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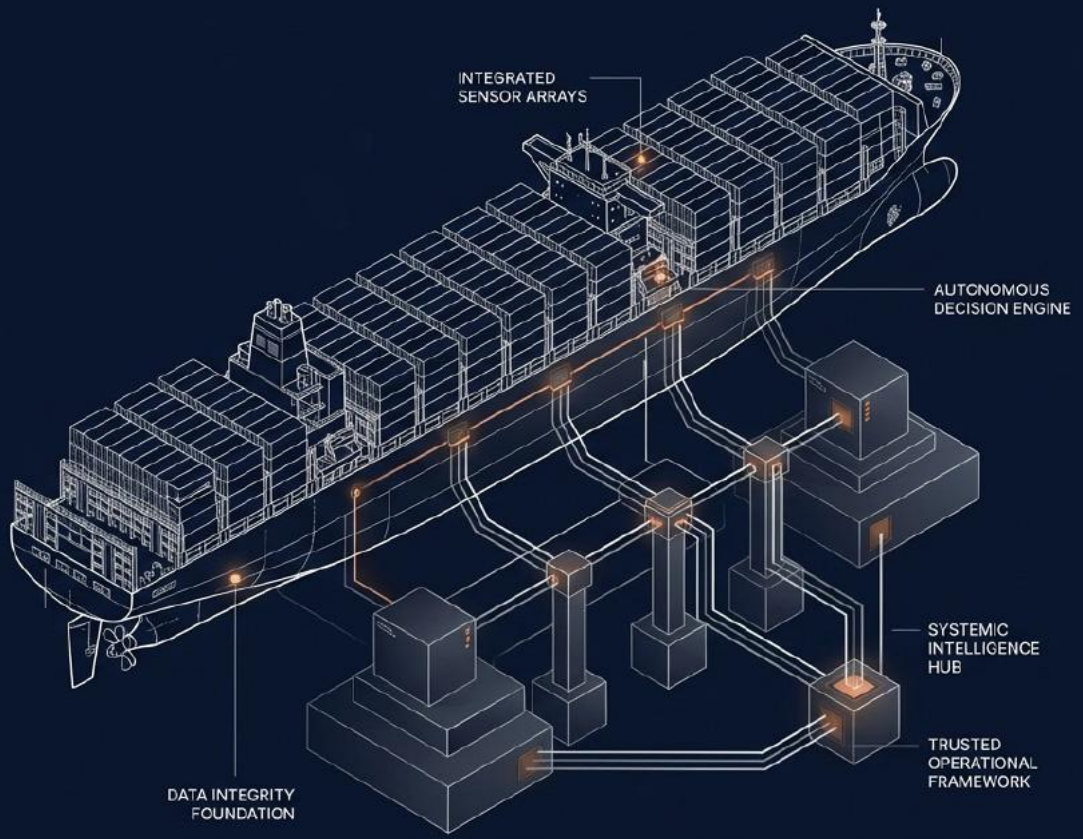
Strengthening data foundations for AI-powered analytics



Andreas Symeonidis
VP of Operations

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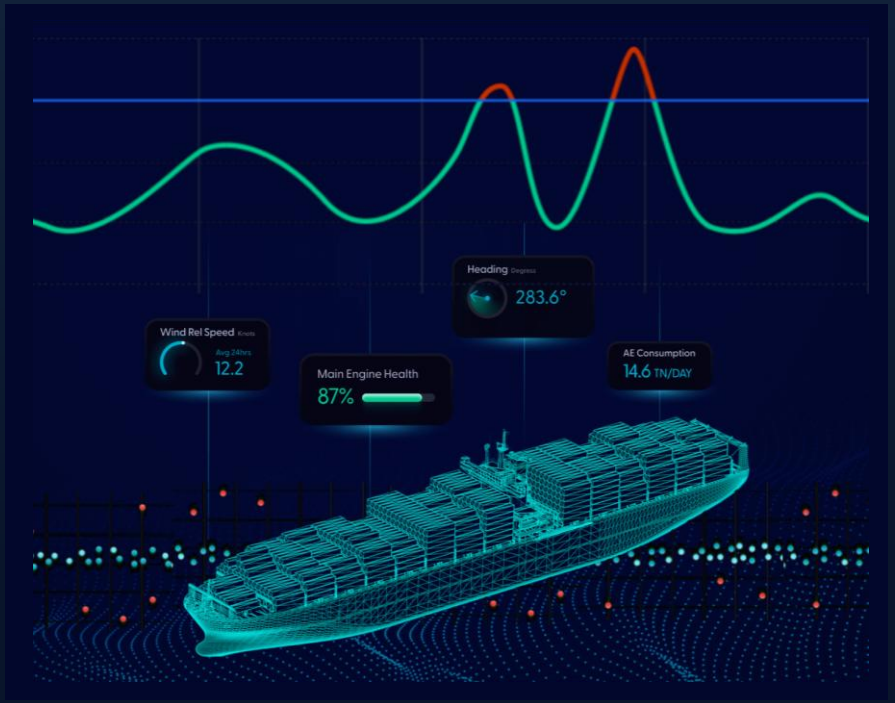
Telemetry-first

