Maritime Sensing and Data Sharing Across DHS

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USCG Overview

- By law, the Coast Guard has 11 missions:

  - Drug Interdiction

  - Migrant Interdiction

  - Other Law Enforcement

  - Ports, Waterways, and Coastal Security

  - Defense Readiness

  - Living Marine Resources

  - Search and Rescue

  - Marine Environmental Protection

  - Marine Safety

  - Aides to Navigation

  - Ice Operations

USCG Force Composition:
- 43,000 Active Duty
- 10,000 Civilians
- 8,000 Reservists
- 259 Cutters
- 200 Aircraft
- 1,602 Boats

Provide services to:
- 3.4M square miles of EEZ
- ~100,000 miles of coastline
- 14,000 miles of inland rivers
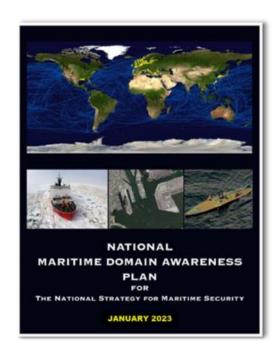
SHORE FORCES

Composition:

- 36 Sectors w/ 10,000 Personnel (mil/civ)

- 46 Command Centers: 35 Sector, 9 District, and 2 Area

- 12 Vessel Traffic Service Centers

- 57 Marine Safety Units/Detachments and Sector Field Offices

- 2 Overseas Field Activities (Japan/Holland)

MAP LEGEND
- Sector
- MSU: Marine Safety Unit
- MSD: Marine Safety Detachment
- SFO: Sector Field Office

JANUARY 24, 2024

Disclaimer: AOR lines and unit locations are approximate. This map is for Shore Forces planning purposes only and should not be used for Search and Rescue or when precise jurisdictional and authority boundaries are required

Challenge: Maritime Domain Awareness

NATIONAL MARITIME DOMAIN AWARENESS PLAN FOR The National Strategy for Maritime Security — JANUARY 2023

Maritime Domain Awareness (MDA) is the effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment of the United States.

The **Maritime Domain** is all areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo, vessels, and other conveyances.
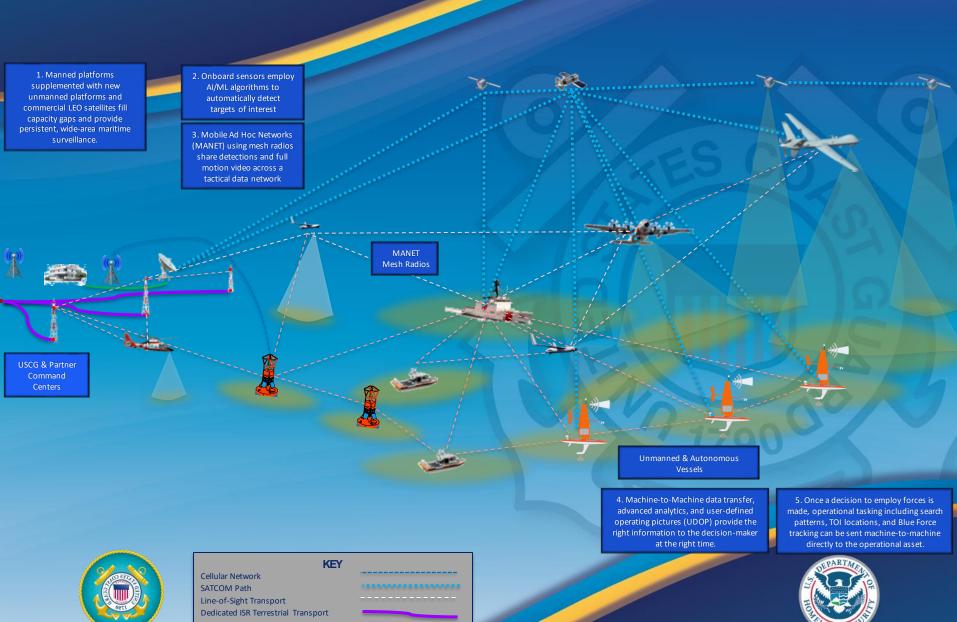
<u>Two Core Principles</u>:
-      Unity of Effort
-      Foster Information Sharing and Safeguarding
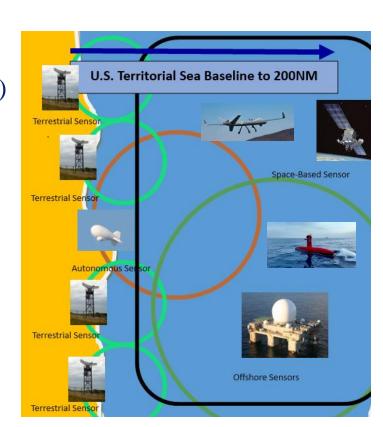
Desired End State: Coastal Maritime Domain Awareness

1. Manned platforms supplemented with new unmanned platforms and commercial LEO satellites fill capacity gaps and provide persistent, wide-area maritime surveillance.

