



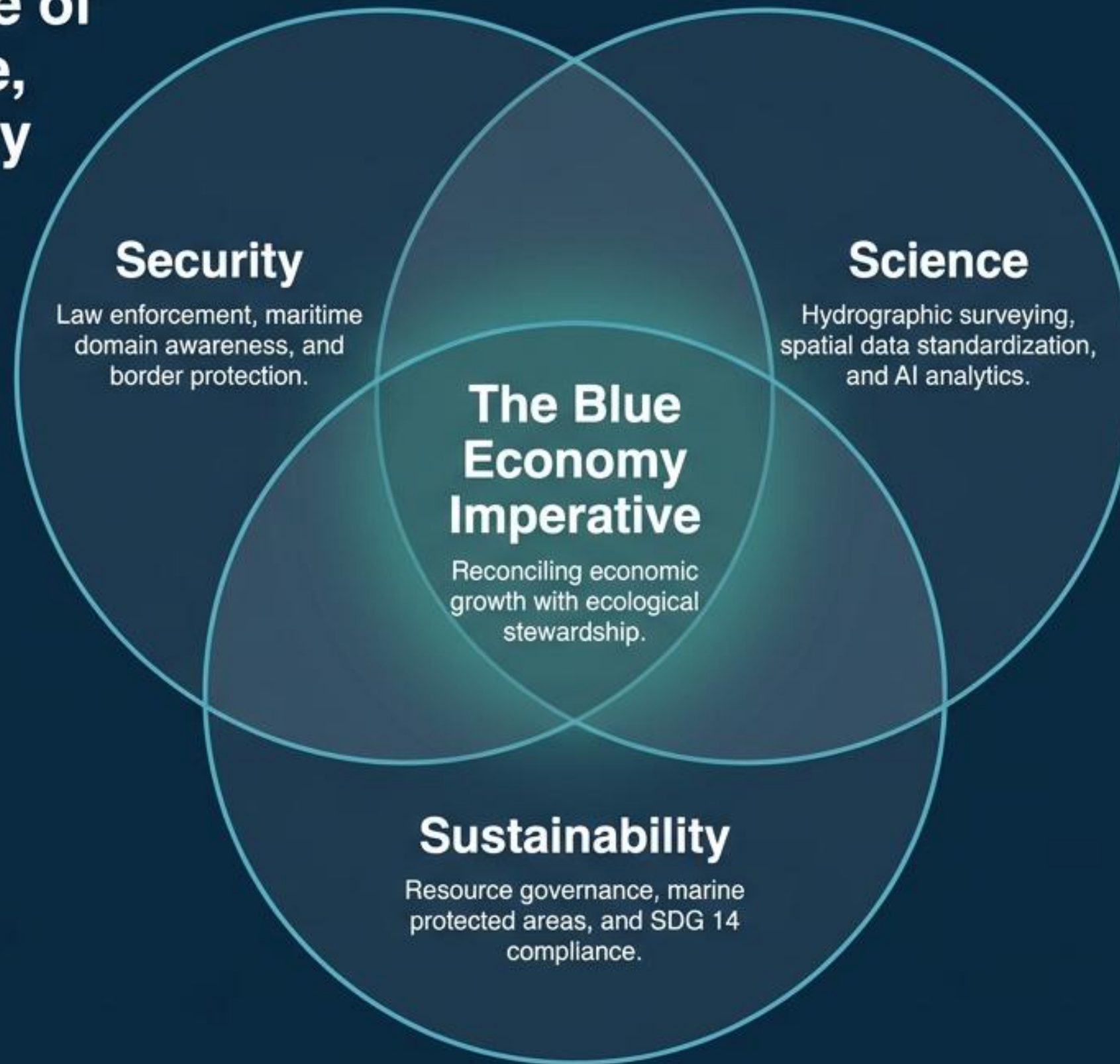
Advancing Thailand's Marine Geospatial Ecosystem

