



Maritime Domain Awareness (MDA)

Commander Sumit Ghosh (Retd), IN

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SUN TZU



“critical element in battle is foreknowledge, it cannot be elicited from spirits, nor from gods, nor by analogy, nor from calculations.”

Knowing the enemy and the battleground are critical to winning the fortunes of war



**INTERNATIONAL
MARITIME
ORGANIZATION**

MDA is “the effective understanding of any activity associated with the maritime environment that could impact upon the security, safety, economy or environment’.



Indian Navy

INDIAN NAVY DEFINITION

- MDA is *“an all-encompassing term that involves being cognizant of the position and intentions of all actors, whether own, hostile, or neutral, in all dimensions of a dynamic maritime environment, across the areas of interest”*

Military MDA

Non-military MDA

**Information sharing
mechanisms**

Sangharsh Software - 1996

TRIGUN Software


26/11





IN NEWS

COASTAL SECURITY-NEED OF THE HOUR



A small inset image showing a helicopter landing on the deck of a ship. The helicopter is white with a yellow stripe and is positioned on the deck of a white ship.

Maritime terrorism





NINE MARITIME CRIMES

TYPES OF

www.marineinsight.com



UNAUTHORIZED ENTRY

Sailing on a nation's waters **without permission** is a punishable maritime crime.



MARITIME PIRACY

Plundering, hijacking, or detention of ship in international waters.



DRUG TRAFFICKING

Bringing and distributing **illicit drugs** through ship is a serious maritime crime.



SMUGGLING EXOTIC PLANTS AND ANIMALS

Due to **quarantine reasons**, **smuggling** them is a punishable offence.



HUMAN TRAFFICKING

Stowing away is a grave marine crime.



ILLEGAL CARRYING OF WEAPONS AND ARTILLERY

Due to their sensitive nature, only certain ships are **authorized** to carry **arms**.



DISCHARGING IN OCEAN WATERS

Countries have strict policies against ships discharging **sewage, garbage** or **oil** into coastal waters.



ILLEGAL FISHING AND DEEP SEA RESOURCE EXPLOITATION

Exploiting **deep sea resource** or **fishing** in areas not allotted for it is a crime.



TAX EVASION

Ship owners try to evade taxes through **false documentation** or **incorrect representation** of cargo material.

MAJOR DECISIONS TO IMPROVE MDA AFTER 26/11

- **Setting up Coastal radar chain** by the Coast Guard
- **Setting up National Automatic Identification System (NAIS) chain** by Directorate General of Lighthouses and Lightships (DGLL)
- **Integrated National Command, Control, Communication and Intelligence (NC3I) network** by the Indian Navy.
- Strengthening of **Vessel and Air Traffic Management System (VATMS)**
- **Establishing Long-Range Identification and Tracking (LRIT) system**
- **Online registration and licensing portal for fishing craft** by Department of Fisheries

