

***Stay ahead of new
emission schemes
and actively drive
decarbonisation***

Digitalization for Smart Optimization

-Suhas Gadkari

ascenz  **marorka**
By **GTT**

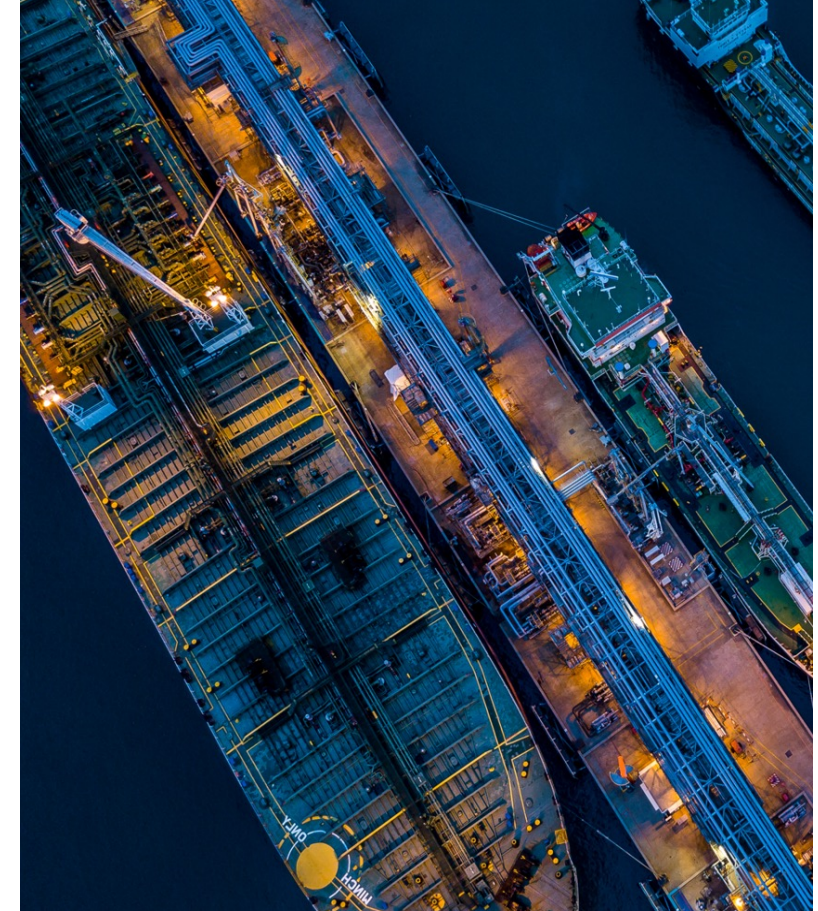
AGENDA



Our Company



Our Solutions

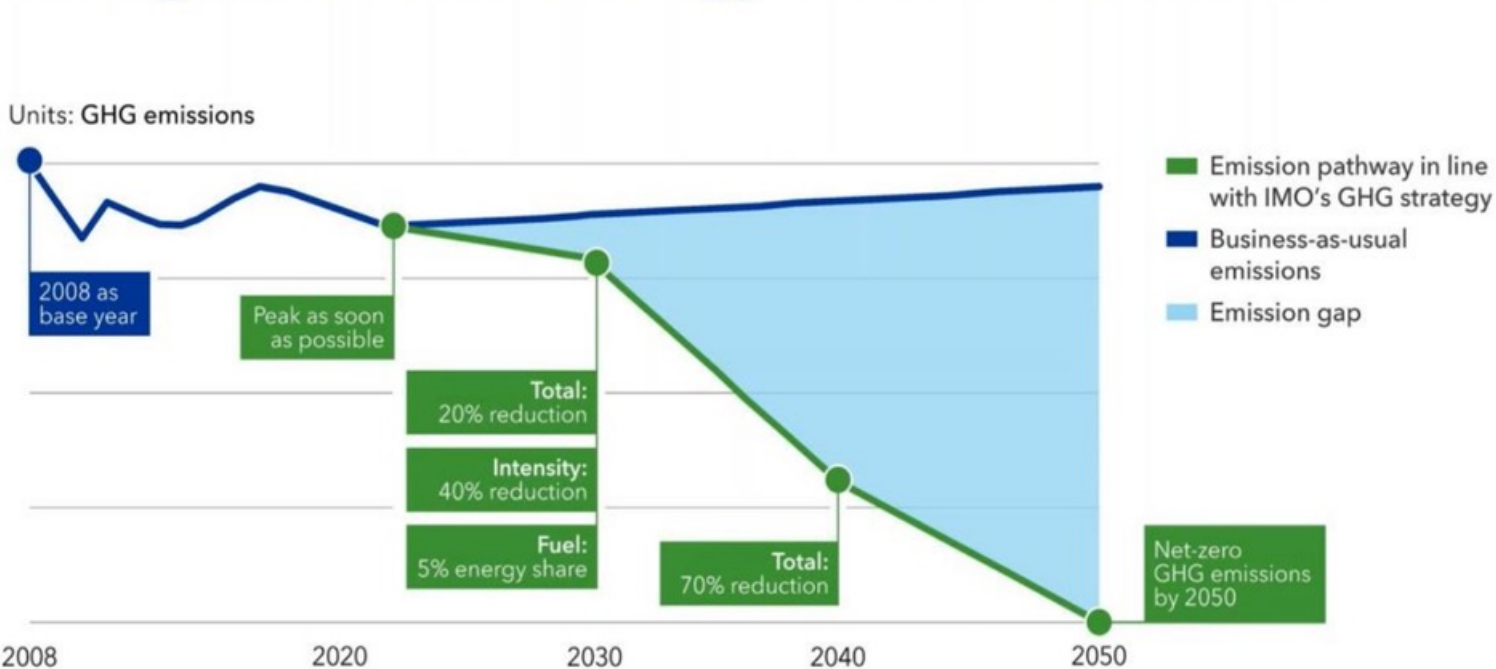


Case Studies

TRANSITION TOWARDS NET ZERO

- IMO initiatives.
