solutions to collect, process, and display maritime data
- Offer on-site expertise and assistance on current mission focus, equipment, systems, and processes with the goal of identifying areas for potential capabilities enhancement
 - Equipment Installation
 - MDA Sensor Site Training
 - Exercise Support
 - Sensor Data Integration
 - AIS Sensor Field Demonstration
 - RADAR relay using AIS Transponder

SeaVision Technical Assistance Field Team Cont.

- Establishes, sustains, and integrates data for partner nations' Regional Maritime Pictures (RMPs)
- Provides basic-to-advanced SV training courses:
 - Operator
 - Analyst
 - Executive
 - Train-the-Trainer



SeaVision Data Sources

- SV integrates multiple government and commercial data sources to aid in developing an RMP:
 - Automatic Identification System (AIS)
 - Fairplay by IHS Markit
 - Visible Infrared Imaging Radiometer Suite (VIIRS)
 - Satellite Synthetic Aperture Radar (SAT-SAR)
 - Coastal Radar

AIS

- AIS is a maritime navigation safety communication system that automatically provides:
 - Vessel identity
 - Type
 - Position
 - Course/Speed
- AIS data is provided to SV by the following sources:
 - MSSIS network
 - ORBCOMM (Satellite AIS)
 - ORBCOMM_T (Terrestrial AIS)
 - ORBCOMM_LR (Long-Range AIS)

Fairplay by IHS Markit

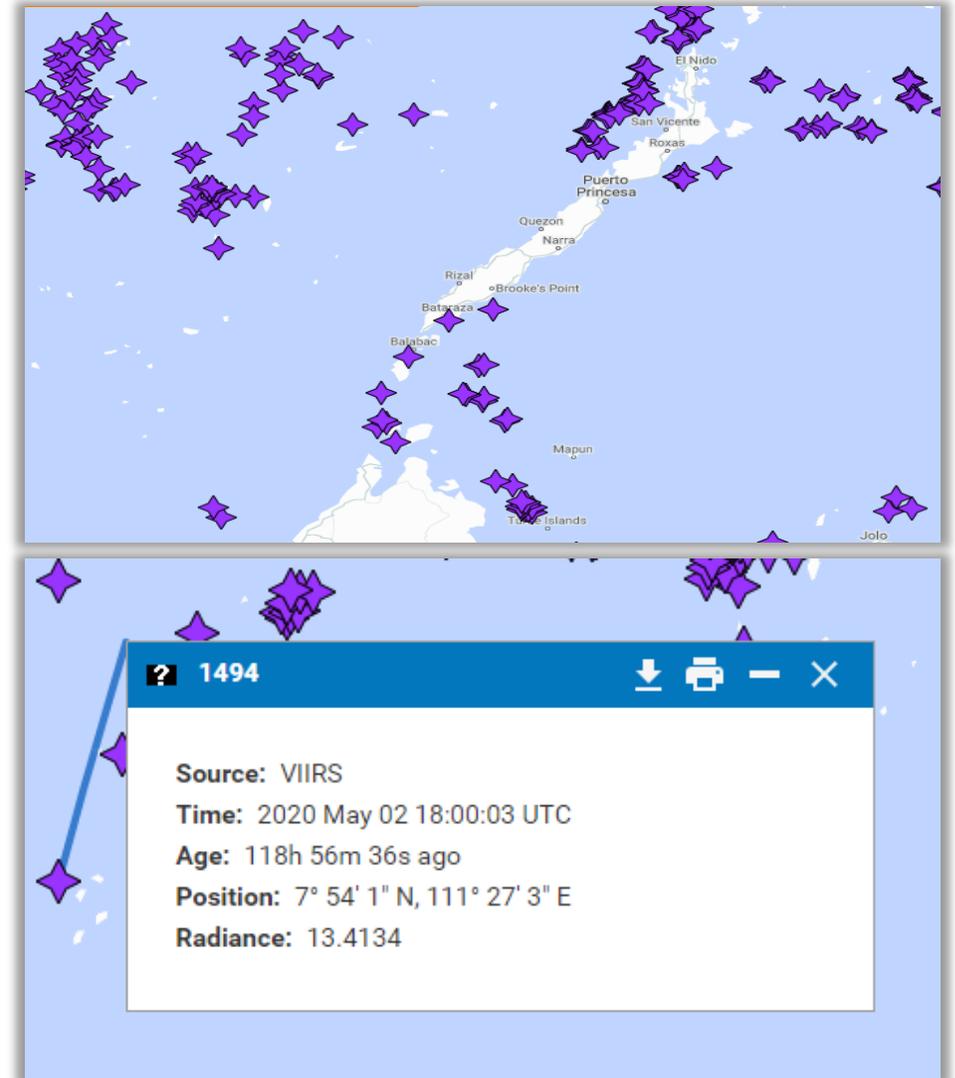
- Fairplay is a repository for International Maritime Organization (IMO) ship registry data:
 - Vessel Details
 - Crew
 - Inspections
 - Port History