Establishing the Architecture for a
Technology-Driven Blue Economy

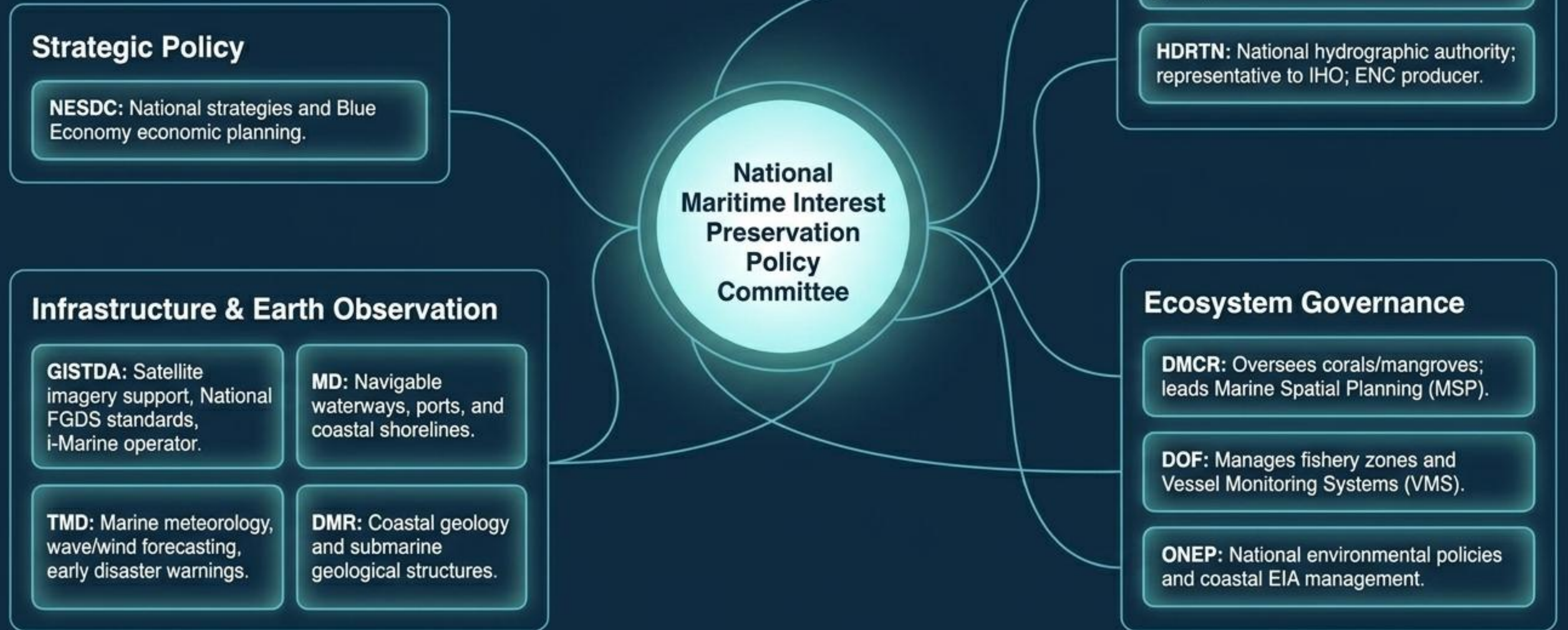
National Report:
Marine Geospatial
Information Management

The Convergence of Security, Science, and Sustainability

Thailand is advancing a coordinated national framework to transform a fragmented maritime environment into an interoperable, real-time intelligence network.