- Regional Initiatives: ETS.
- Voluntary Initiatives: Poseidon Principles, Green Voyage 2050 etc.

Strengthened IMO strategy on GHG reductions

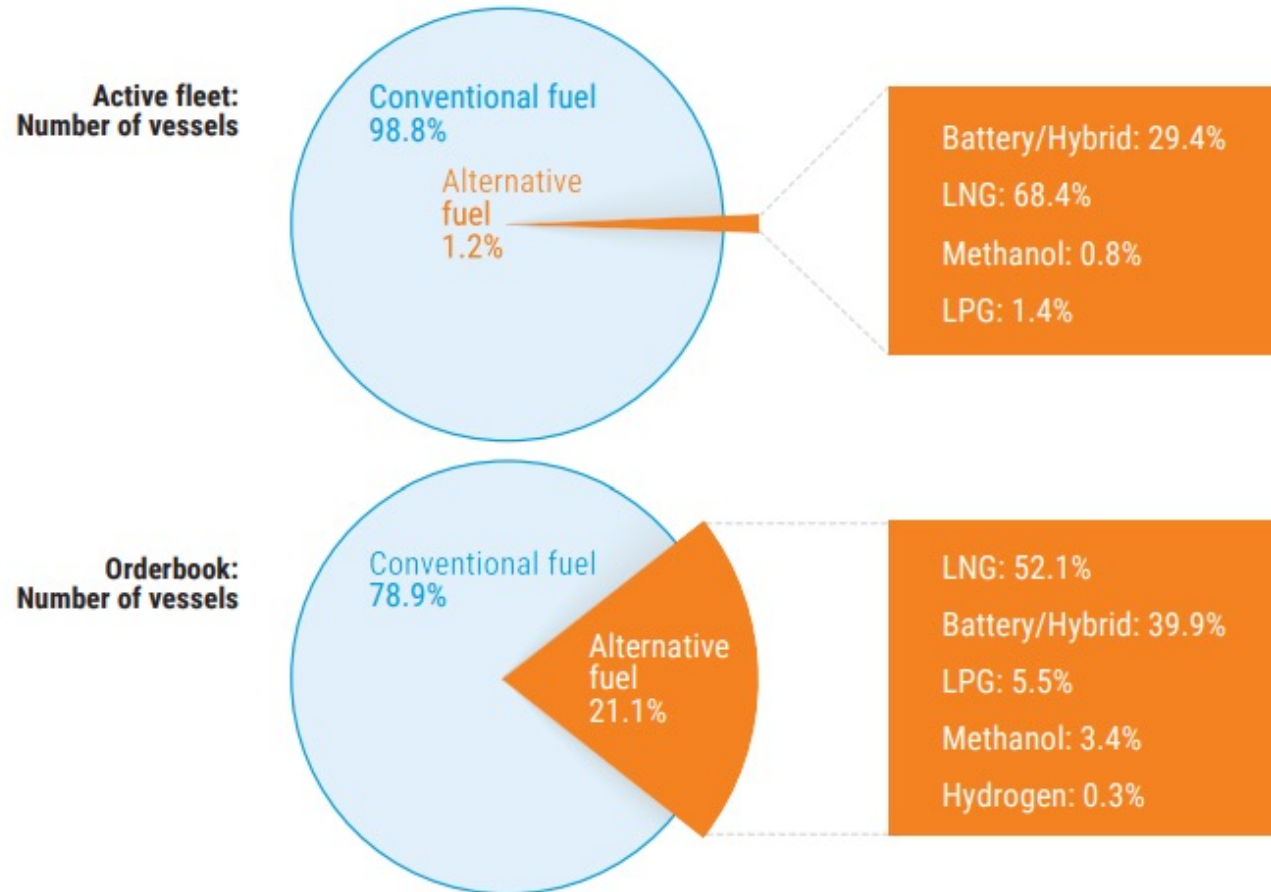


Total: Well-to-wake GHG emissions; Intensity: CO₂ emitted per transport work; Fuel: Uptake of zero or near-zero GHG technologies, fuels and/or energy sources