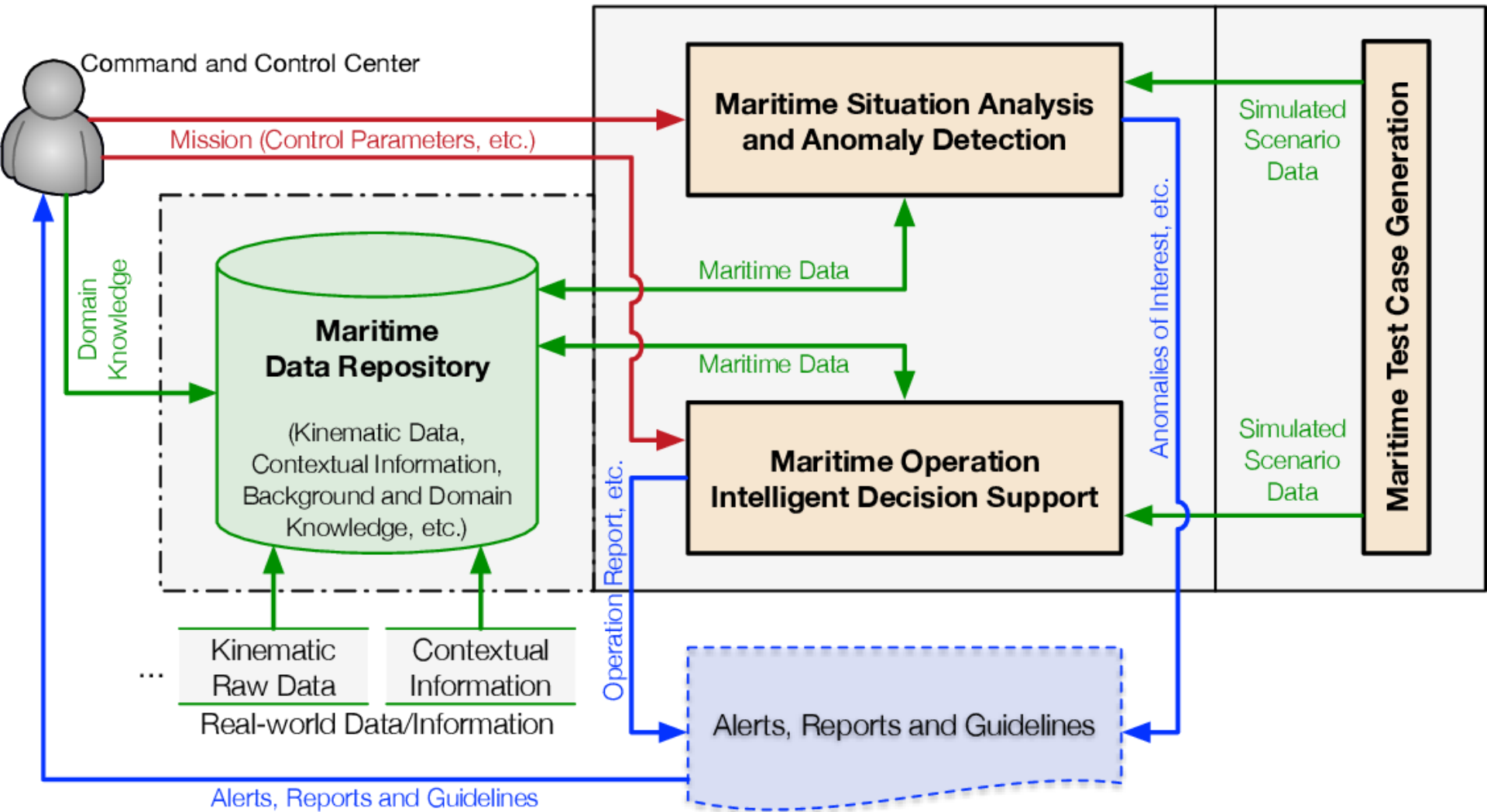
CONTINUED EFFORTS FOR MDA

- **Information Management and Analysis Centre (IMAC)** – the nodal center of the NC3I Network in 2014
- **Information Fusion Centre-Indian Ocean Region (IFC-IOR)** in 2018.
- DG Shipping MDA centre: **Sagarmanthan** or the **Mercantile Maritime Domain Awareness Centre (MM-DAC)** -2021
- Marine security collaboration through **Quadrilateral Security Dialogue (QUAD)** group - 2022

STRENGTHENING OF MDA

- **National Maritime Domain Awareness (NMDA) project**
- **White Shipping Information Exchange (WSIE)**
- **Indo-French agreement – Constellation of satellites**

Maritime Domain Awareness Framework



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USE OF SATELLITE-BASED TECHNOLOGIES

- RESOURCESAT-2 relayed AIS information to the IN
- GSAT-7 (Rukmani) 2013 – real time secure ship to shore communications
- CARTOSAT
- RISAT
- EMISAT
- OCEANSAT
- Geospatial portal (Bhuvan)