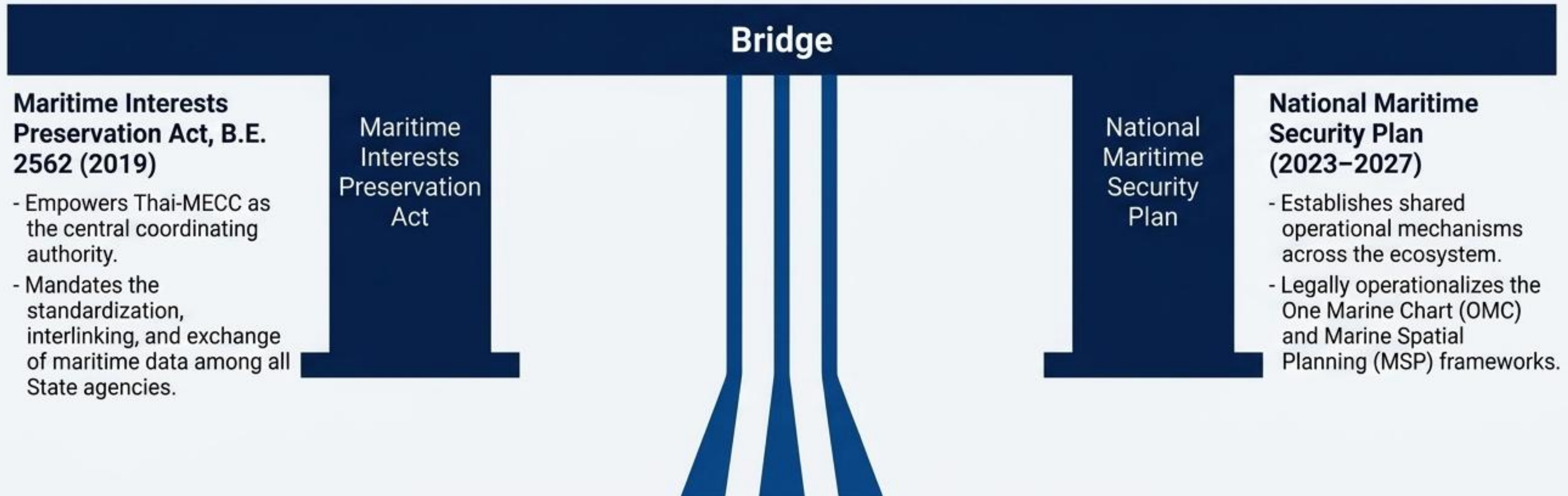
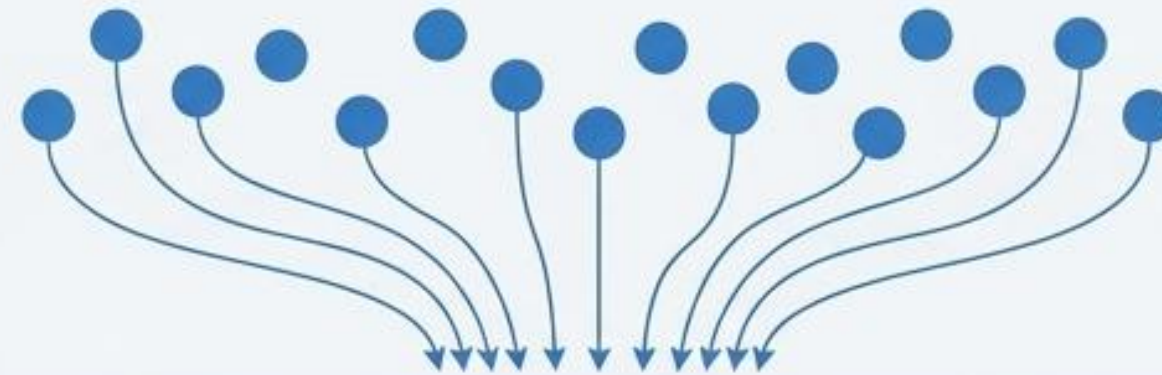


The Multi-Agency Marine Geospatial Ecosystem



The Strategic and Legal Governance Backbone

Institutional alignment is anchored in a coherent body of national legislation, legitimizing inter-agency data sharing and standardizing maritime data consolidation.



Engines of Change: Operationalizing the Framework

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01 | Maritime Security (Thai-MECC):
AI Analytics and Integrated Domain Awareness.

02 | Hydrographic Foundation (HDRTN):
Transitioning to the IHO Universal Data Model.

