Maritime Security is burdened by thousand of years of history and tradition
Maritime Domain Awareness (MDA):
The effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy or environment of a nation.

*Maritime Domain Awareness is a component of and key enabler for Maritime Security.*
• The Importance of MDA
• Governmental and Non-Governmental Responses to the MDA Challenge
• Area of Responsibility/Area of Interest
• A Changing Threat Environment
• Common MDA Tools
• Integrating Weather Data
• Training and Education
• Summary
Enabling Maritime Domain Awareness
Collect, fuse, identify, track, and disseminate information

**Intelligence**

**Sensors**

**Open Source Data**

**Commercial Vessels**

**Other Fusion Centers**

**National Leadership**

**Law Enforcement**

**Interdiction Platforms**

JIATF-South, SIFC, NMIC, RMIFC, and many more.....

Information Exchanges between countries and organizations important to build trust
### MDA Situational Awareness

<table>
<thead>
<tr>
<th>Observables</th>
<th>Collect</th>
<th>Fuse</th>
<th>Analyze</th>
<th>Disseminate</th>
<th>Decide/Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessels</td>
<td>Sensors</td>
<td>Tracks w/ tracks</td>
<td>Anomaly Detection</td>
<td>Networks</td>
<td>Strategic</td>
</tr>
<tr>
<td>People</td>
<td>Operators &amp; field personnel</td>
<td>Data w/ data</td>
<td>Pattern Recognition &amp; analysis</td>
<td>Displays</td>
<td>Operational</td>
</tr>
<tr>
<td>Facilities</td>
<td>Intel. agencies</td>
<td>Tracks w/ Data</td>
<td>Compare w/ rules</td>
<td>Command Centers</td>
<td>Tactical</td>
</tr>
<tr>
<td>Cargo</td>
<td>Open source</td>
<td></td>
<td>Research tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Private sector data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sea lanes</td>
<td>Law Enf</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threats</td>
<td>Intl Sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendly forces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview

- The Importance of MDA
- Governmental and Non-Governmental Responses to the MDA Challenge
- Area of Responsibility/Area of Interest
- A Changing Threat Environment
- Common MDA Tools
- Integrating Weather Data
- Training and Education
- Summary
Examples of Interagency/Multinational Maritime Information Sharing Organizations

- IMB Piracy Reporting Centre (1992) Malaysia
- The Joint Interagency Task Force – South (1999) U.S.
- Coast Watch South/System (CWS) (2008) Philippines
- The Information Fusion Centre (2009) Singapore
- South Africa MDA Centres (2012) South Africa
- Indian Ocean Coastal Surveillance (2014) India
- Regional Maritime Information Fusion Center (Mad)
Extensive Global Linkages

65 Operational Centres in 35 countries
• The Importance of MDA
• Governmental and Non-Governmental Responses to the MDA Challenge
• Area of Responsibility/Area of Interest
• A Changing Threat Environment
• Common MDA Tools
• Integrating Weather Data
• Training and Education
• Summary
Maritime Domain Awareness

**ACCIDENTS AT SEA**

Some of the world’s most iconic oceans are also the most at risk. The South China Sea and East Indies, east Mediterranean and Black Sea, North Sea and British Isles were found to be dangerous hotspots for accidents involving ships. WWF is reinforcing the importance of ensuring that vessels are built, maintained and operated to a high standard so as to lower the risk of accidents.

**50% OF ANNUAL SHIP LOSSES**

- Sinking due to rough weather, leaks or breaking in two, but not collisions, causes 50% of all annual ship losses.

**90% SHIPPING DELIVERS 90% OF ALL WORLD TRADE**

**WWF FOR SAFER SEAS**

- The shipping industry needs to promote greater owner and operator responsibility
- Ships should register with better flag states
- Highlight irresponsible and badly performing flag states
- Bad and unsafe practices should be scrutinized publicly

**PRESTIGE OIL SPILL**

In 2002, the Prestige oil tanker sank resulting in over 70,000 tonnes of oil being released into the Atlantic Ocean off the Spanish coast. It caused not only devastating environmental impacts but economic losses estimated at €8 billion. But out of this disaster came a bridge of trust between fishermen and environmentalists that still exist today.

**DEFINITION OF FLAG STATE**

The flag state is the country the ship is registered to and that has the authority and responsibility to enforce regulations over vessels.

**THE RISK FACTORS**

The greatest probability of a shipping accident occurring is when all of the following factors act together:

- Key hotspot locations
- Over 10 years old
- Poorly performing flag states
- Being a general cargo or fishing vessel

**THE CORAL TRIANGLE’S ECONOMIC VALUE**

- Gum and orchids could severely impact the livelihoods and food security of the 120 million people that rely on the areas resources.
- Marine resources contribute to a growing nature-based tourism industry, valued at over US$12 billion annually.
- 76% of the world’s coral species
- 6 of the world’s turtle species
- Coral reef nurseries support a multi-billion dollar reef industry and supply millions of consumers worldwide.
Area of Responsibility & Area of Interest
Monitoring Daily Vessel Traffic
• The Importance of MDA
• Governmental and Non-Governmental Responses to the MDA Challenge
• Area of Responsibility/Area of Interest
• A Changing Threat Environment
• Common MDA Tools
• Integrating Weather Data
• Training and Education
• Summary
Transnational Maritime Threat

- Flag (Open Registry?)
- Owner?
- Crew?
- Passengers?
- Cargo?
- Command & Control?
- Return address to retaliate?

A much more complex and challenging intelligence problem
Common MDA Tools

Automatic Identification System (AIS)

Cooperative Situational Information Integrated System (CSSII)

Maritime Safety and Security Information System

Long Range Identification and Tracking (LRIT)

Maritime Electronic Highway

Computer Assisted Maritime Threat Evaluation System (CAMTES)

Sea link Advance Analysis (S2A)

Maritime Safety and Security Information System (MSSIS)
Integrating Weather Data

Weather Avoidance
Maritime Domain Awareness Training and Education

Current Training and Education: no shared vision

• Stove-piped by agencies
• Not integral to careers
• Ad hoc and self-initiated
• Emphasis on credentials
• No focal-points for tool-building or lesson-learning

New Training and Education Vision

• Joint, Interagency and Multinational
• Integral to careers, with enough time to accommodate
• Strategic and organization driven
• Emphasis on job skills
• Create focal-points for tool-building and lesson-learning
Summary

Maritime Domain Awareness for the 21st Century

Now

• Protect information
• “Need to know”
• Avoid risk
• Stove pipes control access
• Write at highest classification; fight to downgrade or declassify
• Compartments, but still much of “one size fits all”

Future

• Move information
• “Need to share” – insights from those with NO “need”
• Manage risk
• Build trusted networks
• Start at lowest classification, add details later
• More levels and forms of access
No Organization/Nation Can Achieve Comprehensive MDA Alone...

We All Need Interagency and International Cooperation to Succeed.
Questions?
Comments?