NECESSITY OF MARITIME SECURITY, TECHNOLOGY-STRATEGY, AND, NEW THINKING

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Director General, National Maritime Foundation

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National Maritime Foundation

A Concept reflects a

'Desired End-State' that is given expression through a

Statement of Policy** which, having been expressed, defines one or more

Interests that are analysed so as to yield a set of

Objectives that are sought to be attained by formulating one or more

Strategies that are-/ will remain relevant to the prevailing or expected conditions of

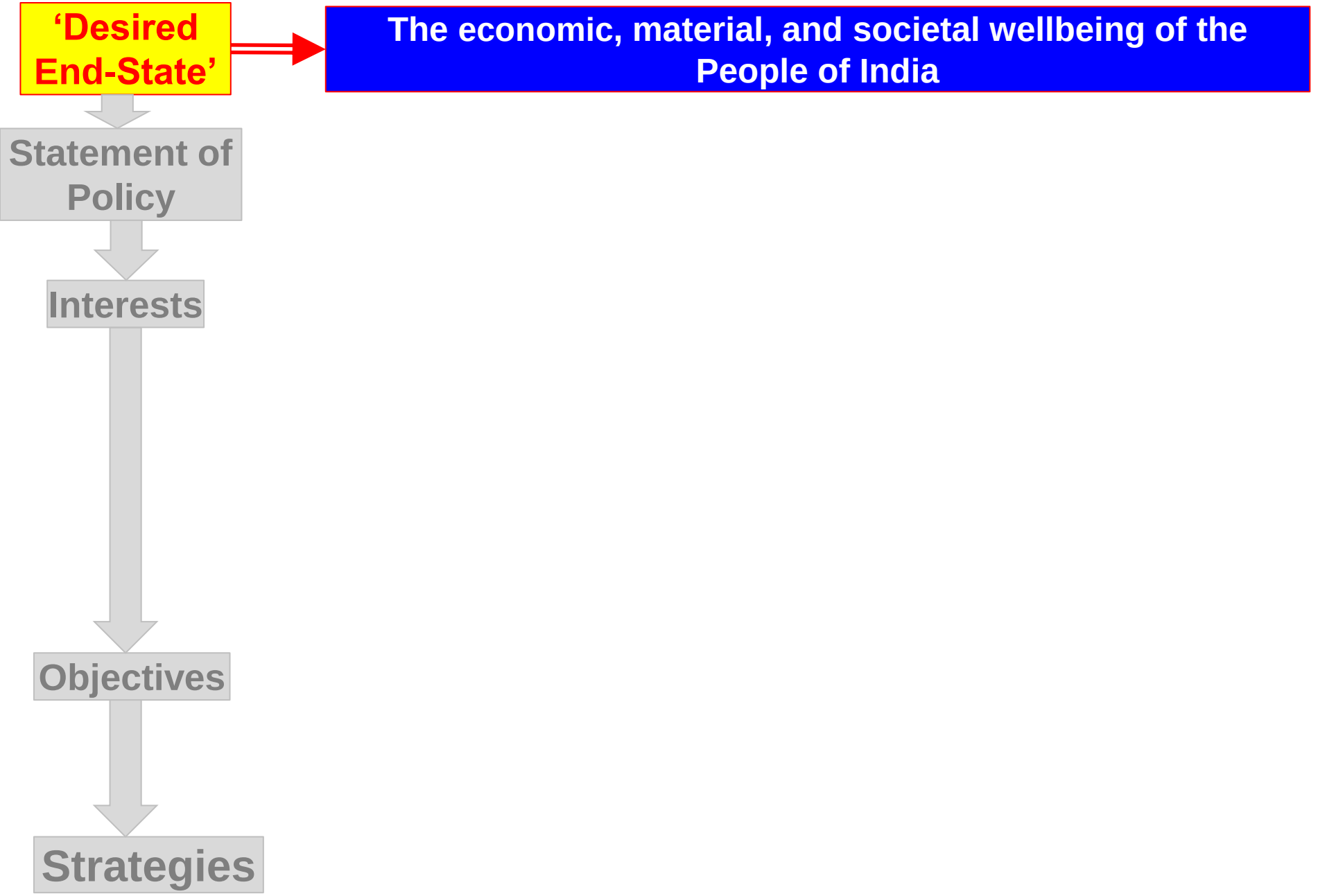
'Peace' or 'Tension / Confrontation' or Conflict and whose implementation needs

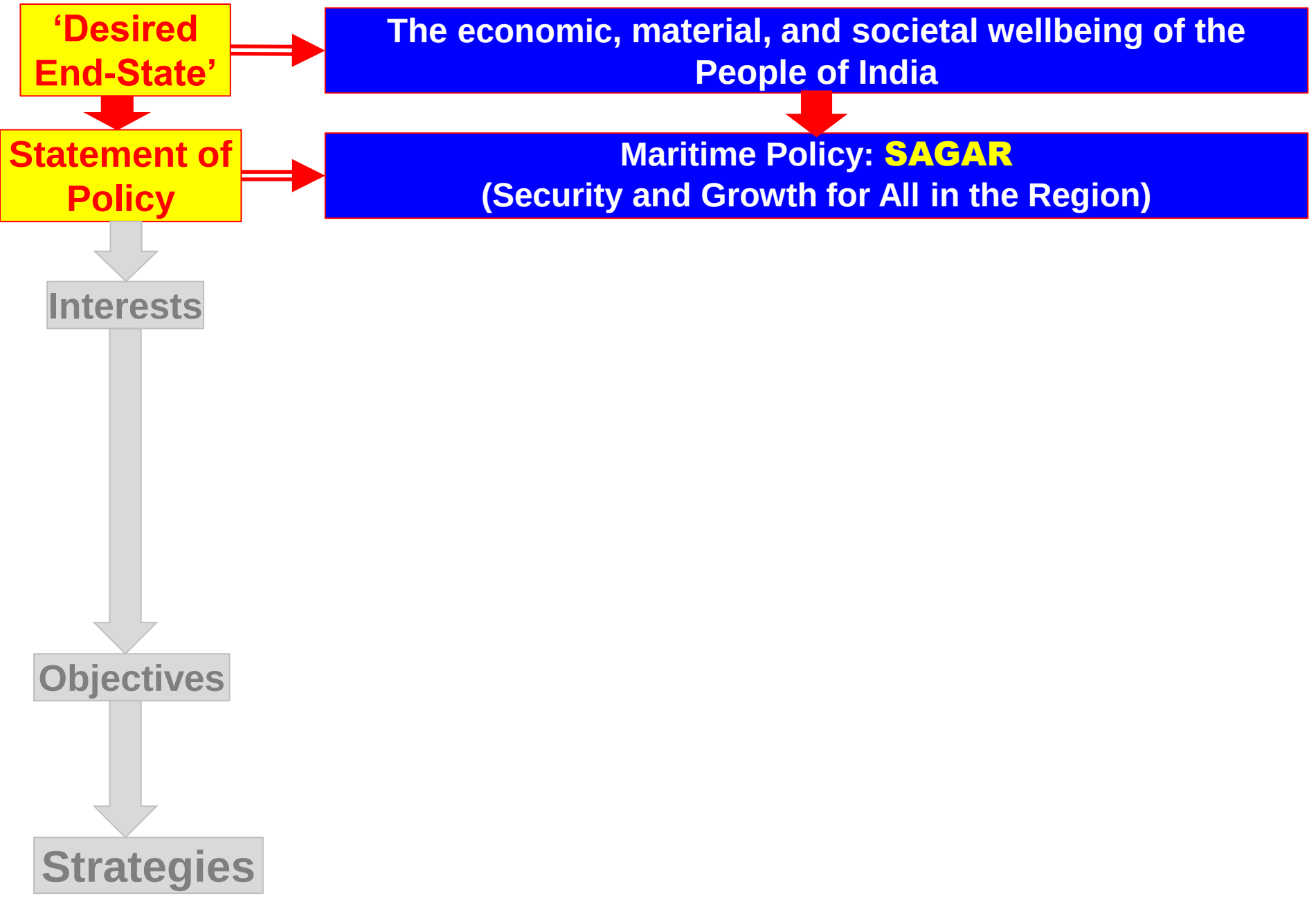
'Terminological uniformity' and 'standardised visualisation' which is ensured by

Doctrine** so as to enable us to Preserve, Promote, Pursue and Protect

India's Core National Interest and, insofar as the maritime domain is concerned,

India's Maritime Interests that flow-out of and feed-into our Core National Interest


‘Desired End-State’
The economic, material, and societal wellbeing of the People of India
Statement of Policy
Interests
Objectives
Strategies


'Desired End-State'
The economic, material, and societal wellbeing of the People of India
Statement of Policy
Maritime Policy: SAGAR
(Security and Growth for All in the Region)
Interests
Objectives
Strategies

Russia
China
S Korea
Japan
Taiwan
Israel
Egypt
Iraq
Kuwait
Iran
Bahrain, Qatar
S Arabia
UAE
Oman
Yemen
Djibouti
Somalia
Kenya
Seychelles
Tanzania
Comoros
Madagascar
Mauritius
Mozambique
France
S Africa
B'desh
Myanm
Thailand
Sri Lanka
Maldives
Vietnam
Malaysia
S'pore
Indonesia
Philippines
USA
SAGAR
Australia
Vanuatu
Fiji
Tonga
New Zealand
PACIFIC OC
INDIAN OCEAN
BRITISH INDIAN OCEAN TERRITORY