Fleet Performance Management

At Metis, we believe that comprehensive performance evaluation necessitates the use of high-frequency, automated telemetry data.

By leveraging data with verified quality, Metis provides valuable analytics that support informed decision-making, enhance operational efficiency, reduce costs, and improve safety.



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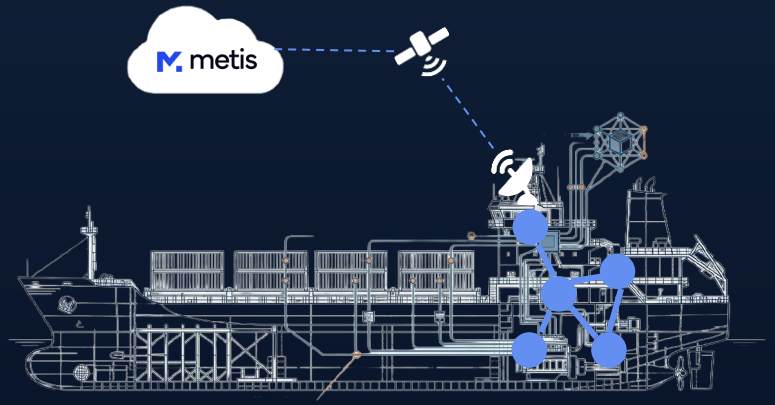
Telemetry

Automated HF Data Acquisition System (IoT)



Intelligent Analysis

Cloud-based Software Platform

Emissions · Operations · Performance · Machinery

Some info about the company

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Established in

2017

Since Oct. 2019, Metis is part of the well established, maritime-focused, sustainable solutions ERMATECH GROUP

Our People

55

- Naval Architects & Marine Engineers
- IoT experts
- Developers & Data Analysts
- AI & Machine Learning Experts

Global Presence

Well-established footprint on key locations worldwide

Reference Customers

Key indicative references

more than

500

contracted vessels

Atlantic Bulk Carriers

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Artificial Intelligence is fundamentally transforming maritime operations.

Faster, more informed decision making across the entire maritime value chain

Technical: Predictive machinery diagnostics.

Energy: Decarbonization and emissions control.

Operations: Dynamic voyage optimization.

Chartering: Data-driven commercial intelligence.

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The value of AI-powered analytics depends on a single critical factor :

Data Integrity

Without a strong foundation, even the most advanced algorithms do not just fail – they can actively mislead.