03 | Ecosystem Zoning (DMCR & DOF):
Implementing Spatial Planning Pilot Zones.

04 | Open Data Infrastructure (GISTDA):
Scaling the National Marine GI Portal.

11.48568

8.10192

12.28866

100.92887

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Thai-MECC: Integrating Maritime Domain Awareness

Operating under the National Maritime Security Plan, integrating real-time intelligence feeds for unified situational analysis.

Coastal Radar Network

Nationwide territorial expansion.

AIS Station Coverage

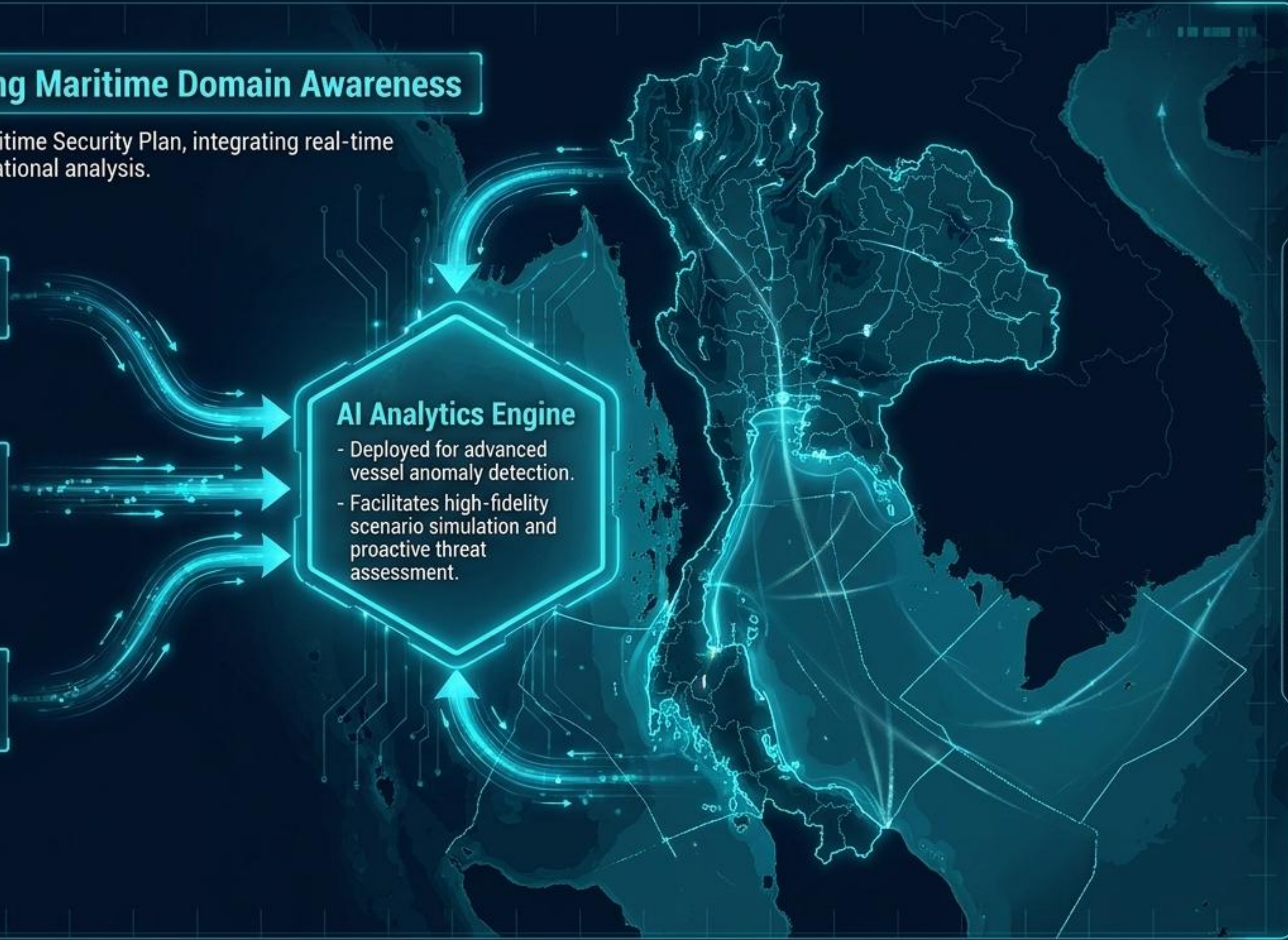
Coastal and satellite-based tracking across the EEZ.