'Desired End-State'
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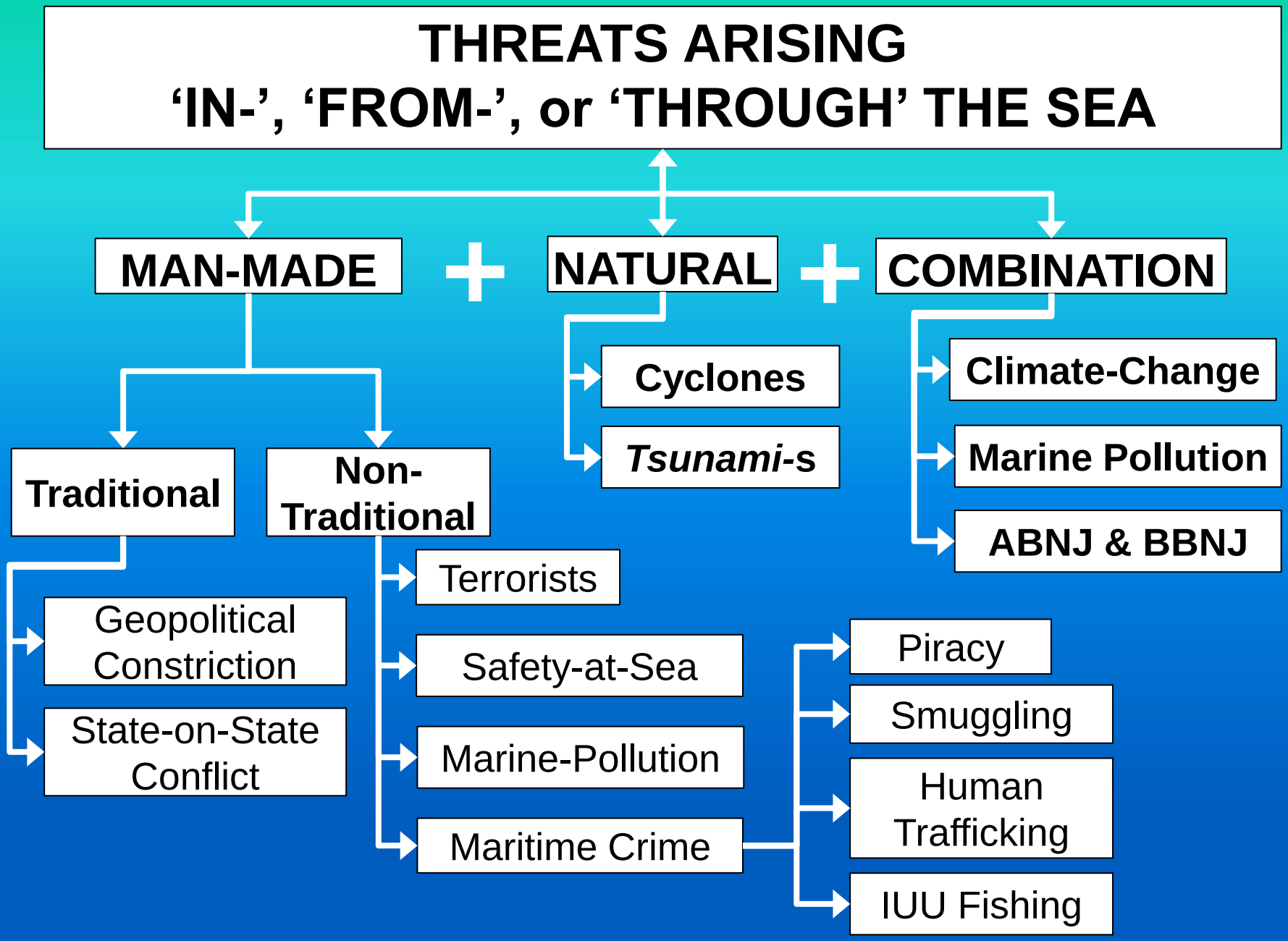
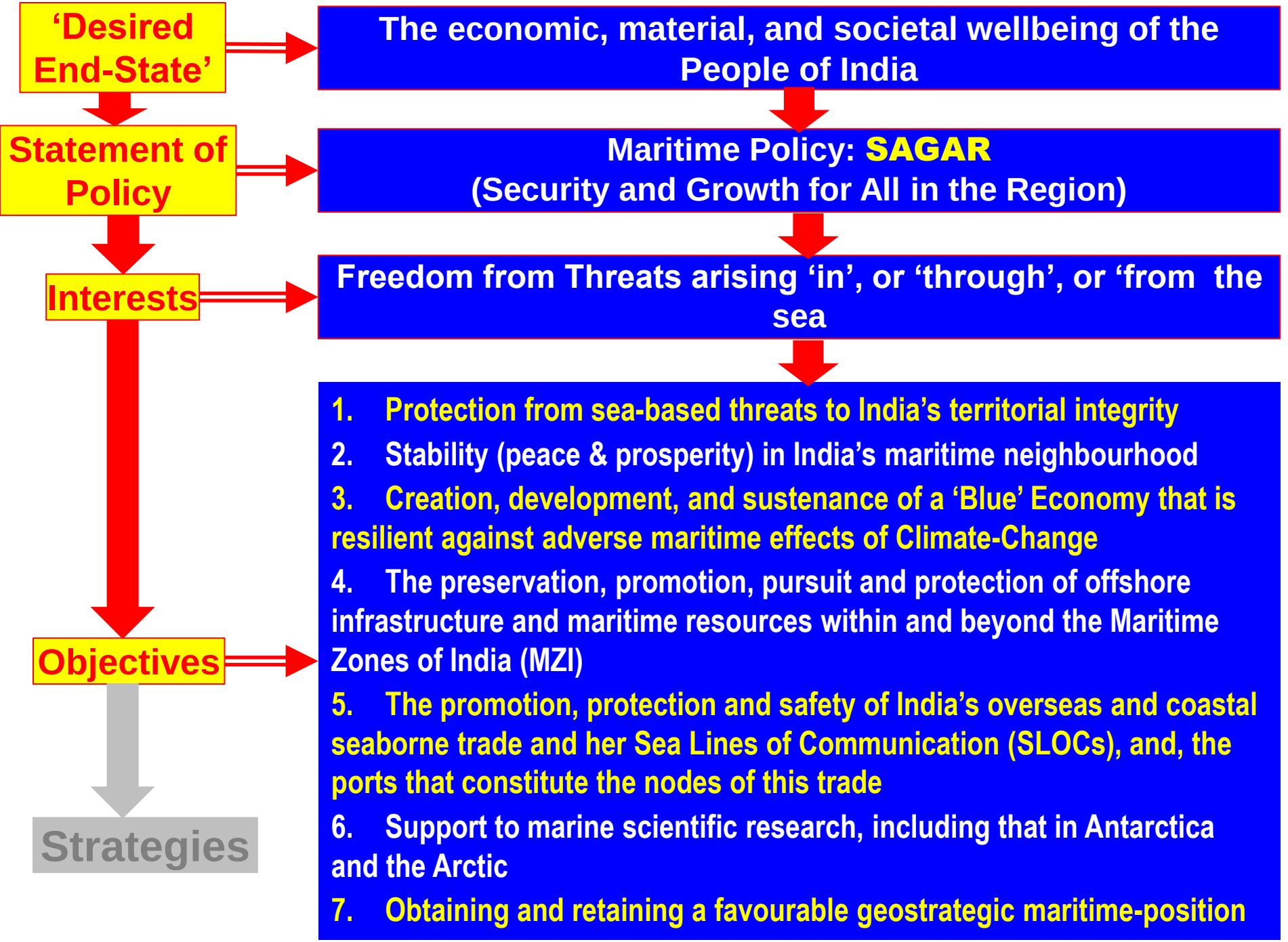
Freedom from Threats arising 'in', or 'through', or 'from the sea
Objectives
Strategies


THREATS ARISING
'IN-', 'FROM-', or 'THROUGH' THE SEA
MAN-MADE
NATURAL
COMBINATION
Traditional
Non-Traditional
Cyclones
Tsunami-s
Climate-Change
Marine Pollution
ABNJ & BBNJ
Geopolitical Constriction
State-on-State Conflict
Terrorists
Safety-at-Sea
Marine-Pollution
Maritime Crime
Piracy
Smuggling
Human Trafficking
IUU Fishing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Objectives
1. Protection from sea-based threats to India's territorial integrity
2. Stability (peace & prosperity) in India's maritime neighbourhood
3. Creation, development, and sustenance of a 'Blue' Economy that is resilient against adverse maritime effects of Climate-Change
4. The preservation, promotion, pursuit and protection of offshore infrastructure and maritime resources within and beyond the Maritime Zones of India (MZI)
5. The promotion, protection and safety of India's overseas and coastal seaborne trade and her Sea Lines of Communication (SLOCs), and, the ports that constitute the nodes of this trade
6. Support to marine scientific research, including that in Antarctica and the Arctic
7. Obtaining and retaining a favourable geostrategic maritime-position
Strategies