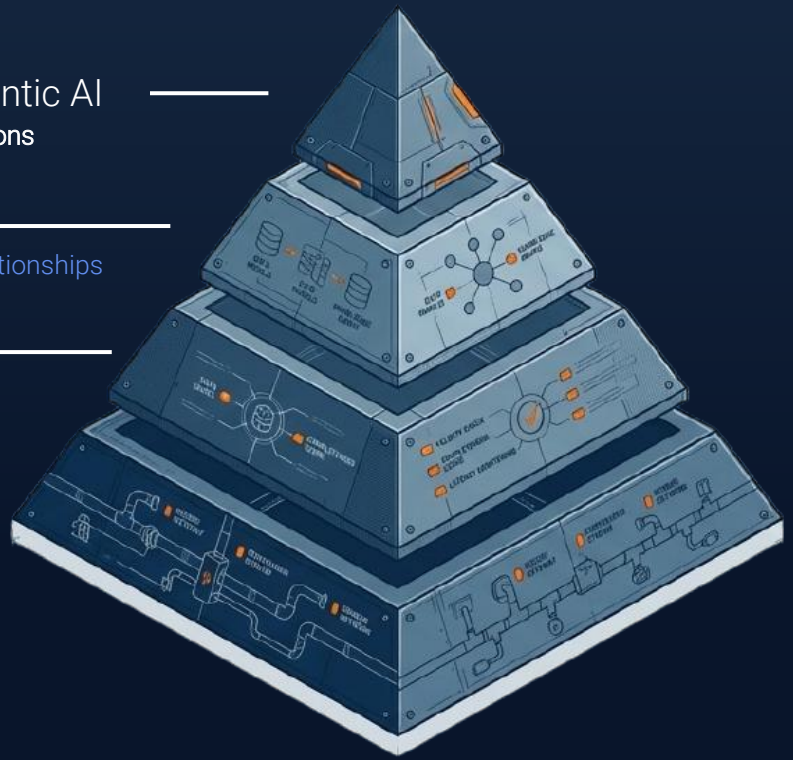
The Architecture of a trustworthy AI Framework

4, Analytics & Agentic AI
Predictive analytics, **Actions**

3. Semantic Layer
Meaning, methodologies, relationships

2. Data Health Framework
Valid, complete, timely data

1. Resilient IoT Infrastructure
Secure, continuous **Data** flow

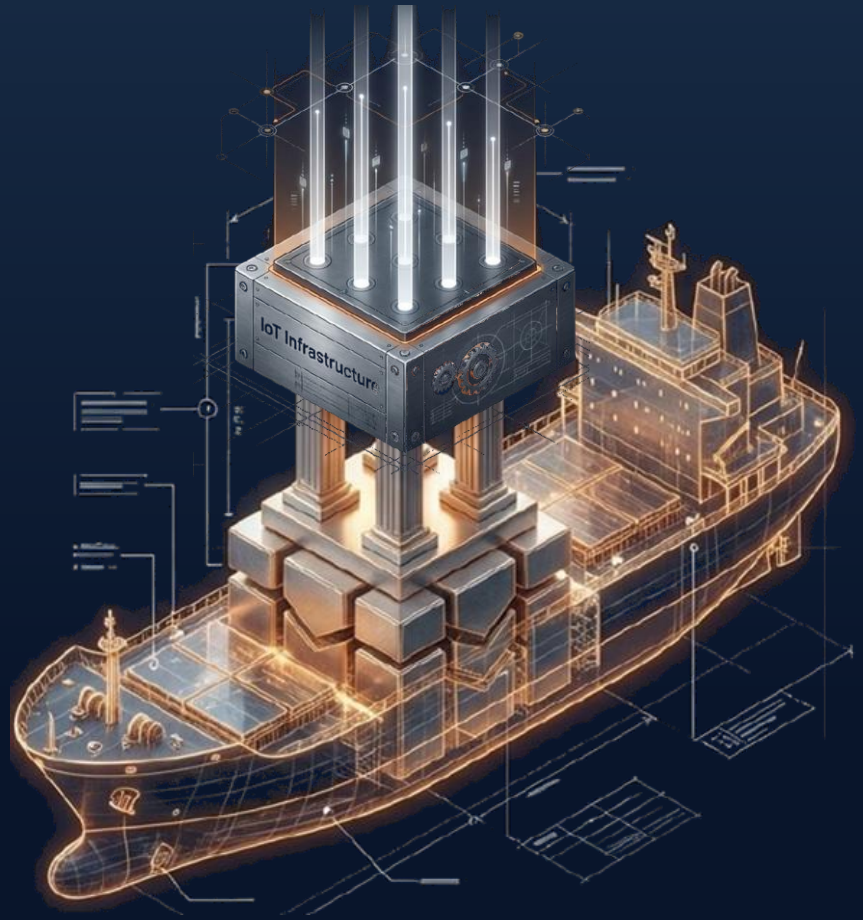


LAYER 1

Resilient IoT

is a must for reliable analytics

- **Centralized management:** Fleet wide monitoring of the equipment
- **Proactive detection:** Identifying connectivity failures and systemic hardware anomalies
- **Self-Healing Architecture:** Automatic restoration of critical services



LAYER 2

Data Health

The 3 Pillars approach

When data quality declines, the reliability of operational and strategic decision making degrades with it.