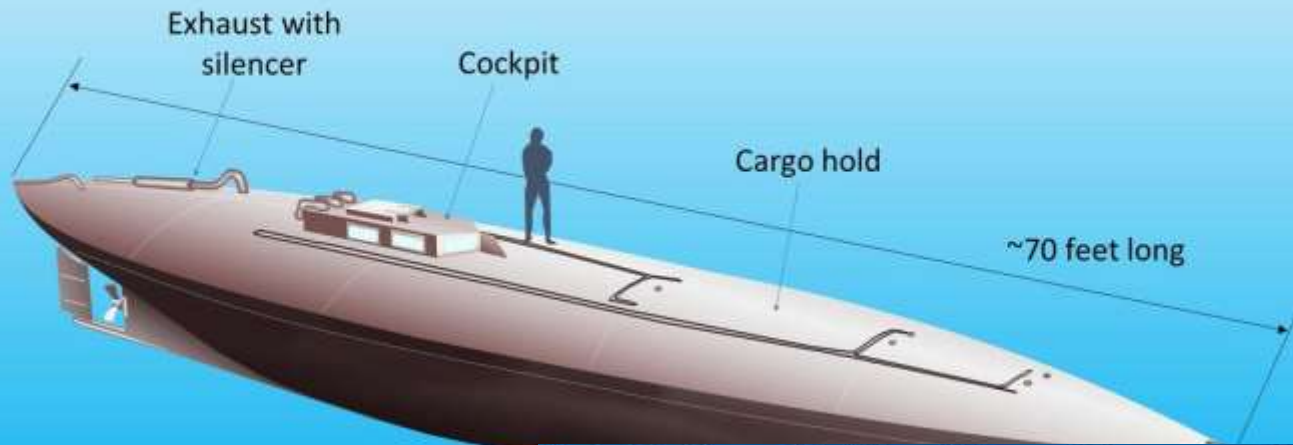
NEW CHALLENGES / NEW HORIZONS TO MDA

- *Underwater Domain Awareness* (UDA)
- Growing conventional and non-conventional underwater threats and **UUV's**



Atlantic Narco-Submarine

Galicia, Spain. November 2019



NARCOTICS TRADE

© H J Sutton, 2019



Graphic by John Lawson



SEMI-SUBMERSIBLES - THE DIFFERENT DESIGNS

- Low profile, inboard motor, 40-120ft long
- Outboard motor versions also used

SUBMARINES

- Fully submersible craft have also been used to traffic drugs across oceans

The USS Connecticut, a Seawolf-class fast attack submarine, hit unidentified object in international waters in the South China Sea on Oct. 2, 2021



What really happened in US nuclear submarine's mysterious collision in South China Sea?