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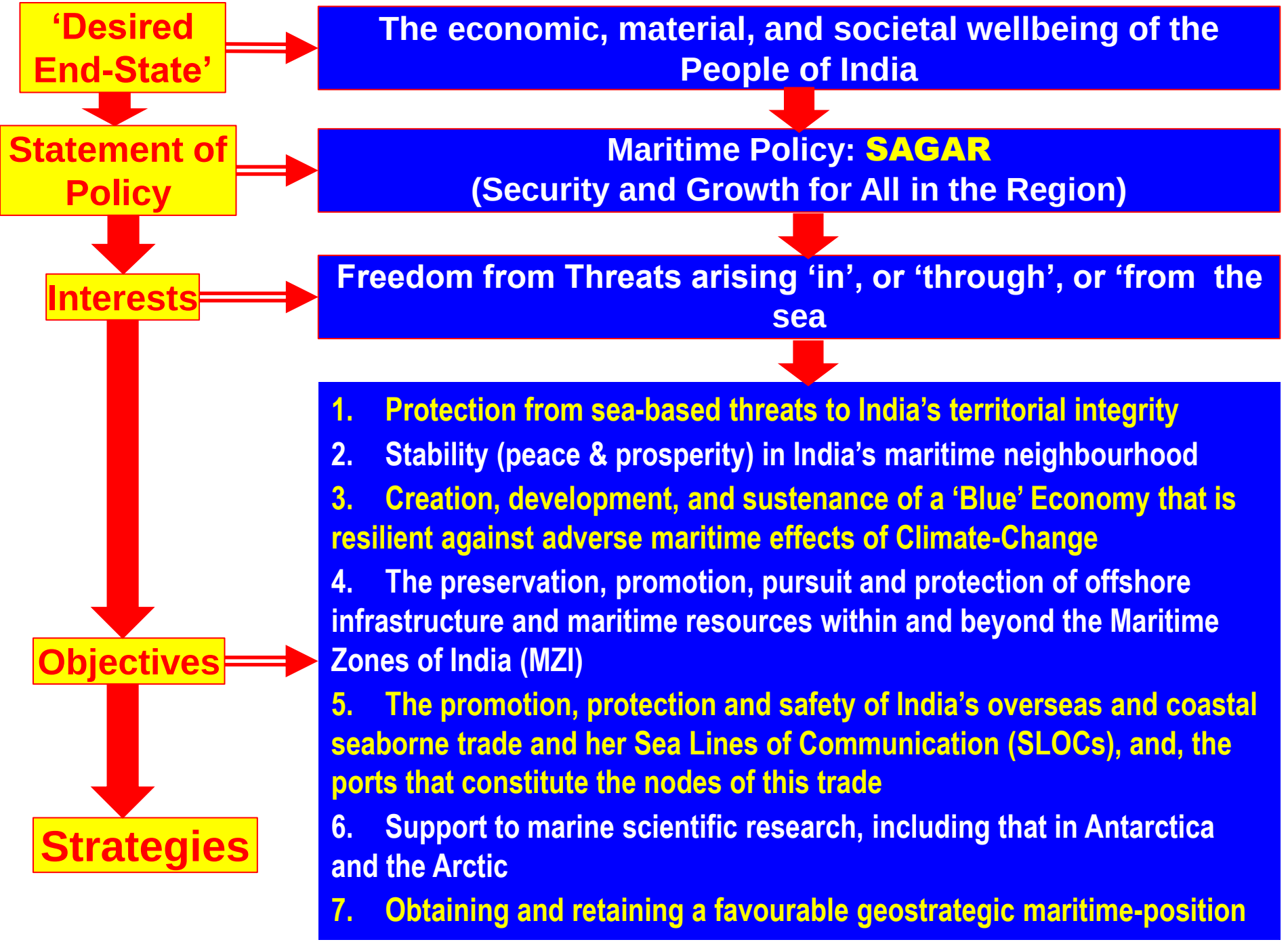
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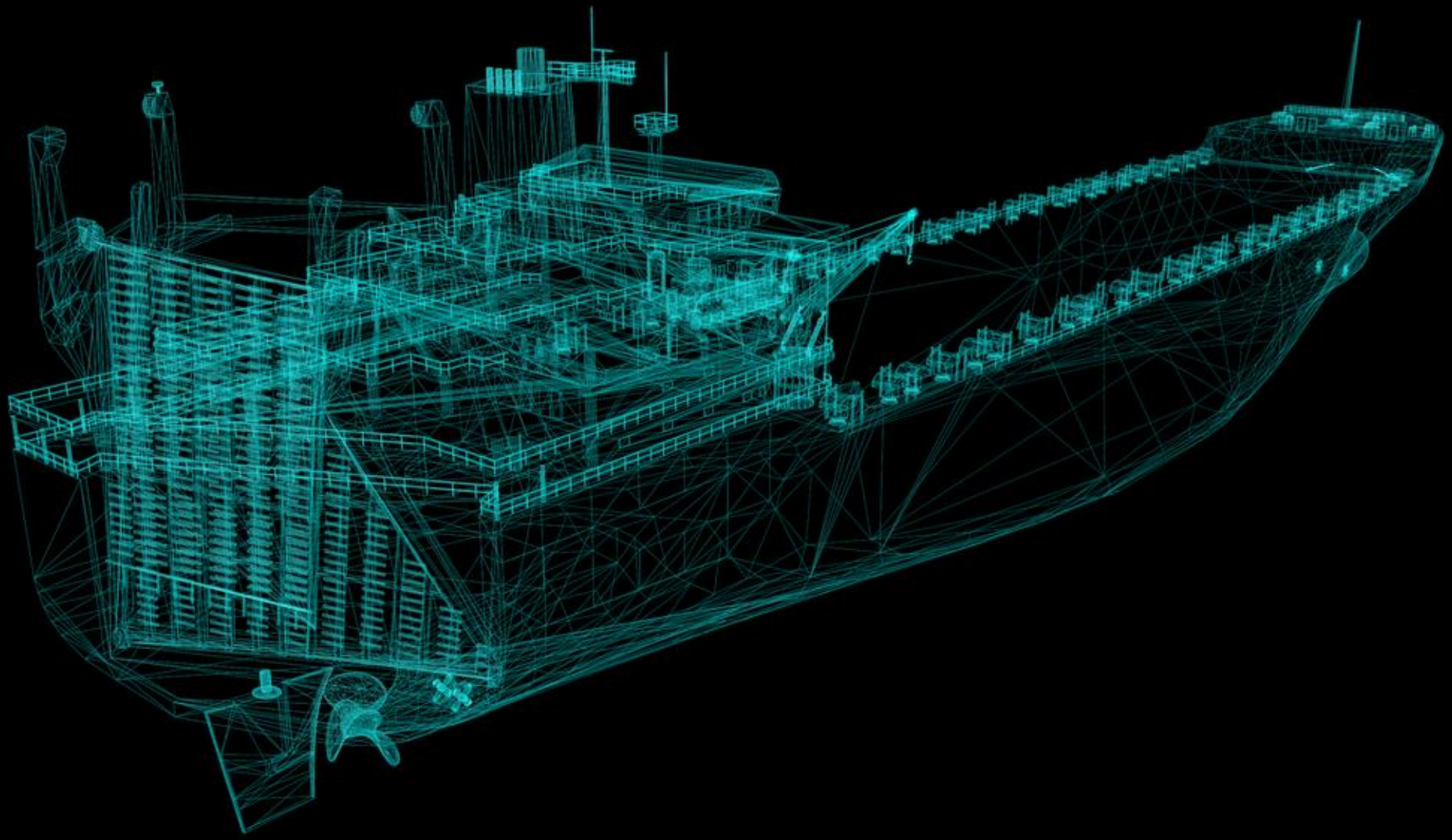
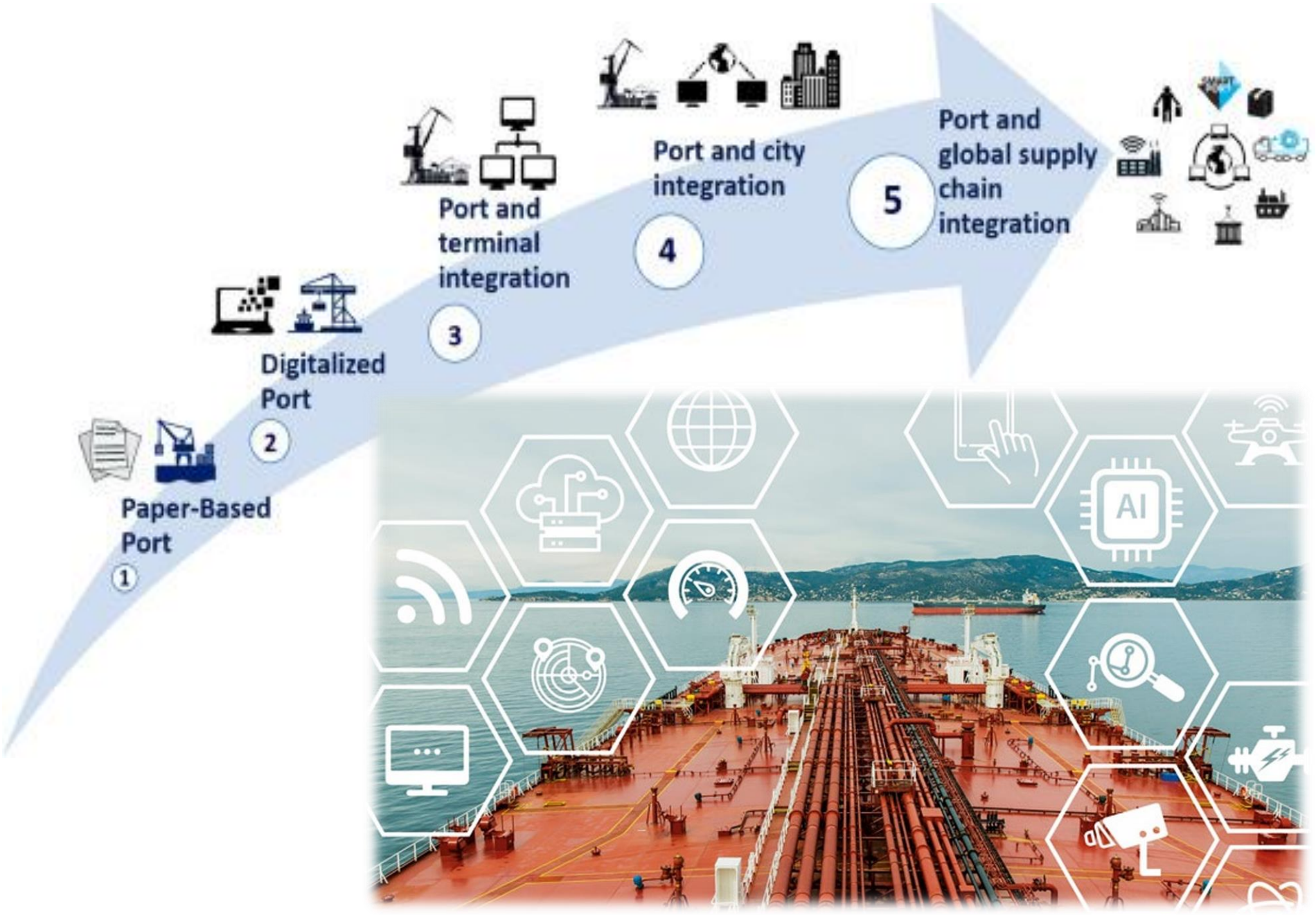
Strategies

Strategy *(one amongst several)*:
Maximise innovation-skills to leapfrog and leverage maritime technology