To produce reliable AI and analytical models, telemetry must satisfy **three essential conditions**

LAYER 2

Data Health

The 3 Pillars approach

Validity

- Continuous data validation against expected ranges, physical behaviour and engineering standards
- Identification of sensor drift and abnormal patterns

LAYER 2

Data Health

The 3 Pillars approach

Completeness

- Ensure a continuous data flow
- Identification of missing telemetry, communication gaps, inconsistent sampling rate.

LAYER 2

Data Health

The 3 Pillars approach

Timeliness

- Ensure data are received on time
- Identification of high latency making data obsolete

The Data Health Framework

Continuously safeguards fleet telemetry

- Continuously validates, monitors and safeguards fleet-wide telemetry
- Ensures that every recommended action and insight is grounded in verified, high-integrity data

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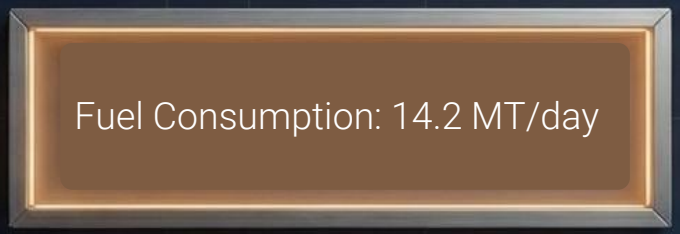
A reliable KPI is useless if the system does not understand what it represents.

What was the weather?

Which filtering logic was used?



What are the operational assumptions?

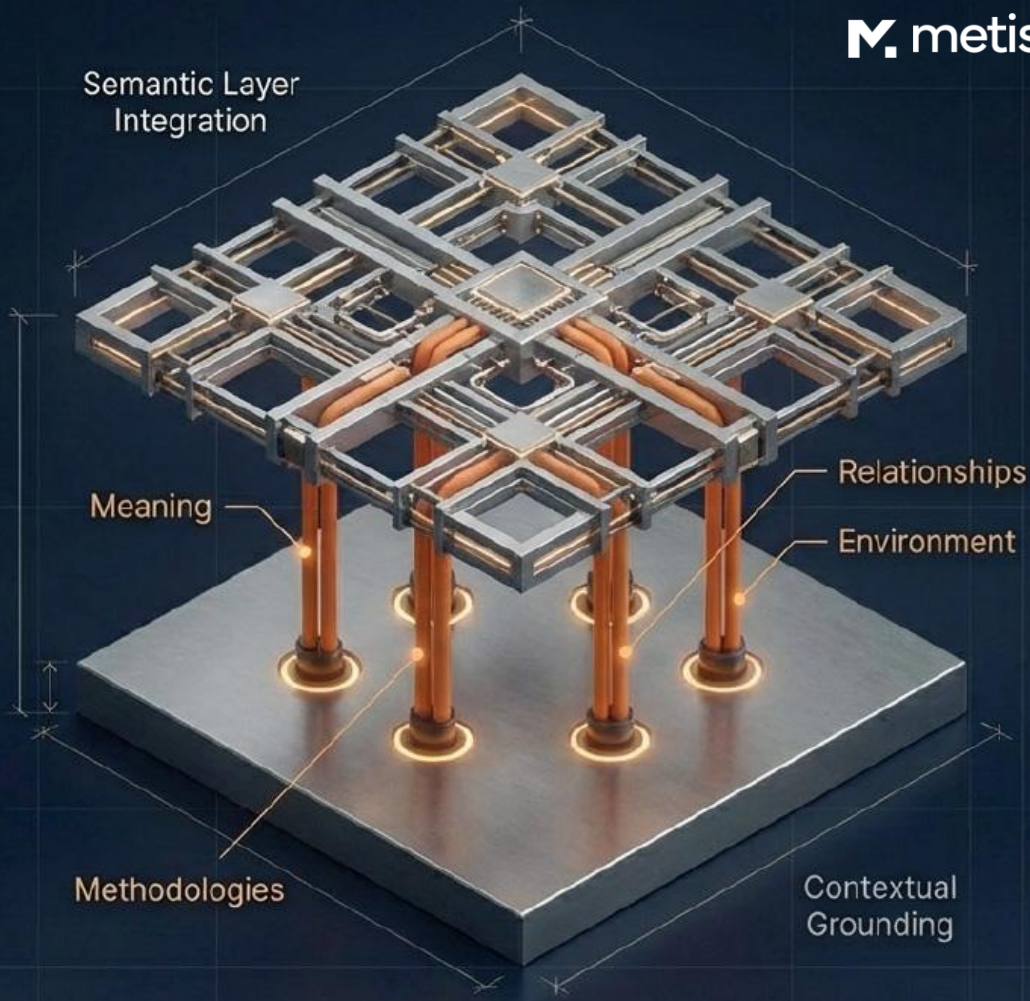
What are the correction factors?