CHINA'S WORLD-FIRST AI DRONE MOTHERSHIP THAT COULD ATTACK US NAVY

Carries 50 flying, surface and undersea drones launched in swarms

Able to be controlled autonomously

SPECIFICATIONS	
 Length	290ft
 Width	46ft
 Weight	2000 tons
 Speed	20mph



UUVs





SHIP DRONES

CHINA'S ADVANCED DRONE TECHNOLOGY

Tanker attacked travelling from Tanzania to UAE



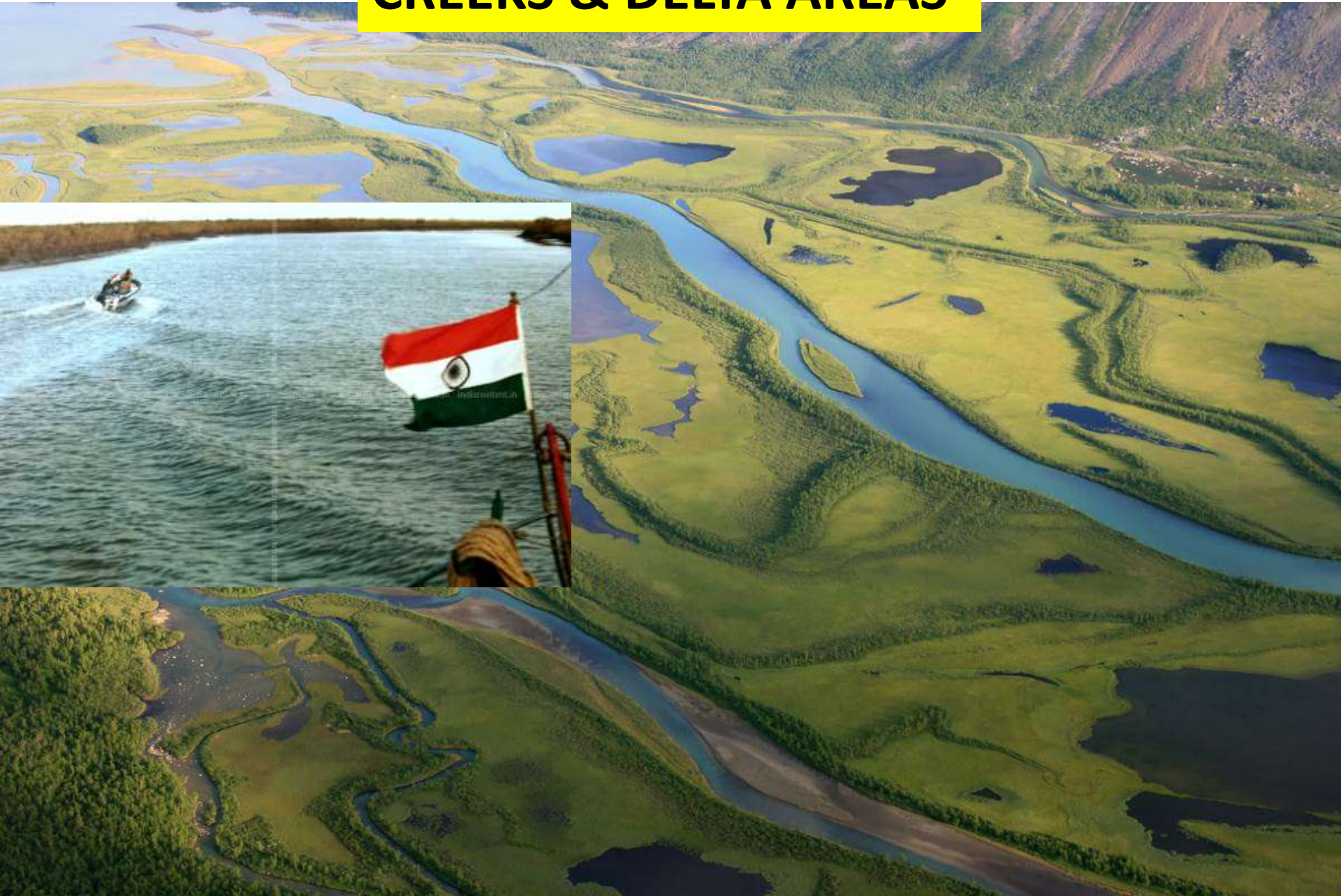
Iranian Drones Attack Tanker Mercer Street