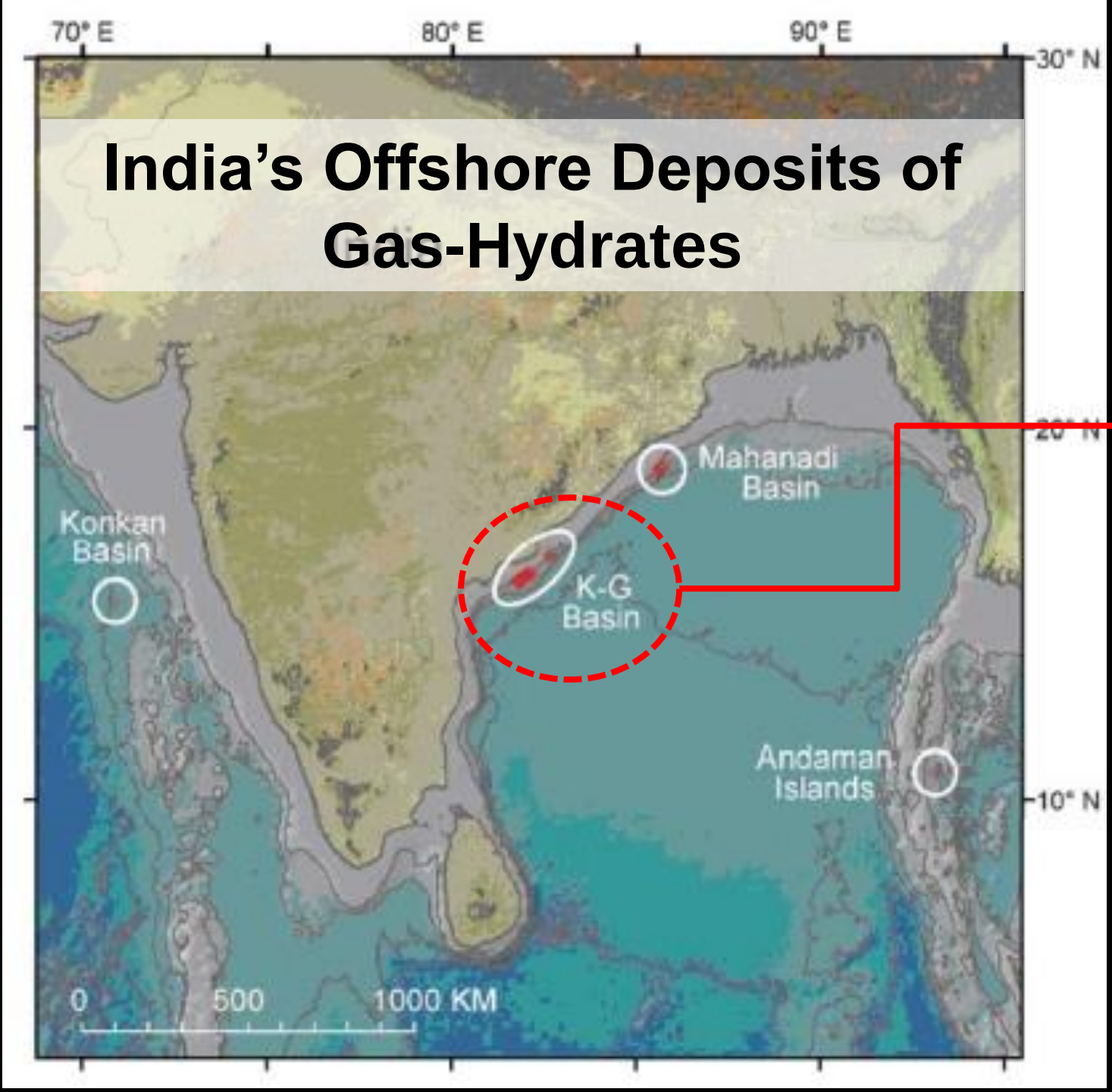
Adoption of Maritime-developmental technologies



LTTD Plant at Agatti Island, Lakshadweep:

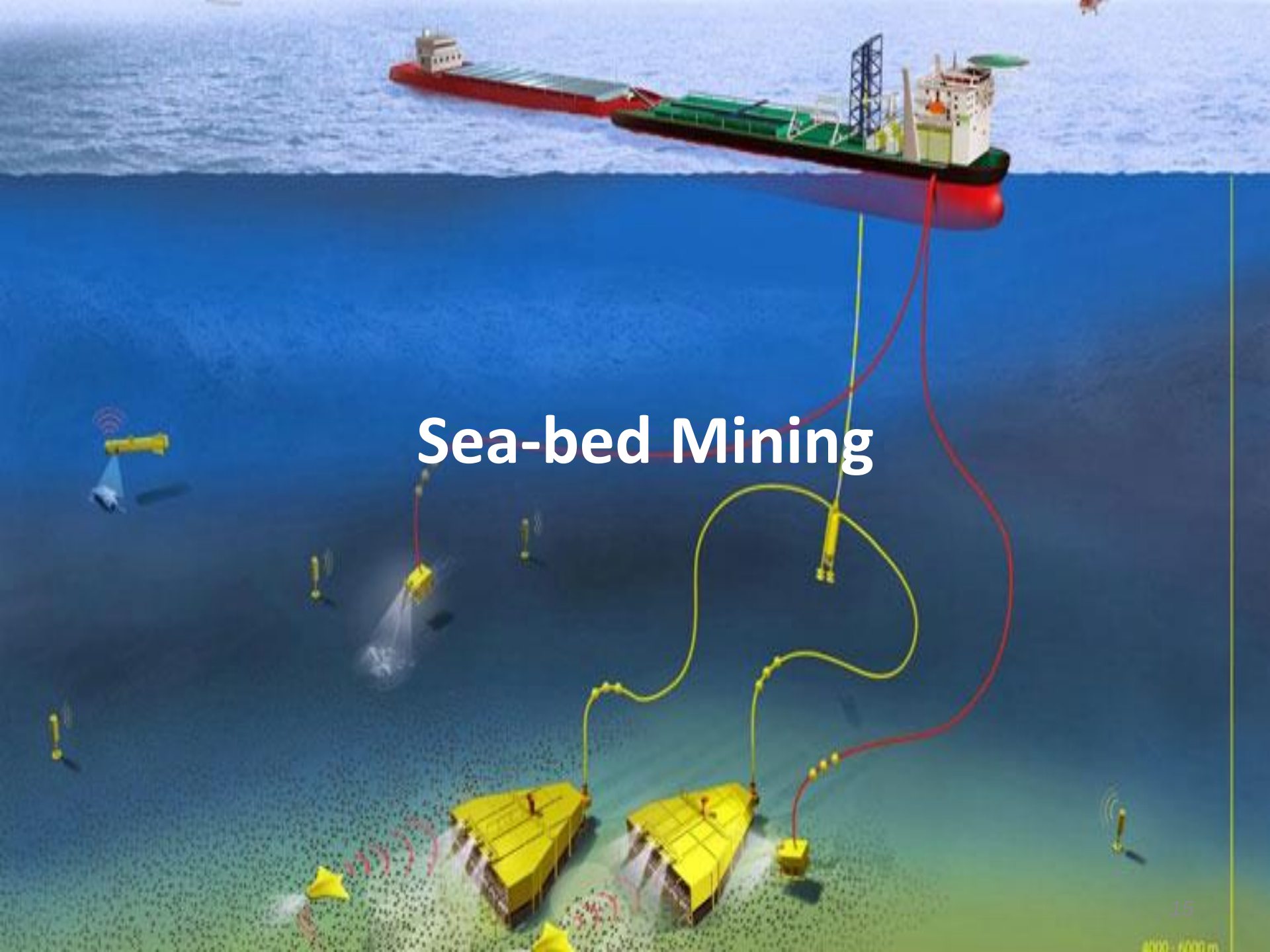
Generates 100,000 litres of fresh-water per day

India's Offshore Deposits of Gas-Hydrates

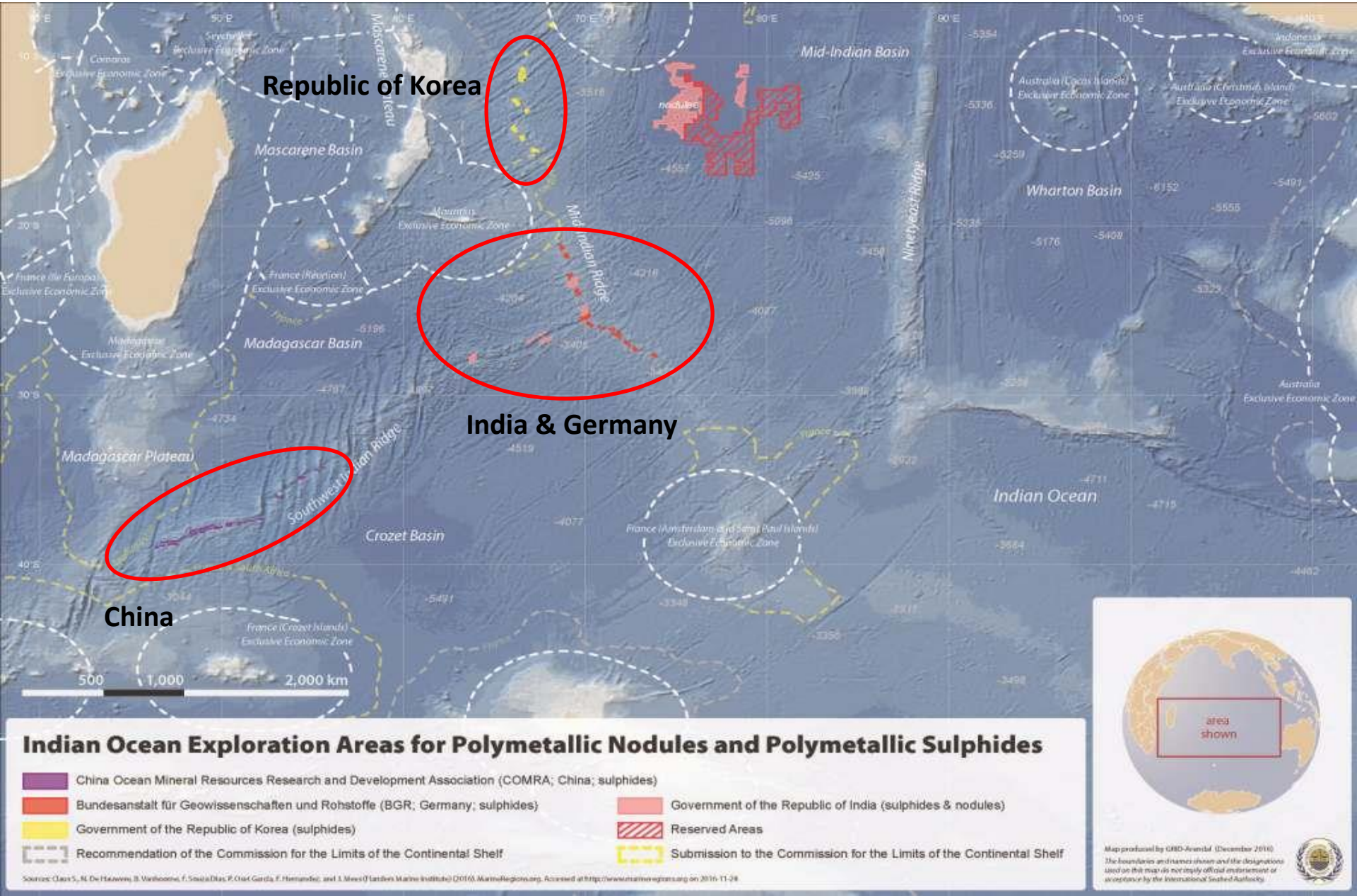


'K-G Basin' accumulations are amongst the richest in the world

Production of just 10% would suffice to meet India's energy requirement for over 100 years


Sea-bed Mining

Players in IOR



Indo-Pacific Oceans Initiative (IPOI)

14th EAS, Bangkok, 04 November 2019

Maritime Security
Maritime Resources
Maritime Ecology
IPOI
Trade Connectivity and Maritime Transport
Science, Technology & Academic Cooperation
Capacity Building & Resource Sharing
Disaster Risk Reduction & Management

CONNECTIVITY

MARITIME CONNECTIVITY

“Connectivity is vital. It does more than enhance trade and prosperity. It unites a region. India has been at the crossroads for centuries. We understand the benefits of connectivity… There are many connectivity initiatives in the region. If these have to succeed, we must not only build infrastructure, we must also build bridges of trust.”

