



**First Expert Meeting of the UN-GGIM and IHO Joint Working Group
on Marine Geospatial Information
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Bridging Geospatial Information and the Law of the Sea: From Frameworks to Implementation

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Where rules exist → implementation problem

Legal norms already define rights/obligations, but they are **operationally dependent on geospatial precision.**

Where rules do not exist → design problem

Emerging practices (smart cables, integrated MDA, ABMTs beyond jurisdiction) require **co-drafting between legal and geospatial experts.**

Where the law defines geospatial data → Questions of data quality and legal validity

Not all data are legally meaningful.
Not all sources are legally reliable.

Where the law requires the production of geospatial data that do not yet exist → Question of trust

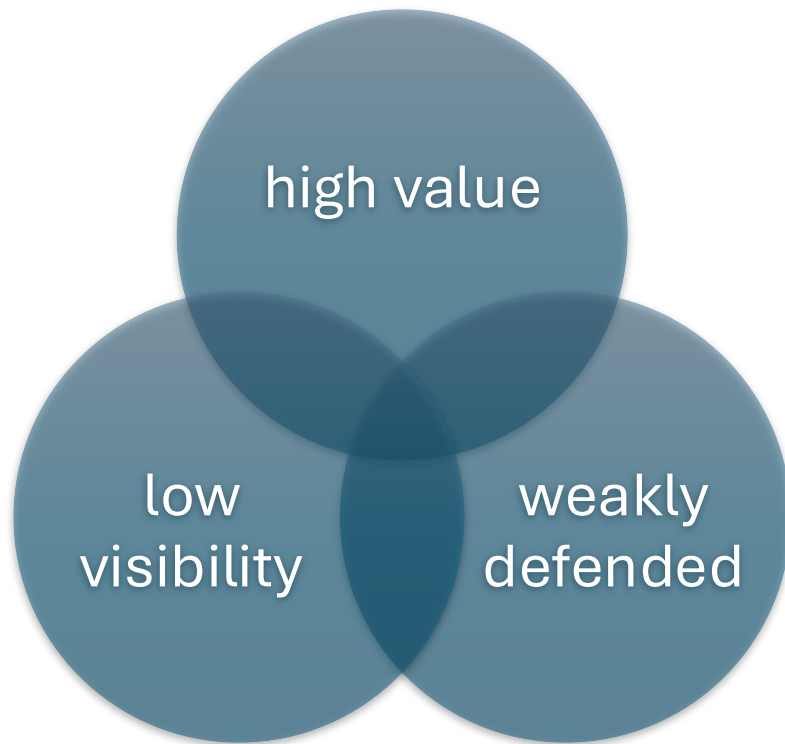
Terrestrial data vs. marine data.

(1) Protection of critical undersea infrastructure (CUI)

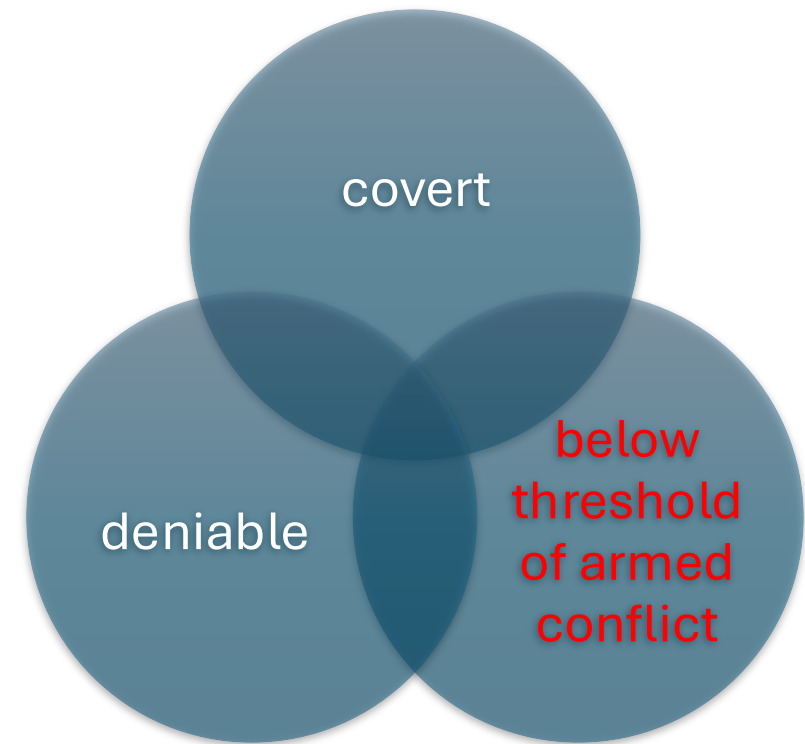
(2) Governance challenges associated with integrated maritime domain awareness (MDA) and data control