UAV Surveillance

Medium- and long-range maritime monitoring capabilities.

AI Analytics Engine

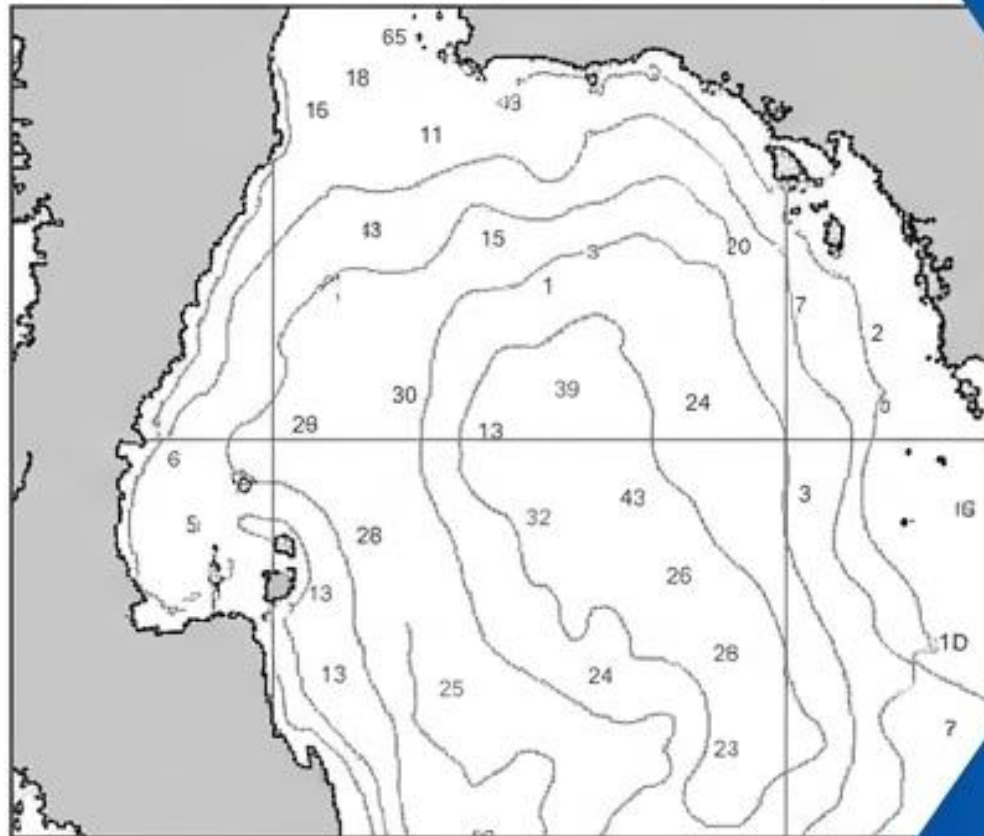
- Deployed for advanced vessel anomaly detection.
- Facilitates high-fidelity scenario simulation and proactive threat assessment.



HDRTN: Modernizing the Hydrographic Infrastructure

Executing the Royal Thai Armed Forces Geospatial Intelligence Development Plan, Phase II (2023–2027).

Legacy Formats
(S-57 Electronic Navigational Chart)



IHO S-100 Universal Hydrographic Data Model



Hydrographic Spatial Data Infrastructure (Hydro-SDI)

Strategic Leap: Full migration to enable seamless interoperability of complex environmental and navigational layers.

Aids-to-Navigation Information System

Remote monitoring and active control of navigational infrastructure across the Gulf of Thailand.