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ENERGY TRANSITION: STILL IN INFANCY

- Efficiency Technologies.
- Fuel Technologies.
- Operational Measures-
Digitalization.

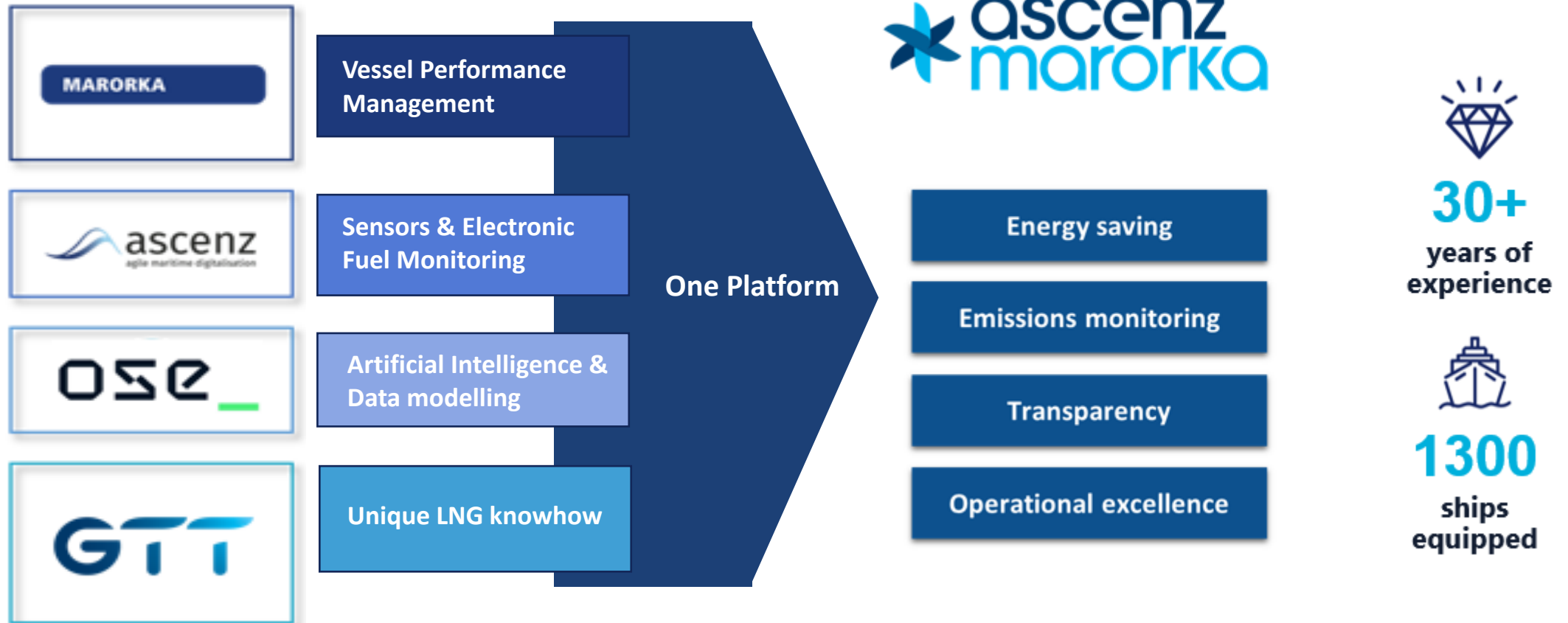


Source: UNCTAD based on DNV (2022a).