(3) Implementation challenges of the BBNJ Agreement

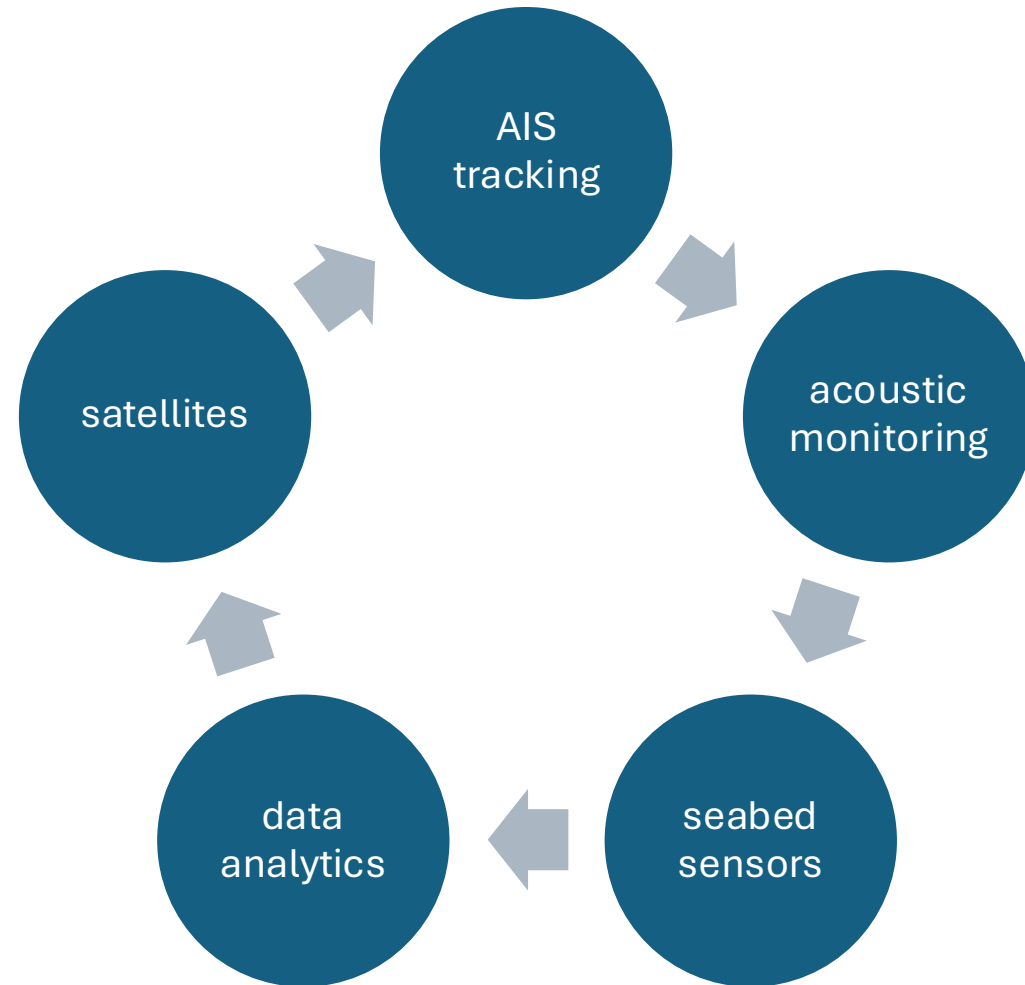
Nature of CUI



Nature of threats



Maritime Domain Awareness (MDA)



integration !!!

Private actors

Risks related to:

- **accountability and security**
- **transparency in decision-making**
- **protection of sensitive data**

physical vulnerability

+

operational gaps

legal ambiguity

governance challenges

UNCLOS **key gaps on CUI protection:**

→ no right of visit (≠ 1884 Convention)

→ no security zones (compared to the 500-meter safety zones on the surface)

→ no defined responsibility (and enforcement is weak)