DMCR & DOF: Spatial Governance and Ecosystem Protection



DMCR (Department of Marine and Coastal Resources)

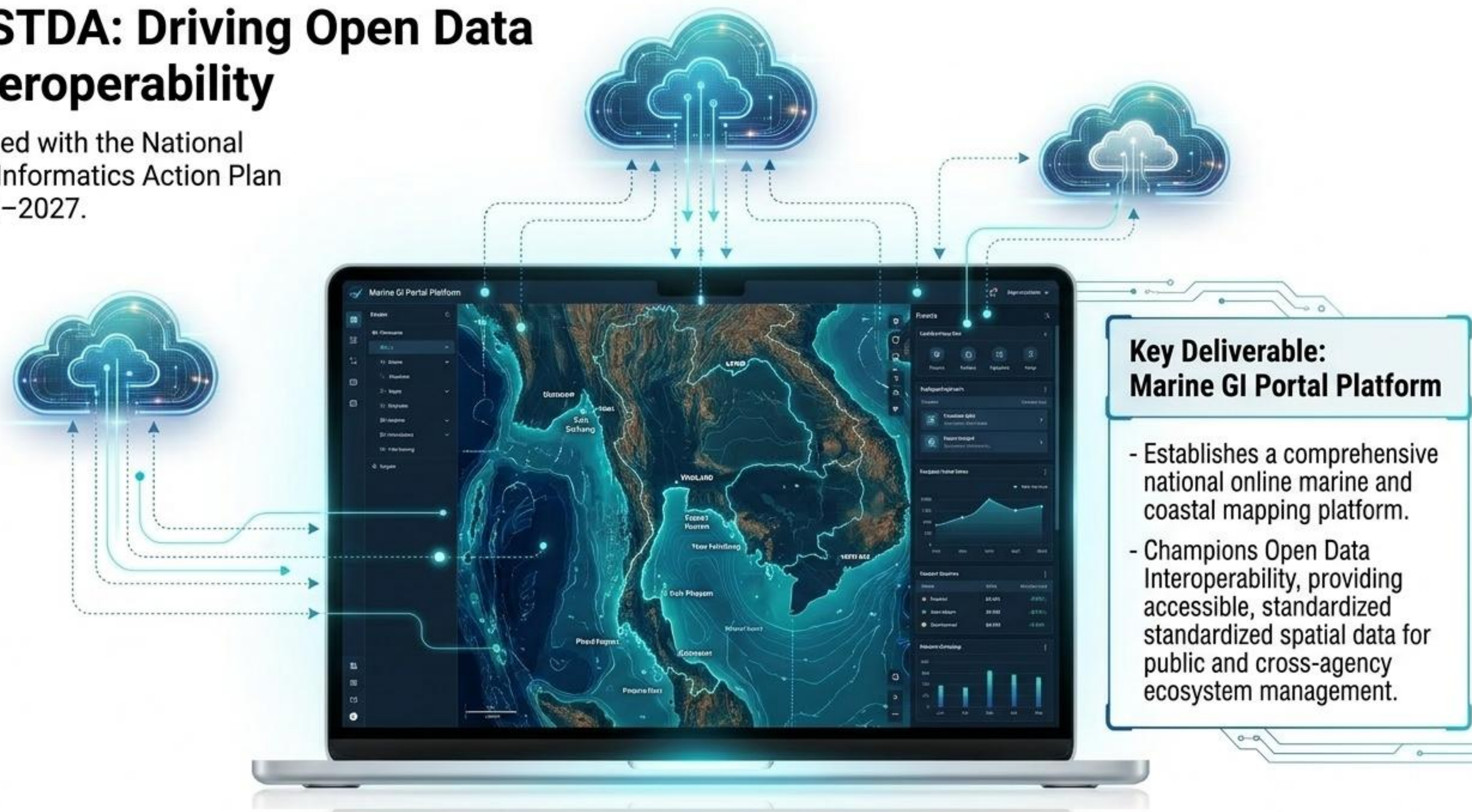
- MSP Pilot Programme: Operationalizing Marine Spatial Planning in key ecological and economic maritime zones.
- MPA Enhancement: Expanding Marine Protected Area designations and management protocols.
- International Collaboration: Bilateral MSP Collaborative Study with the First Institute of Oceanography (FIO), P.R. China.