CONNECTIVITY

1. Physical Connectivity (Road, Rail, Air, Maritime)

2. Trade & Transport Connectivity
   (Production and Distribution Networks, Regional / Global Value Chains, etc.)

3. Energy Connectivity

4. Digital Connectivity

5. People-to-People (P2P) Connectivit

MASTER PLAN ON
ASEAN CONNECTIVITY 2025
Three Pillars
Physical Connectivity
Institutional Connectivity
P2P Connectivity
Five Strategic Focus Areas
Sustainable Infrastructure
Digital Innovation
People Mobility
Regulatory Excellence
Seamless Logistics

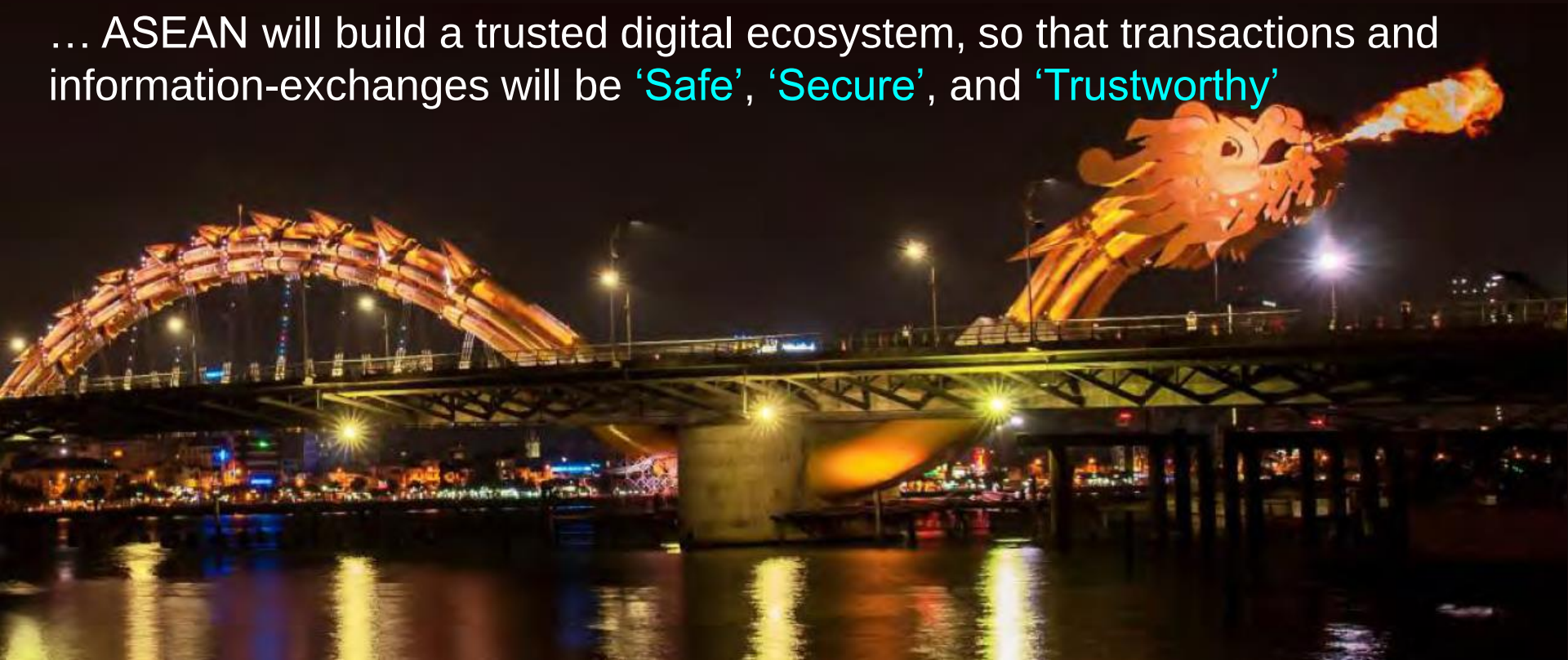
DIGITAL INDIA
What is
AIM
2020?
ICT

Thrust Line # 8 of the ASEAN ICT Master Plan (AIM) 2020

Information Security and Assurance

… focuses on the increasing prospect of cyber threats – both economic and social – posed by malicious software, hacking, data theft and online fraud. If left unchecked, these threats could impede ASEAN's progress as a digitally-enabled community

… ASEAN will build a trusted digital ecosystem, so that transactions and information-exchanges will be 'Safe', 'Secure', and 'Trustworthy'



Initiatives '8.1' and '8.2' of AIM-2020

Strengthen Information-Security and Preparedness throughout ASEAN

- **Develop Regional Guidelines for protection of Personal-data**
  - *Commission a study that compares personal-data privacy-protection frameworks across AMS, to identify current practices, develop case-studies, and disaggregate issues across different levels — local, national, cross-border and ASEAN*

- **Develop Best Practices for Information-security and Network-security (including Cloud-computing)**

- **Establish a Collaborative, pan-ASEAN, 'Incident-Reporting Framework' and CERT (Cyber-incident Emergency Response Team)**
  - *Commission a study to examine optimal 'ownership' models (Government and/or PPP)*
  - *Promote regular cyber-security collaboration and dialogue between governments, business community, and citizens, through joint awareness-raising campaigns*

India-ASEAN Track 1.5 on Cyber Issues, 14 October 2019

Issues addressed under three pillars:

1. Data Governance: Models, Goals and Possibilities
2. Taking Stock of Cyber (In)security in Asia
3. Cyber Norms Processes: The Way Forward

asean india
PROGRESS & PROSPERITY

- **India has launched ‘Centres of Excellence’ in Software Development and Training (CESDTs) in Cambodia, Lao PDR, Myanmar and Vietnam...**

- **India is also funding "Child Online Risks Awareness Campaign" and "Building Capacity on Digital Public Services Implementation and Cyber Security for Government Agencies" as Quick Impact Projects in Cambodia, in 2020...**

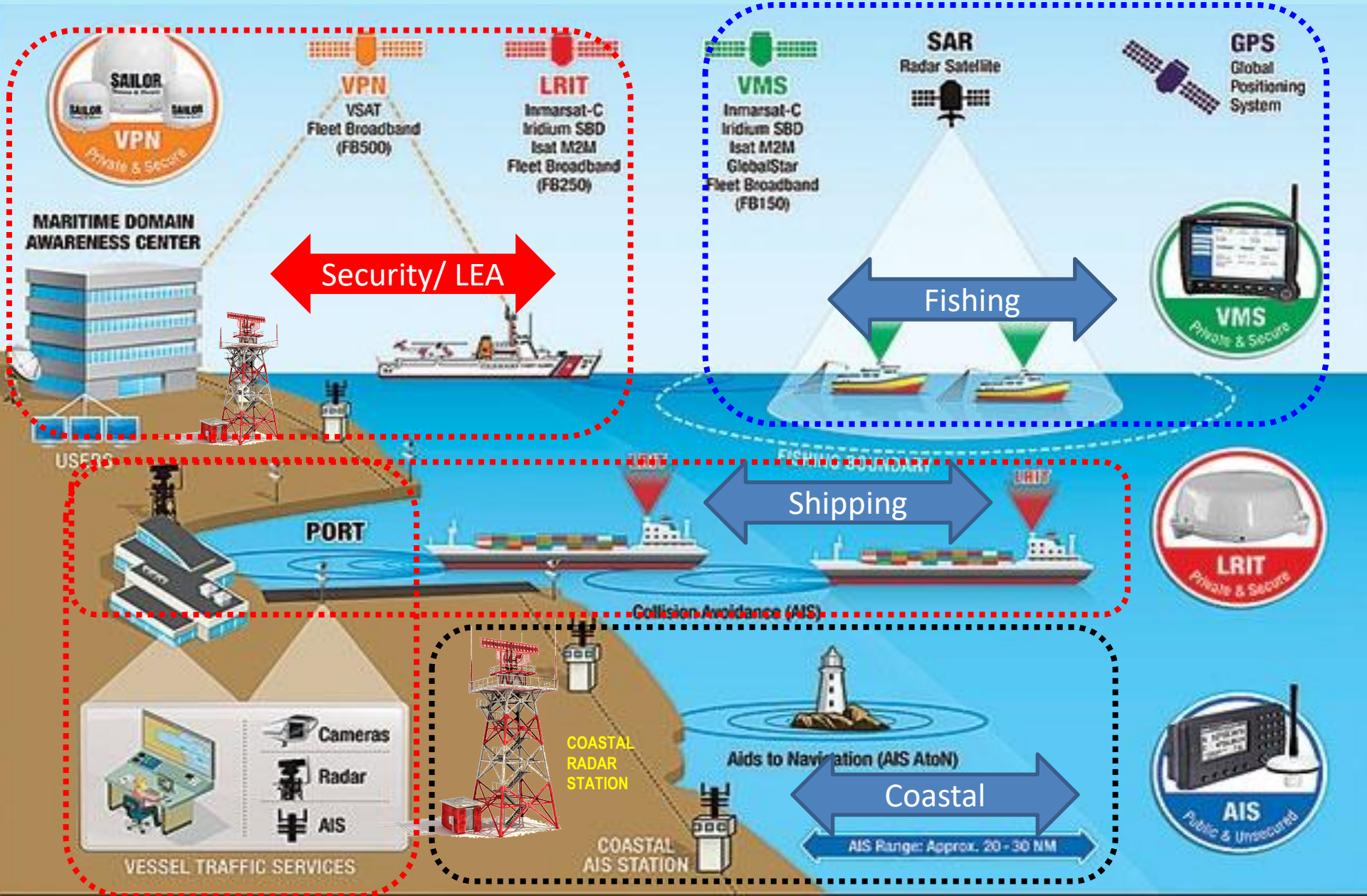
Adoption of ‘Hard Security’ technologies