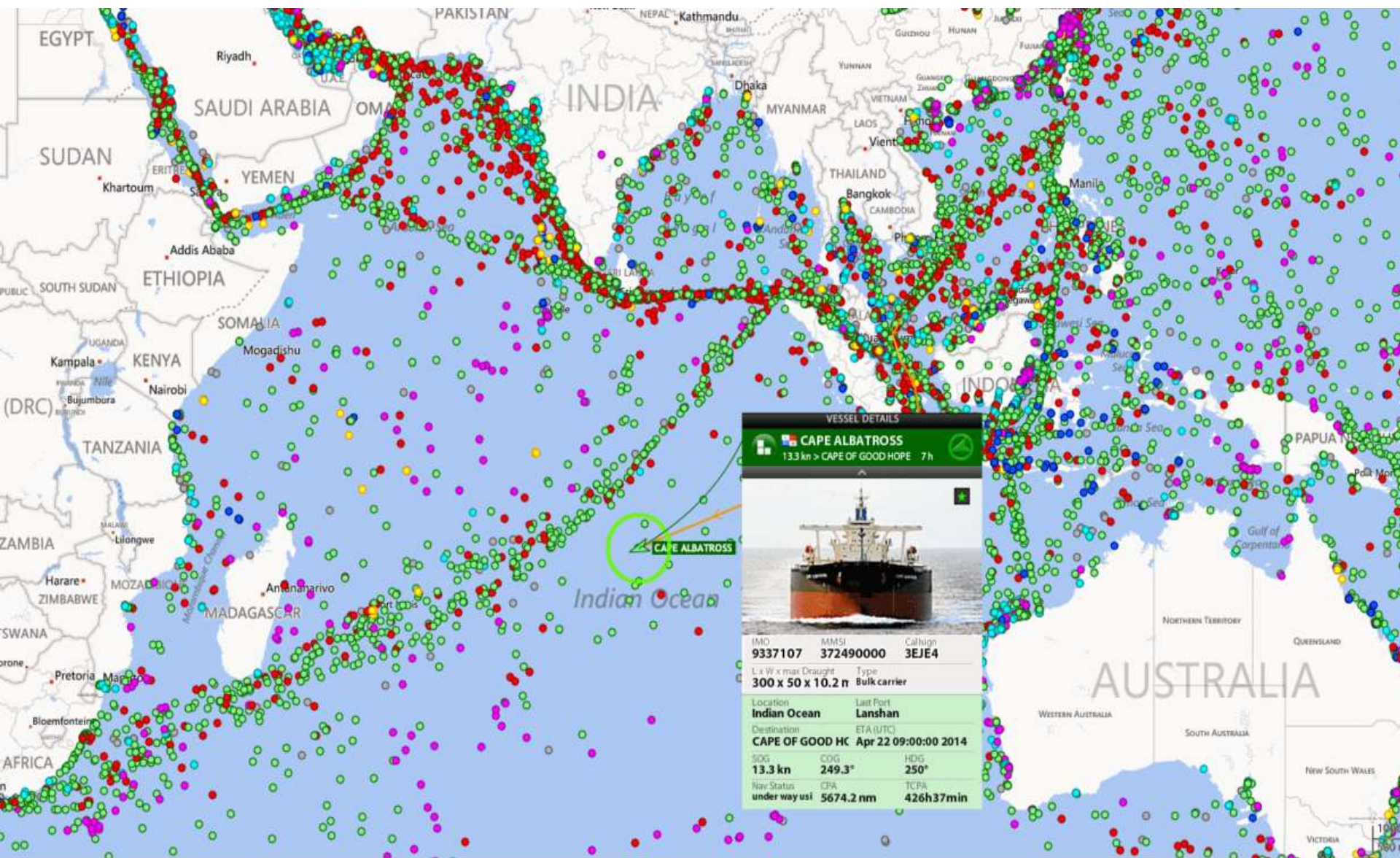


**What's Going on
With Shipping?**



CREEKS & DELTA AREAS





VESSEL DETAILS

CAPE ALBATROSS
13.3 kn > CAPE OF GOOD HOPE 7h



IMO	MMSI	Callign
9337107	372490000	3EJE4
L x W x max Draught	Type	
300 x 50 x 10.2 m	Bulk carrier	
Location	Last Port	
Indian Ocean	Lanshan	
Destination	ETA (UTC)	
CAPE OF GOOD HC	Apr 22 09:00:00 2014	
SOG	COG	HDG
13.3 kn	249.3°	250°
Nav-Status	CPA	TCPA
under way usi	5674.2 nm	426h37min

NEW CHALLENGES / NEW HORIZONS TO MDA

- AIS Compliance
- Web based tools ..
- Using AI
- Uncovering “DARK” shipping



IUU FISHING



Fishing in the Shadows

How much coastal states are exposed to and combat illegal, unreported, and unregulated fishing



Scores fall between 1 and 5, with darker shaded countries faring worse. The Cook Islands are not shown on the map, but have an index value of 2.3.

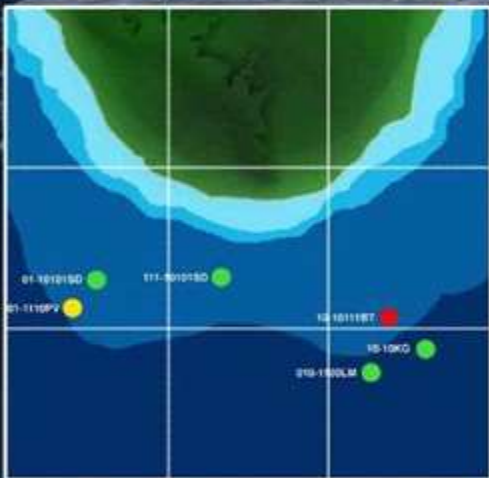
Sources: Poseidon Aquatic Resource Management Ltd.; Global Initiative Against Transnational Organized Crime.