DOF (Department of Fisheries)

- IUU Prevention Programme: Utilizing Vessel Monitoring Systems (VMS) and spatial information systems for strict fishing zone delineation and enforcement.

GISTDA: Driving Open Data Interoperability

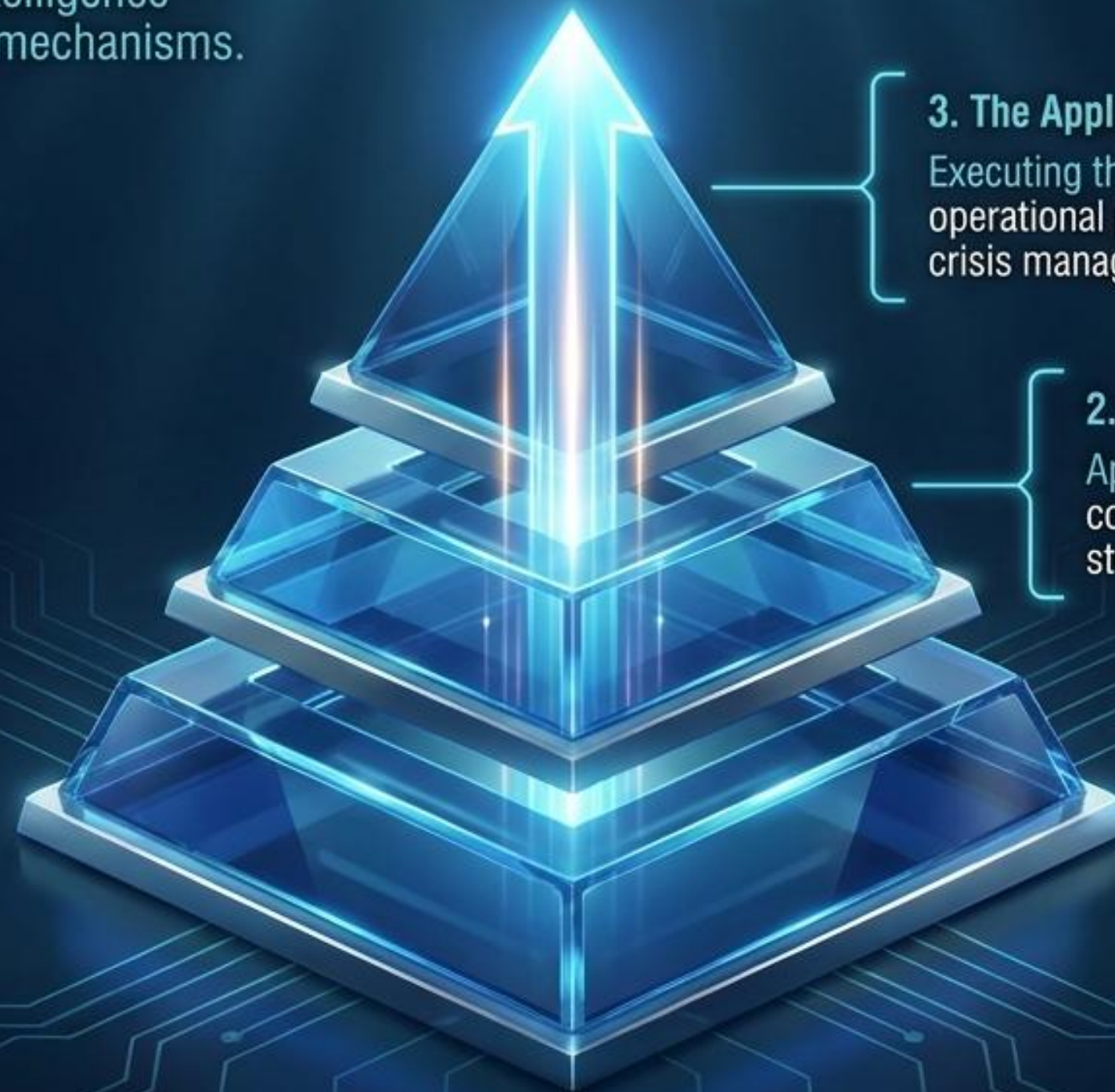
Aligned with the National Geo-Informatics Action Plan 2023–2027.