2. Onboard sensors employ AI/ML algorithms to automatically detect targets of interest

3. Mobile Ad Hoc Networks (MANET) using mesh radios share detections and full motion video across a tactical data network

MANET Mesh Radios

USCG & Partner Command Centers

Unmanned & Autonomous Vessels

4. Machine-to-Machine data transfer, advanced analytics, and user-defined operating pictures (UDOP) provide the right information to the decision-maker at the right time.

5. Once a decision to employ forces is made, operational tasking including search patterns, TOI locations, and Blue Force tracking can be sent machine-to-machine directly to the operational asset.

KEY

Cellular Network	
SATCOM Path	
Line-of-Sight Transport	
Dedicated ISR Terrestrial Transport	

Solution: Persistent Wide-Area Maritime Surveillance (PWAMS)

- **Focused on surveillance and detection**
- Joint Capability Analysis (JCAR) validated by JRC
- Drafted Joint Mission Needs Statement (J-MNS) in component review
- Complementary capabilities and sensors across U.S. Exclusive Economic Zone
- Layered approach of platforms & sensors
- Will require enabling systems and technology
- Seamless access to data by end-users across components
- Will require the ability to tag/credential/control access to data and sensors

U.S. Territorial Sea Baseline to 200NM

Terrestrial Sensor

Terrestrial Sensor

Autonomous Sensor

Terrestrial Sensor

Terrestrial Sensor

Space-Based Sensor

Offshore Sensors

Persistent Wide Area Maritime Surveillance

- PWAMS seeks to close capability gaps in DHS ability to surveil and detect TOI from baseline to EEZ

- PWAMS is comprised of representatives across DHS including USCG, CBP AMO, and ICE/HSI.

- Strategic Guidance from component Executive Steering Committee.

- Looks to leverage complimentary sensors across components.

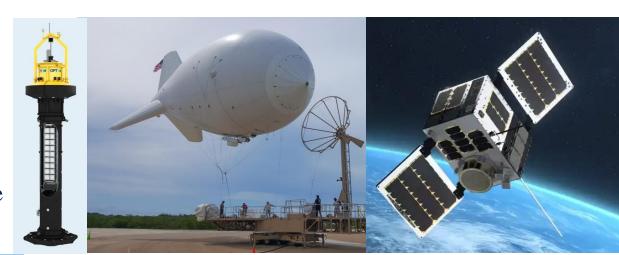- Creates a layer system to maximize capabilities

PWAMS General Concept

Layered Surveillance

Different Platforms With Different Detection & Tracking Payloads at Different Altitudes & Locations

- Space-Based Maritime Surveillance Radar
- NOAA Earthview Maritime Optical Surveillance
- LEO Broadband Communication Satellite Constellation Deployment
- USCG High Seas
- High-Altitude Untethered Aerostats
- C4ISR
- TARS
- Ship-Launched Aerostats
- Radar on Offshore Platforms
- DoD Donated Surplus Small Tactical Aerostats
- USCG Littoral
- AMO
- Maritime OTH Radar
- Coastal Maritime Radar
- Illegal Surface Vessels

Figure 6: Persistent Wide-Area Maritime Surveillance in Depth

➢ PWAMS will encompass numerous sensors to facilitate a "defense-in-depth" approach to S&D

➢ Layered capabilities will be "owned" by multiple DHS components with data shared across the department

➢ PWAMS will be interoperable with DHS enterprise system architecture; as well as other required systems

Sensor Examples: Joint Capabilities Development & Deployment

- Saildrone in Southern California & Caribbean
- Joint Program Office for UAS
- S&T collaboration for MDA Sensors
- Shoreside sensors
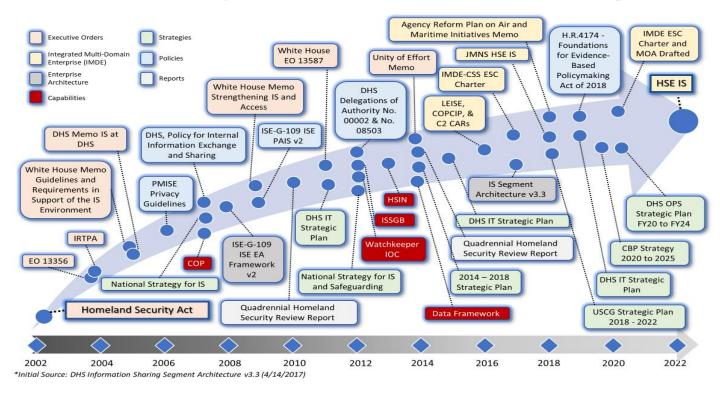- Commercial space surveillance & detection