Illustration of the Common Information Sharing Environment (CISE)

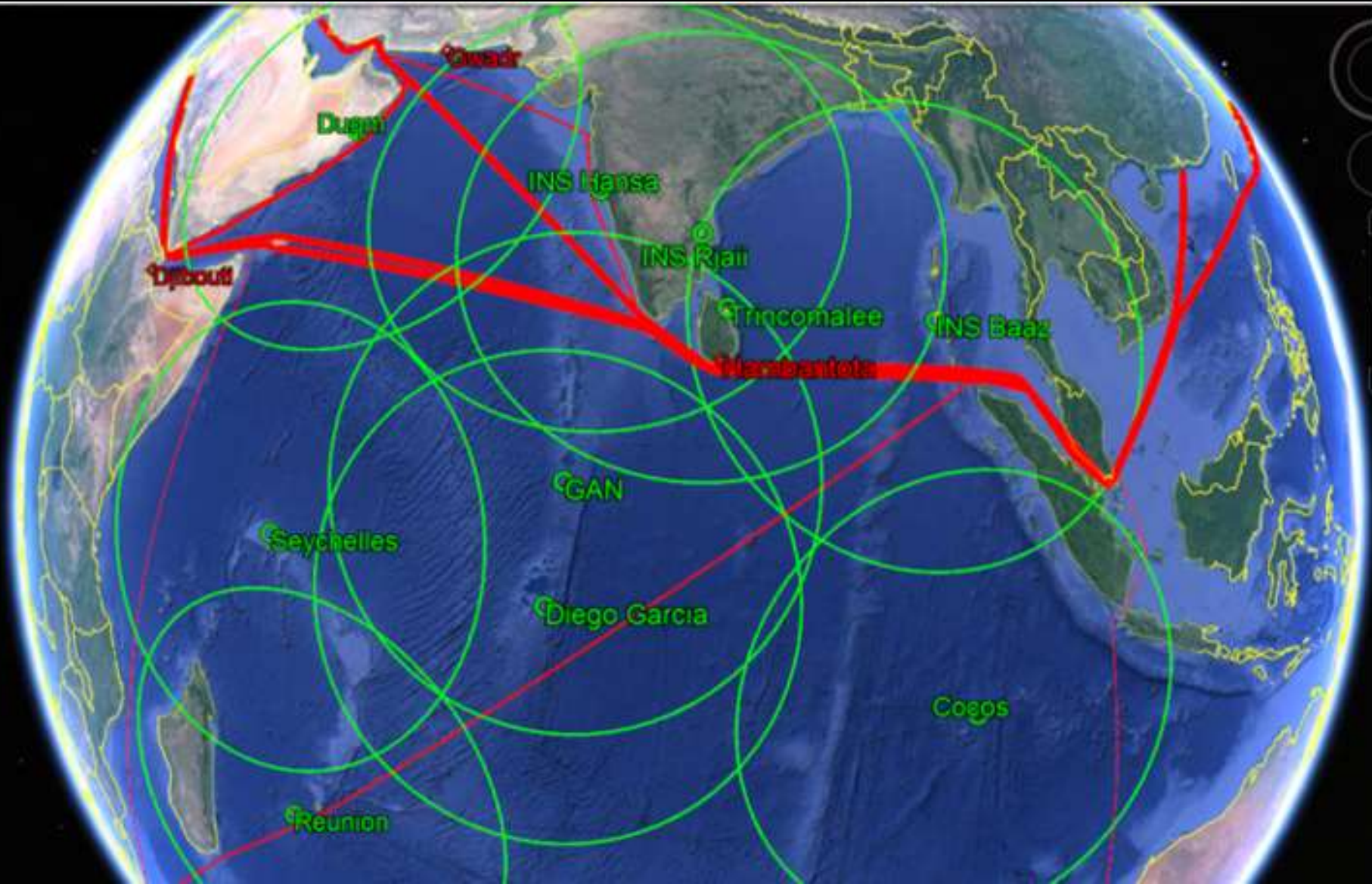
CONCLUSION

Assess today's data fusion capabilities and recommend technological improvements to maritime awareness data fusion and contact management tools.



Reduce time to process actionable information and increase the quantity of maritime information fused





THANK YOU



THE BLUE ECONOMY.



uses smart shipping to lessen the impacts on the environment



is inclusive and improves the lives of all



harnesses renewable energy



is based on sustainable fisheries



takes action against illegal fishing



creates jobs, reduces poverty and ends hunger



protects coastal communities from the impacts of climate change



tackles marine litter and oceans pollution

conserves marine life and oceans