Maritime Domain Awareness

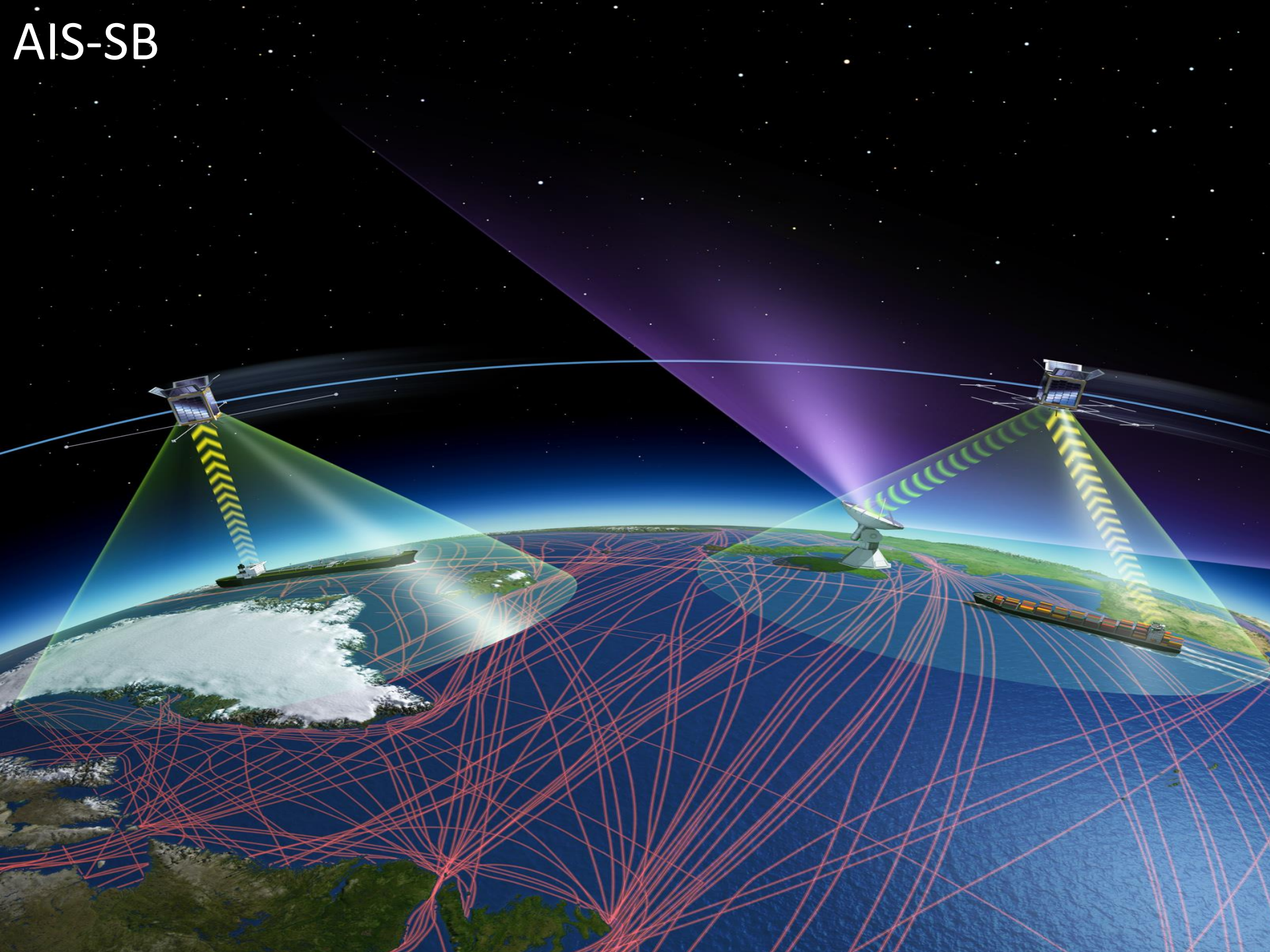
The Key to Maritime Security

Satellite Surveillance

Technology-Aided Surveillance

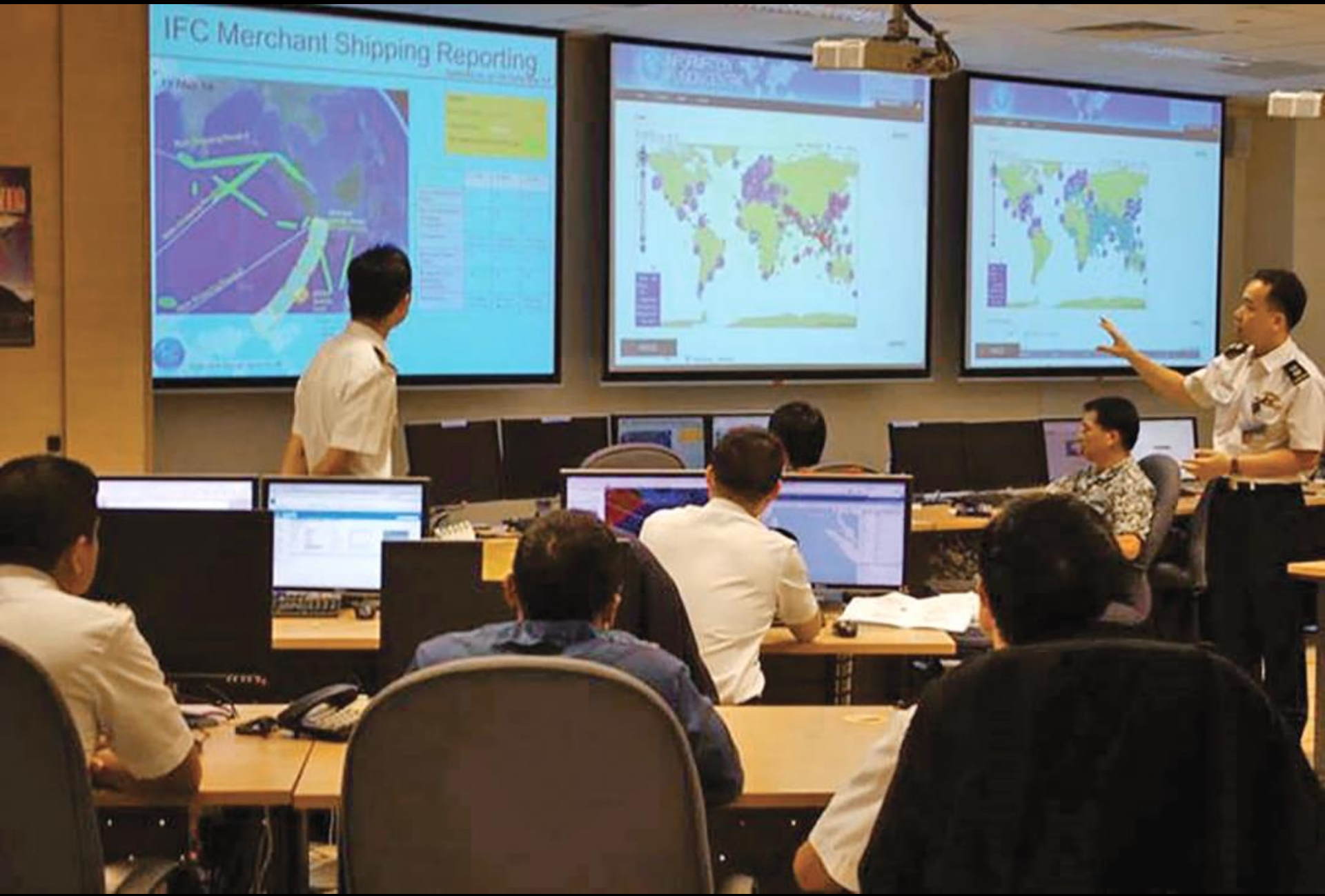


AIS-SB



Information-Fusion: India's IMAC & IOR-IFC

Information-Fusion: Singapore's IFC



EU INDIAN OCEAN REGION
SOUTH & SOUTHEAST ASIA
CRIMARIO

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CRIMARIO II, part of the Critical Maritime Routes Programme,
is an European Union initiative implemented by Expertise France

EXPERTISE FRANCE

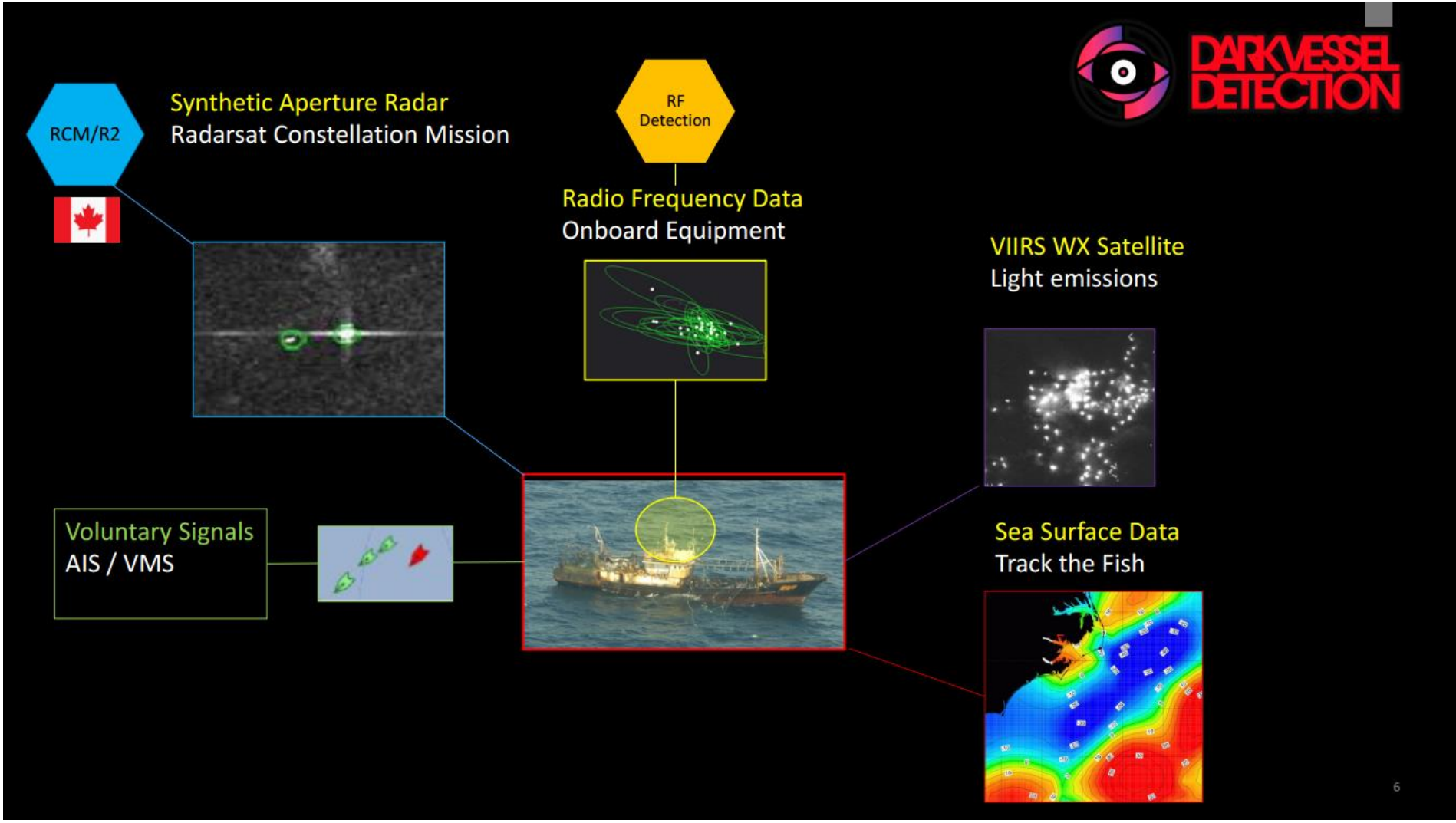
India: 'White Shipping' Technical Agreements