The Integrated Development Pathway

Thailand's roadmap to maritime intelligence relies on three interlocking spatial mechanisms. None can succeed in isolation.

Pathway to a Sustainable Blue Economy



3. The Application: One Marine Chart (OMC)

Executing the vision. A unified, real-time operational platform for decision-making and crisis management.

2. The Logic: Marine Spatial Planning (MSP)

Applying the rules. Reconciling human use, conservation, and economic activity through structured geographical zoning.

1. The Foundation: Marine Spatial Data Infrastructure (MSDI)

Standardizing the data. The transition to the IHO S-100 model ensures technical interoperability across all systems.

Pillar 1: Marine Spatial Data Infrastructure (MSDI)

Eliminating friction through universal data standards.

S-100 Transition

Moving entirely away from legacy formats to embrace the highly dynamic IHO S-100 Universal Hydrographic Data Model.

Centralized Metadata Library

Discovery & Exchange

Establishing a centralized Metadata Library to act as the single source of truth.

Global Compliance

Built in strict conformity with ISO 19115 and OGC (Open Geospatial Consortium) standards to guarantee seamless data discovery and standardized institutional exchange.

Bringing logic to the national maritime domain



Operational Execution

- Led by DMCR in concert with the National Committee.
- Actively operationalized in the Koh Sichang, Phang Nga Bay, and Koh Phayam pilot zones.

Strategic Capacity Building

- Elevating domestic capabilities through international frameworks.
- Deep engagement with the MSPglobal 2030 initiative under the auspices of IOC-UNESCO.
- Ongoing capacity enhancement via the FIO (China) bilateral partnership.

Pillar 3: Anatomy of the One Marine Chart (OMC)

Delivering a true Common Operating Picture (COP).

Stewardship: Managed by Thai-MECC; fully referenced to the WGS 84 horizontal datum.

Layer 4: Real-Time Meteorology
(TMD Live Weather & Wave Data).

Layer 3: Policy & Fishery Zones
(DOF delineated enforcement areas).

Layer 2: Conservation Boundaries
(DMCR Corals/Mangroves, MPAs).

Layer 1: Foundational Basemap
(HDRTN Bathymetry & Coastal Geometrics).



Bridging the Gap: Overcoming Challenges to Reach 2031

2024 Current Constraint

Data Architecture & Law

Fragmented silos; reliance on ad hoc MOUs due to legal constraints; NSC policy reform pending.

Geospatial Standards & ICT

Legacy hardware struggling with Big Data; fragmented S-57 formats.

Operational Capability

Marked deficit in specialized data science and hydrography skills; nascent AI analytics.



2031 Strategic Target

(Thai-MECC) Cross-Institutional Flow
API-based, real-time data ingestion into the unified OMC for crisis management.

(HDRTN) Full S-100 Implementation
Complete migration enabling the seamless overlay of complex environmental data layers.

(DMCR / National MSP) National MSP Framework
Full nationwide rollout powered by AI to perfectly reconcile tourism, fisheries, industry, and conservation.

2031: The Integrated Blue Economy

"A deliberate convergence of security, science, and sustainability."

- **Open & Standardized:** Marine information assets built entirely on interoperable, policy-relevant intelligence.
- **Economic & Ecological Harmony:** Driving SDG 14 mandates by perfectly balancing commercial growth (EEC ports, fisheries) with uncompromised ecological stewardship.
- **Global Leadership:** Fulfilling Thailand's commitments to global ocean governance through precision spatial management.