The screenshot shows a 'Vessel Card' interface with a search bar at the top containing 'MMSI' and 'IMO Number 9294537', and a 'FIND' button. Below the search bar is a navigation menu with tabs: Summary, Details (selected), EEZ History, Port History, Rules, Alerts, Warnings, Lists, Notes, Recently Viewed, and Images. An 'EXPORT AS' button is located on the right side of the menu. The main content area is titled 'REGISTRATION' and contains a table with the following data:

REGISTRATION	
Fairplay Sid	75128
Name	As Penelope
IMO Number	9294537
Call Sign	D5RB3
MMSI	636092863
Flag	Liberia
SubType	Container Ship (Fully Cellular)
Gross Tonnage	26611
Deadweight	34740
Year Due Or Delivered	2005
Sub Status	In Service/commission
Builder	STX Shipbuilding Co Ltd
Port of Registry	Monrovia

VIIRS

- Joint NASA/NOAA project with the primary mission of weather tracking
- An algorithm developed for reporting the locations of boats based on satellite sensing of light sources
- Ships detected in images are displayed as position reports in SeaVision
- Has the ability to correlate data with AIS position reports



SAT-SAR

- Benefits

- Very large coverage area
- Works in all weather, day or night
- Well suited for ship detection
- Able to see through clouds

- Limitations

- Does not look like a picture
- Ships need to have a reflective surface
- Lower resolution than electro-optical imagery

- Results

- Ships detected in the image are displayed as position reports in SeaVision

Source: SAT-SAR
Time: 2020 May 06 22:44:47 UTC
Age: 15h 16m 15s ago
Position: 2° 35' 44" N, 108° 2' 38" E
Speed: - kts
Heading: 279°
Length: 202.3 m
Width: 76.5 m
Sensor: TSX1

Time	SAT-SAR	AIS	Delta
2019 Dec 26 23:27:05 UTC	2019 Dec 26 23:36:12 UTC	00h 09m 07s	307s
Age: 260h 40m 42s ago	260h 31m 35s ago	30h 09m 07s	307s
Position: 8° 57' 30" N, 97° 41' 59" E	8° 57' 30" N, 97° 41' 59" E	144 m	144 m
Heading: 339°	339°	20°	20°
Width: 60.6 m	18 m	42 m	42 m
Length: 84.5 m	154 m	18 m	18 m

SAT-SAR Attributes

Possible Correlation with AIS

Name: Eastern Pearl
 MMSI: 47702320
 IMO Number: 958217
 Speed: 9.8 kts
 Call Sign: ---
 Navigation Status: 0 (Underway)
 Ship Type: 7 (Cargo)
 Cargo: 0 (AllShips)
 Draft: 8.4 m

Coastal Radar

- Sourced from a SeaVision participant nation's shore-based sea radar network
- Ships detected are displayed as position reports in SV
- Has the ability to correlate data with AIS position reports
- Integration of Coastal Radar data in SV is possible. Please contact SV-TAFT for more information



Differences of Data Sources Content

Data Source		Range	Delay into SeaVision
AIS	Terrestrial	20-40 NM	Near Real-Time (NRT) 30 sec - 3min
	Satellite	Footprint of Satellite	1-3 Hours
RADAR	Coastal/Vessel	20-60 NM	Near Real-Time (NRT) 30 sec - 3min
	SAT-SAR	Footprint Of Satellite	1-3 Hours
VIIRS		Footprint of Satellite	24 Hours

Summary

In this lesson, we covered:

- An overview of the SV application
- Capabilities of SV
- SV development and support
- The role SV-TAFT plays in SV
- SV data sources
 - AIS
 - Fairplay by IHS Markit
 - VIIRS
 - SAT-SAR
 - Coastal Radar