→ “due regard” obligation is vague

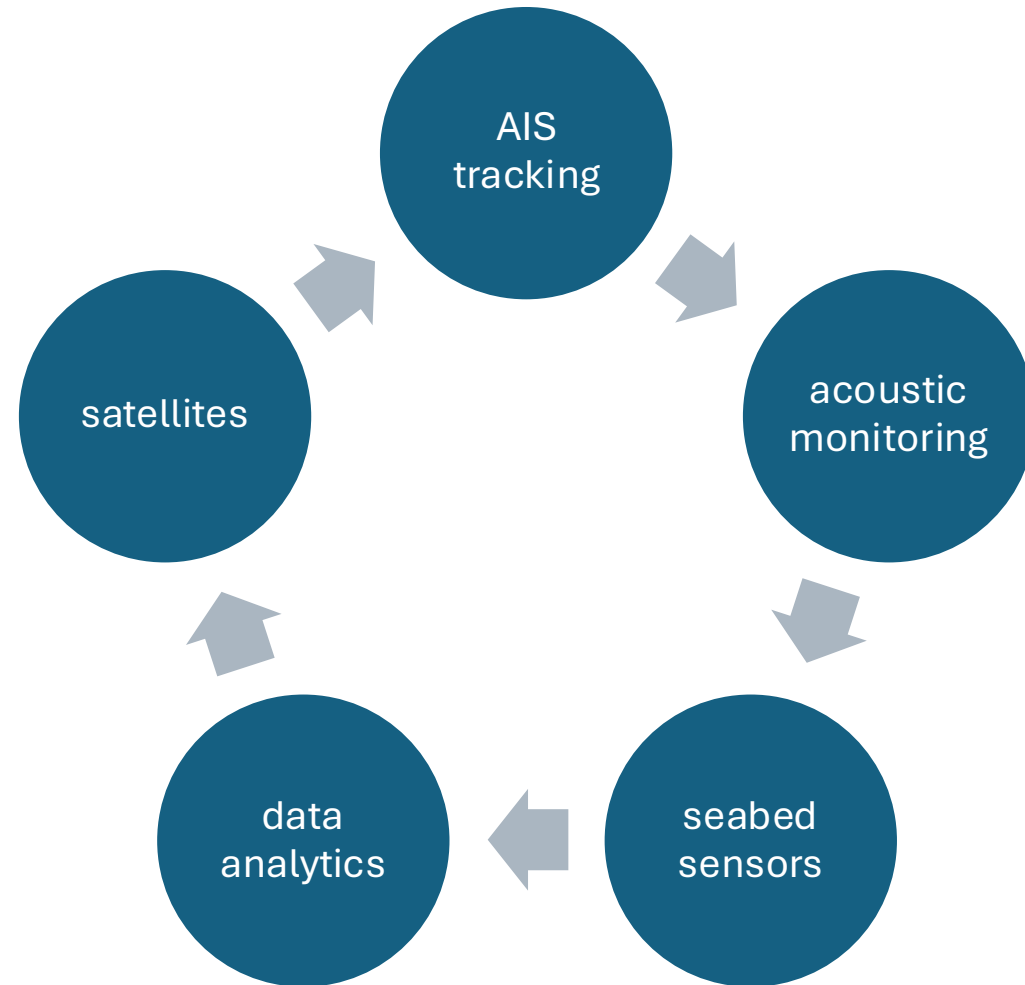
3 main issues

(1) seabed as a multi-use space → **overlay without integration**

(2) data can be → authoritative, but **restricted**
available, but **not legally authoritative**
simply **missing (or outdated)**

(3) from passive to sensor-enabled CUI → opportunity **vs.** challenge

Maritime Domain Awareness (MDA)



integration !!!

3 levels of uncertainty

(1) private actors → **structural dependency**

(2) proprietary models → **not fully transparent**

(3) access to sensitive data → **beyond public-interest purposes?**

BBNJ Agreement's **geospatial-related** elements

- (1) disclosure of marine genetic resource **(MGR)** collection sites
- (2) design of area-based management tools **(ABMTs)**

Disclosure of MGR collection sites

Legal perspective → transparency mechanism :)

Geospatial perspective → data-reliability problem :(

Coordinates are self-declared but expected to produce legal effects!

FROM → mapping known features
TO → assessing the credibility of reported locations of unknown features

FROM → data representation
TO → data validation frameworks

Establishment of ABMTs

~~data availability~~ → **spatial design**

→ multi-layer spatial analysis

→ mobility of patterns

→ buffer zones

→ adaptive or dynamic boundaries

What problems are we facing?

(1) in case of CUI → it is not (only) physical vulnerability

(2) in case of MDA → it is not the availability of data

(3) In case of BBNJ → it is not (only) to encode MGRs and ABMTs

Conclusions

→ where legal frameworks exist, they are not always operationally implementable

→ where geospatial data exist, they are not always legally reliable

→ integration is advancing, but without a fully defined governance structure

Recommendations

CUI → Develop practical guidance and reference models for **secure, tiered-access geospatial framework** for critical undersea infrastructure, enabling **integration of authoritative and restricted datasets** with **standardized quality indicators** to enable protection while respecting security constraints.

BBNJ → Develop methodological guidance for **geospatial validation, metadata,** and **data quality frameworks** supporting the implementation of BBNJ disclosure requirements and the spatial design of area-based management tools.

Governance MDA/data control → Promote guidance on a **public-interest-driven governance approach to integrated marine geospatial data systems**, ensuring transparency, traceability, and State oversight while avoiding excessive concentration of strategic data control.



Thank you!