TA Signed & Operational		TA Signed but not yet ops		TA being Pursued	
1	Australia	1	Japan	1	Bangladesh
2	Brazil	2	Myanmar	2	Djibouti
3	France	3	Nigeria	3	Egypt
4	Israel	4	Oman	4	Germany
5	Kenya	5	Qatar	5	Indonesia
6	Maldives	6	Thailand	6	Iran
7	Mauritius			7	Madagascar
8	Seychelles			8	Malaysia
9	Singapore			9	Mozambique
10	Spain			10	New Zealand
11	Sri Lanka			11	Philippines
12	UK			12	South Africa
13	USA			13	Tanzania
14	Vietnam			14	UAE
15	VRMTC + TRMN			15	South Korea
				16	Italy
				17	SADC
				18	ReMIX

Virtual Regional Maritime Traffic Centre + Trans-Regional Maritime Network

Albania, Algeria, Argentina, Belgium, Brazil, Bulgaria, Cameroon, Chile, Croatia, Cyprus, Ecuador, France, Georgia, Germany, Greece, India, Israel, Italy, Jordan, Libya, Malta, Mauritania, Montenegro, Morocco, Nigeria, Netherlands, Pakistan, Portugal, Peru, Romania, Senegal, Singapore, Slovenia, Spain, South Africa, Tunisia, Turkey, UK, USA, Ukraine

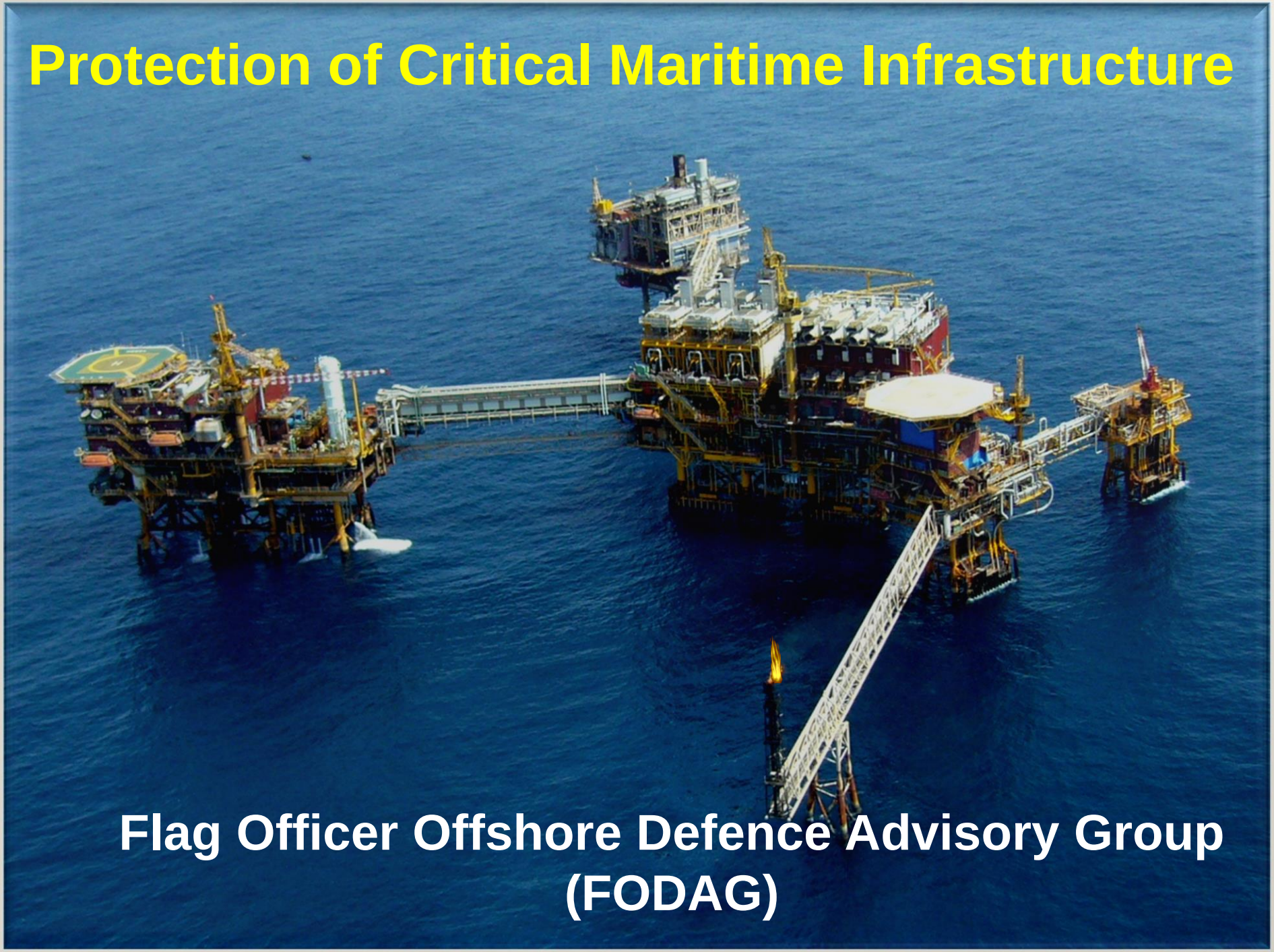
Emerging Technologies



VIIRS: Visible Infrared Imaging Radiometer Suite

Source: Sean Wheeler, Canada

Protection of Critical Maritime Infrastructure



Flag Officer Offshore Defence Advisory Group (FODAG)

FODAG

- Constituted in 1983
- In 2002, following the Kargil Conflict, FODAG was re-designated “FODAG & Advisor Offshore Security and Defence to the Government of India”

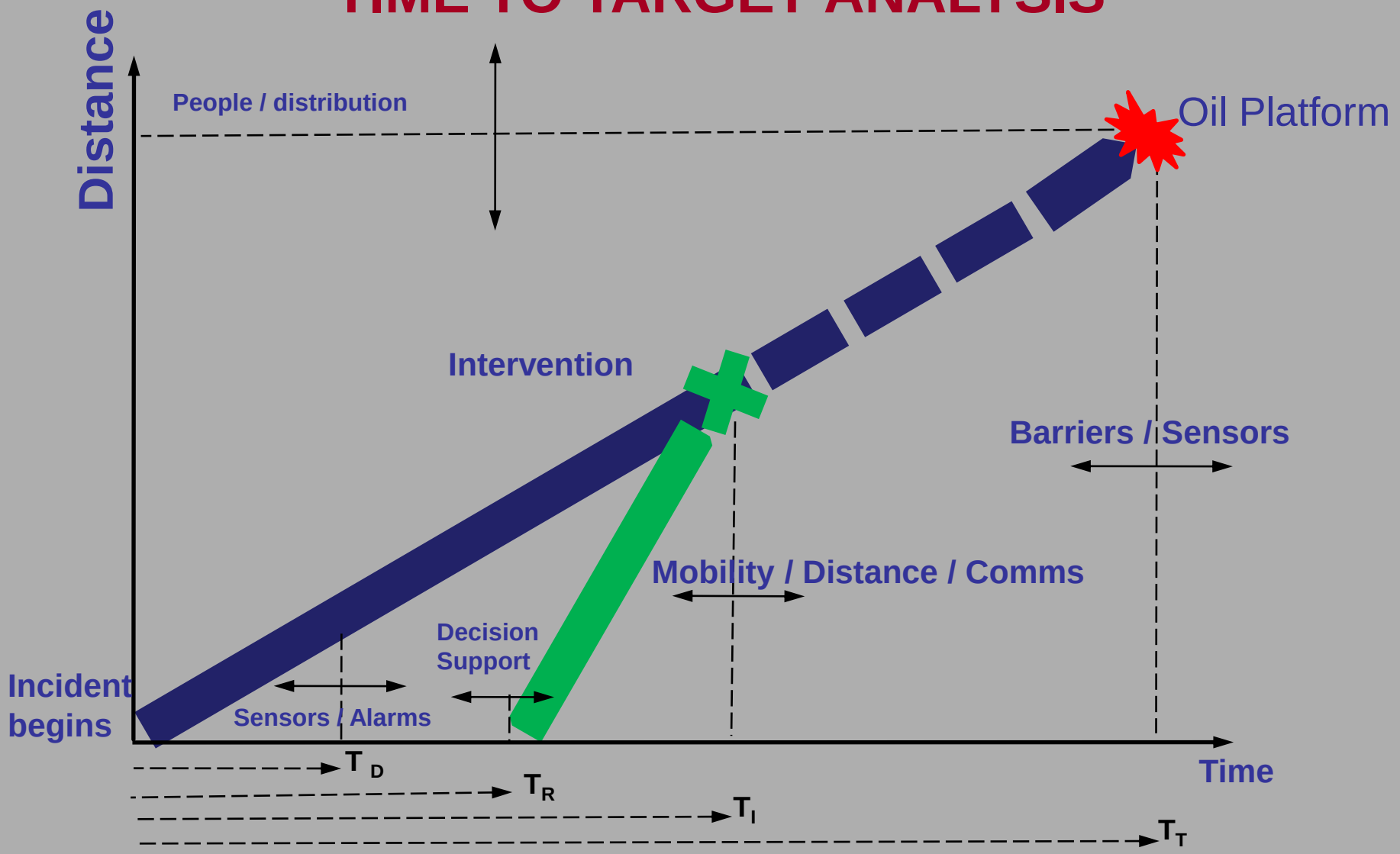
WESTERN SEABOARD

Average Distance from Mumbai - 40-130 NM (75-240 km)
Oil Rigs/Drill Ships - 30
Support Vessels - 100-150c