LAYER 3

Semantic layer

Provides critical contextual intelligence

- The Meaning
- The Methodologies
- The Relationships
- The environment



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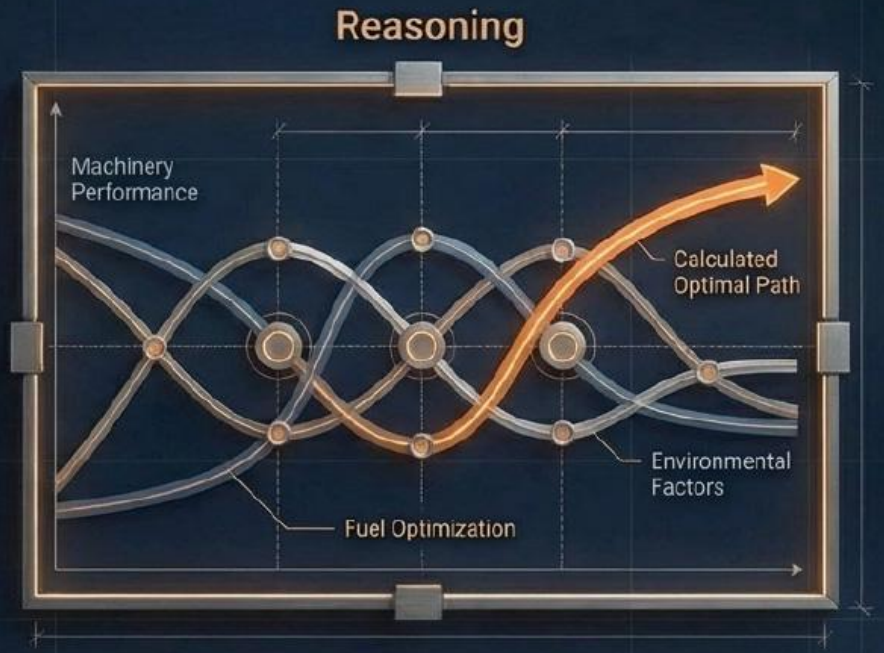
AI literally moves from being a simple **pattern matcher** to a **reasoning engine**.