As-Is Enterprise Information Sharing (IS)
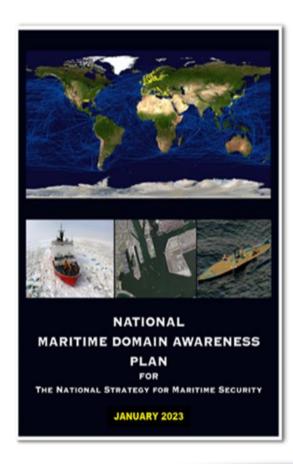
Initial Source: DHS Information Sharing Segment Architecture v3.3 (4/14/2017)

70 integration initiatives, 30 Dept-level documents/policies, 30 enterprise level governance bodies

Information Sharing & Achieving MDA

Linkage to Strategic Plans

- National Strategy for Aviation Security
- National Strategy for Maritime Security
- National Strategy for Information Sharing
- North American Air Surveillance Plan
- National Maritime Domain Awareness Plan National Maritime Domain Awareness Architecture Plan
- DHS 2014 Quadrennial Homeland Security Review
- DHS Enterprise Data Strategy Fiscal Year 2017-2021
- Homeland Security Standing Information Needs
- Small Vessel Security Strategy
- CG Western Hemisphere Strategy
- CBP Vision and Strategy 2020 Plan
- Maritime Operations Coordination Plan
- Southern Border and Approaches Campaign

NATIONAL MARITIME DOMAIN AWARENESS PLAN FOR THE NATIONAL STRATEGY FOR MARITIME SECURITY

JANUARY 2023

Two Core Principles

Unity of Effort

Foster Information Sharing and Safeguarding

Note: Unity of Effort and ISS cannot be stove-piped by domain

Ever Growing Need for a DHS Enterprise Solution

NMIO

Building upon and creating a path for implementation of the NMIO sponsored Essential Information Elements for Cooperation in the Maritime Environment

CISA

Building a secure infrastructure and an implementation path for enhanced information sharing during emergency operations to support CISA and the nationwide set of NG911 stakeholders

OHSS

Standardizing and creating an efficient transfer of migrant information across DHS including information provided to DHS OHSS

PWAMS

Ingestion and distribution of sensor data to key operational centers and component data platforms

FEMA

Working with FEMA to enhance data and information sharing between FEMA's Enterprise Data and Analytics Modernization Initiative (EDAMI) and IMDE.

MOC Plan

Standardizing and creating an efficient transfer of Essential Operational and Intelligence Information supporting ReCoMs

IMDE

ICE

Engaging on new project focused on data related to TCO's and Fentanyl

DIVERSE PERSPECTIVES + SHARED GOALS = POWERFUL SOLUTIONS

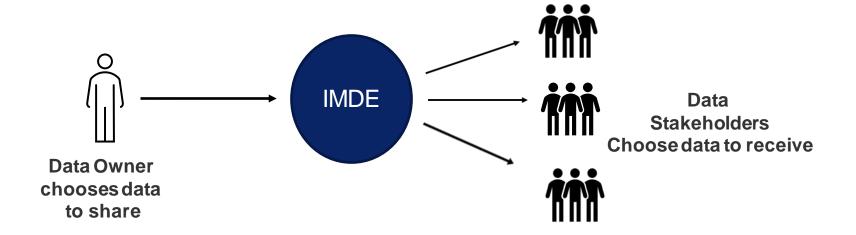# Solution: Integrated Multi-Domain Enterprise (IMDE)

IMDE is a data transactional platform used to control the flow of unclassified information to and between authorized sources, systems and data consumer native systems to support mission outcomes

Simply Put....
*Information Sharing and Safeguarding

1 Component elects to share a set of data based on an associated sharing policy established by the data owner

3 Approved transactions are automatically disseminated to authorized users of native systems

Data Owner chooses data to share

IMDE

Data Stakeholders Choose data to receive

2 IMDE compares the data owners sharing policy against an IMDE stakeholder's attributes and enforces the policy by allowing (or not allowing) the data transaction to take place

IMDE Outcomes for DHS Components

1. **Mitigate** the need to rely on traditional and inefficient information sharing paradigms (Information Sharing and Safeguarding)

2. **Improve** the quality and availability of data across the enterprise *(Information Sharing and Safeguarding)*

3. **Advance** the Non-Material Changes that improve policies and procedures supporting IS *(Information Sharing and Safeguarding)*

4. **Improve** operational and intelligence sharing to enhance operational coordination and collaboration *(Unity of Effort)*

5. **Improve** data and data sharing to enhance our opportunities to leverage AI/ML *(Unity of Effort)*

6. **Support and Enhance** other Major Efforts and Acquisitions (Unity of Effort – leveraging existing and enhancing future capabilities)

Types of Data/Information

The capability shall be able to disseminate multiple structured and unstructured authoritative data types to authorized connected native systems, including:

- Relational database
- Non-relational databases
- Analytic products
- Spreadsheets conforming to Open Document Format for Office Applications
- Documents conforming to Open Document Format for Office Applications
- Images
- Geospatial data
- Video formats
- Raw sensor data

Questions/Discussion

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