EASTERN SEABOARD

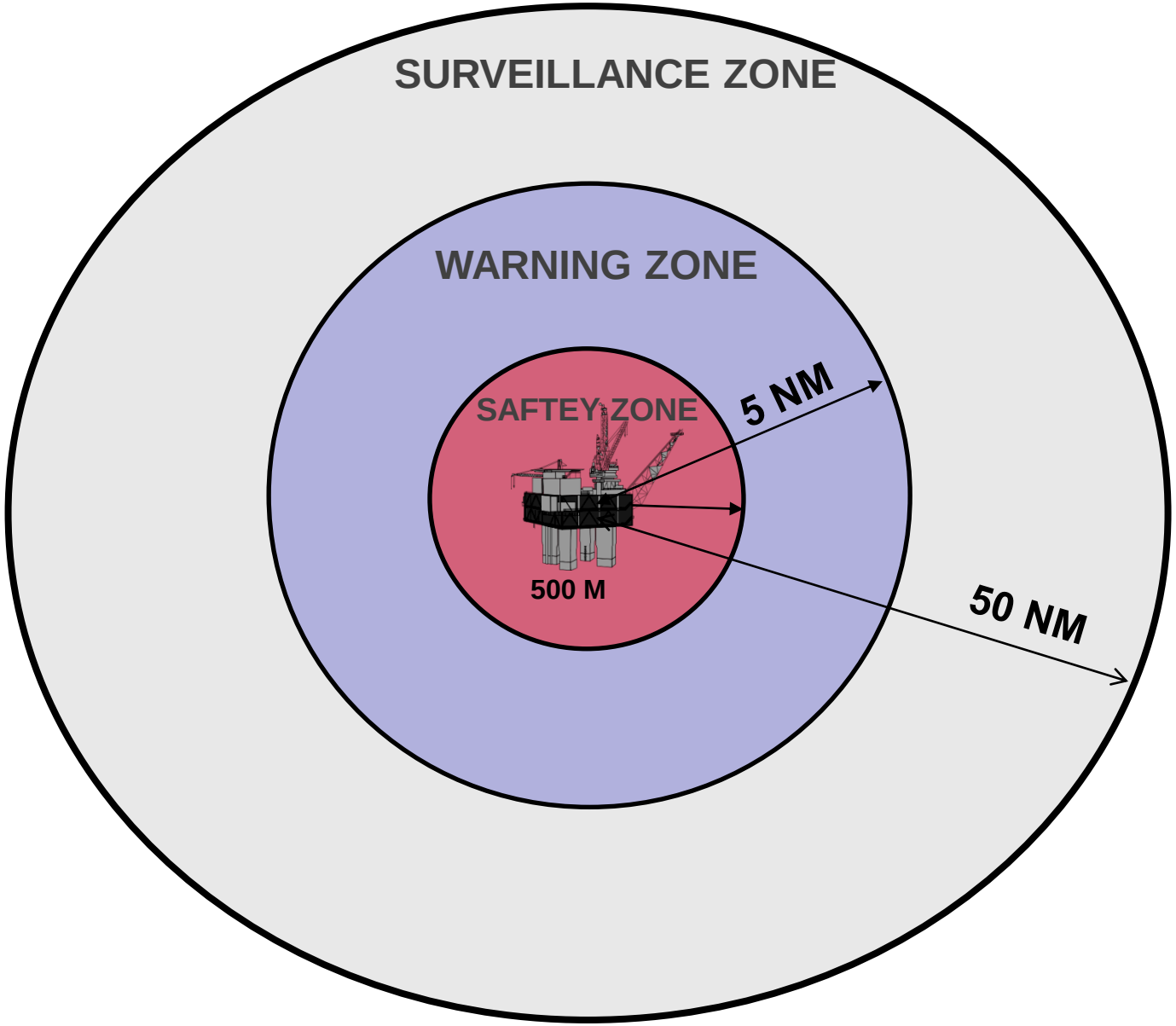
Average Distance from Vizag	-	90-360 NM (165-667 km)
Oil Rigs/Drill Ships	-	10-13
Support Vessels	-	60-90

TIME TO TARGET ANALYSIS



T_D = time to detect	T_I = time to intervention
T_R = time to respond	T_T = time to target

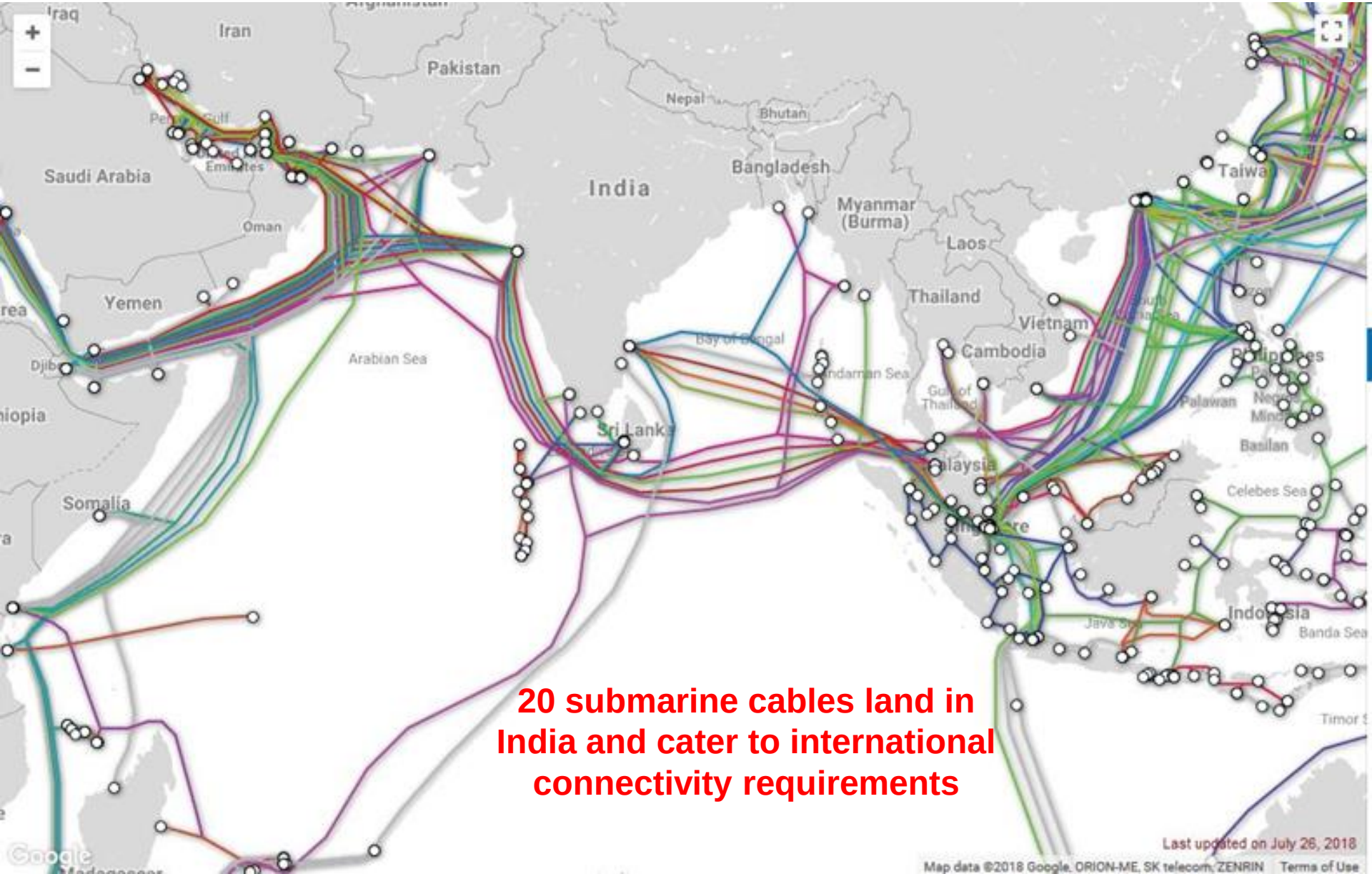
DEFENCE IN DEPTH



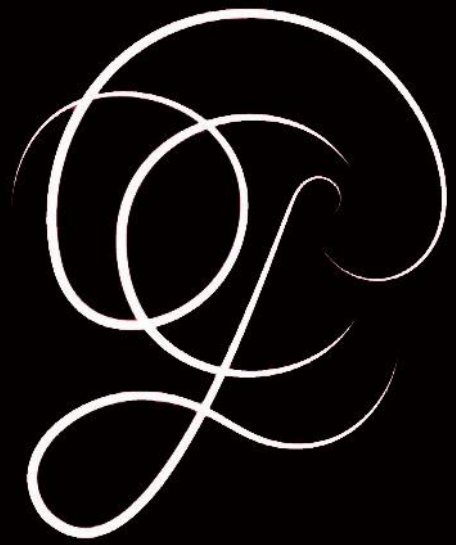
High-end ‘Hard Security’ Maritime Technologies

1	Advanced Surveillance Systems, especially Underwater Surveillance
2	Minimally-manned, unmanned, semi-autonomous and fully- autonomous vessels operating upon, under and over the sea
3	UAV integration with Manned-flying (‘Manned-Unmanned Teaming’ [MUM-T])
4	Technologies and products to support tri-Service simultaneous-operations in own and enemy ‘brown’ (‘littoral’) waters
5	Laser-based Mine Warfare Systems such as the ‘Airborne Laser Mine Detection System’ (ALMDS)
6	Robotics and additive-manufacturing driven by artificial intelligence, capable of being used on board ships and submarines
7	Indigenous, hand-held encrypted communication systems
8	Development of a Cloud architecture and agile applications
9	Miniaturisation through the adoption of nanotechnology
10	The replacement of explosive-ordnance by electromagnetically-driven kinetic ordnance and by Directed Energy Weapons (DEW)
11	Replacement of ‘digitisation’ by ‘digitalisation’
12	Lighter-than-air ships in large-load-long-endurance (L3E) configurations
13	Standardising hull-forms and corresponding equipment-fit for surface combatants.
14	The replacement of petroleum-driven propulsion for sea-going platforms by hybrid power and fully-integrated electric-propulsion, wherein the primary energy would be hydrogen-fuel sourced from the ocean itself.

Undersea Cables



Questions? Comments?



Discussions