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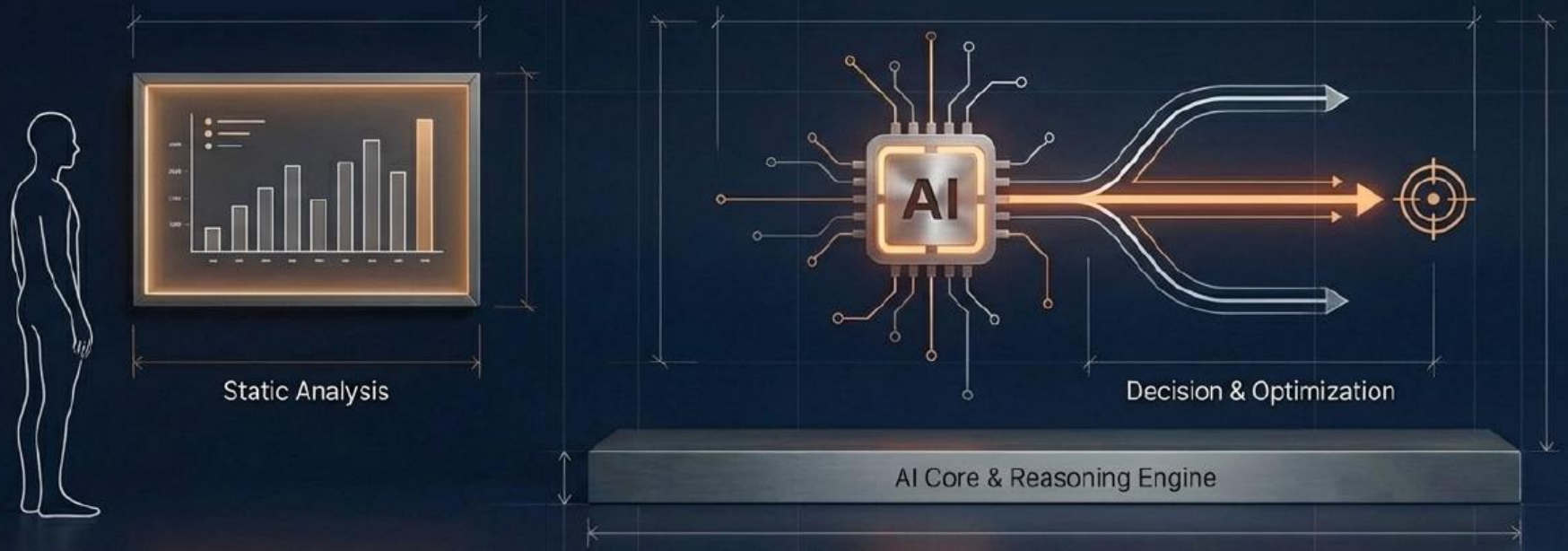
Modern AI agents move from

Passive dashboards

Active reasoning, recommendations



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Reliable Data and solid Contextual Intelligence unlock the true power of AI

Resilient IoT

(Infrastructure Health)

+

Healthy Data

(Validity, Completeness, Timeliness)

+

Semantic Context

(Meaning, Methodology, Relationships)

=

Trustworthy AI foundations

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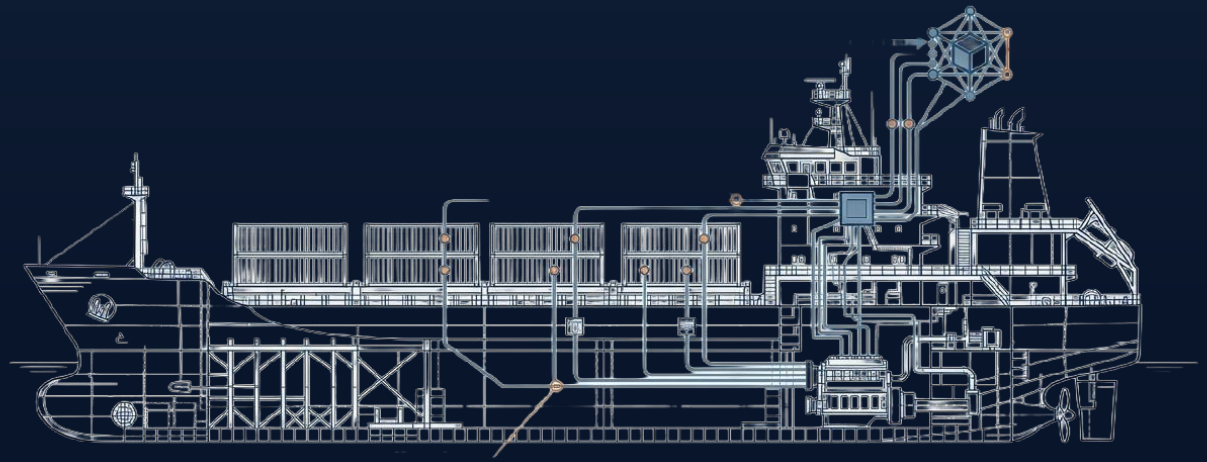
Transparency builds Trust



metis Beyond the voyage

Andreas Symeonidis
VP of Operations