Our Company

A GTT GROUP COMPANY





 **3 Main Clusters:**
France, Iceland and
Singapore

 **Teams in China, Bulgaria,
UAE, UK, Greece, Mexico,
Taiwan, Nigeria, Malaysia
and India.**









GLOBAL PRESENCE

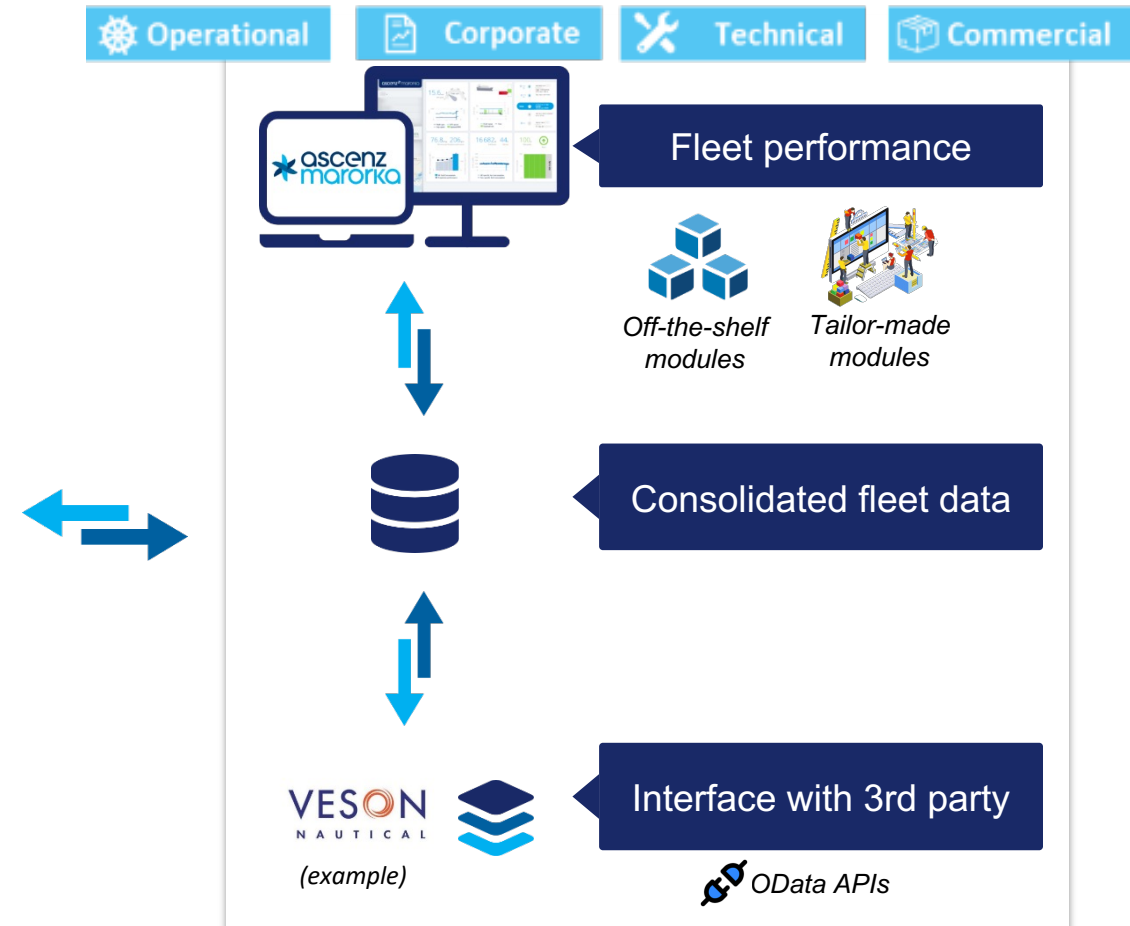


Our Solutions



FLEXIBLE AND CUSTOMIZABLE SETUP


















	Manual Fleet	Light Fleet	Standard Fleet	Advanced Fleet
				
 Noon Data	✓	✓	✓	✓
 AIS Data		✓	✓	✓
 Bridge		✓	✓	✓
 Flow meter			✓	✓
 Shaft power			✓	✓
 AMS				✓
 FGHS				✓








COMPREHENSIVE DIGITAL PLATFORM

One-stop-shop platform to achieve performance, compliance and safety

PERFORMANCE

VOYAGE MANAGEMENT  Time  Consumption  Speed	PERFORMANCE MONITORING  Charter Party  Propulsion Performance  Fleet Benchmark	TRANSPARENCY  Bunkering Monitoring  Ship activities
PERFORMANCE OPTIMISATION  Weather Routing  Voyage Optimisation  Trim Optimisation  Machinery Usage  TCE Optimisation	REPORTING & COMPLIANCE  Crew Reporting  Regulatory Reporting  Emissions and CII  ShaPoLi Management	

SENSORS

 Mass Flow Meter	 Shaft Power Meter
 Bunkering Monitoring	 Gas analyser
 Emissions measurement	

LNG CARGO & FUEL SOLUTIONS

REMOTE MONITORING  BOG  SLOSHING	BOIL-OFF MODULES  LNG Ageing  HEEL  LNG OPTIM	SLOSHING MODULES  SLOSHING PREDICTION  PUMP TRIPPING  RISK-BASED INSPECTION	SAFETY  ROLL-OVER  EMERGENCY DEPARTURE  EMERGENCY RESPONSE SERVICE
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NEWLY LAUNCHED SERVICES

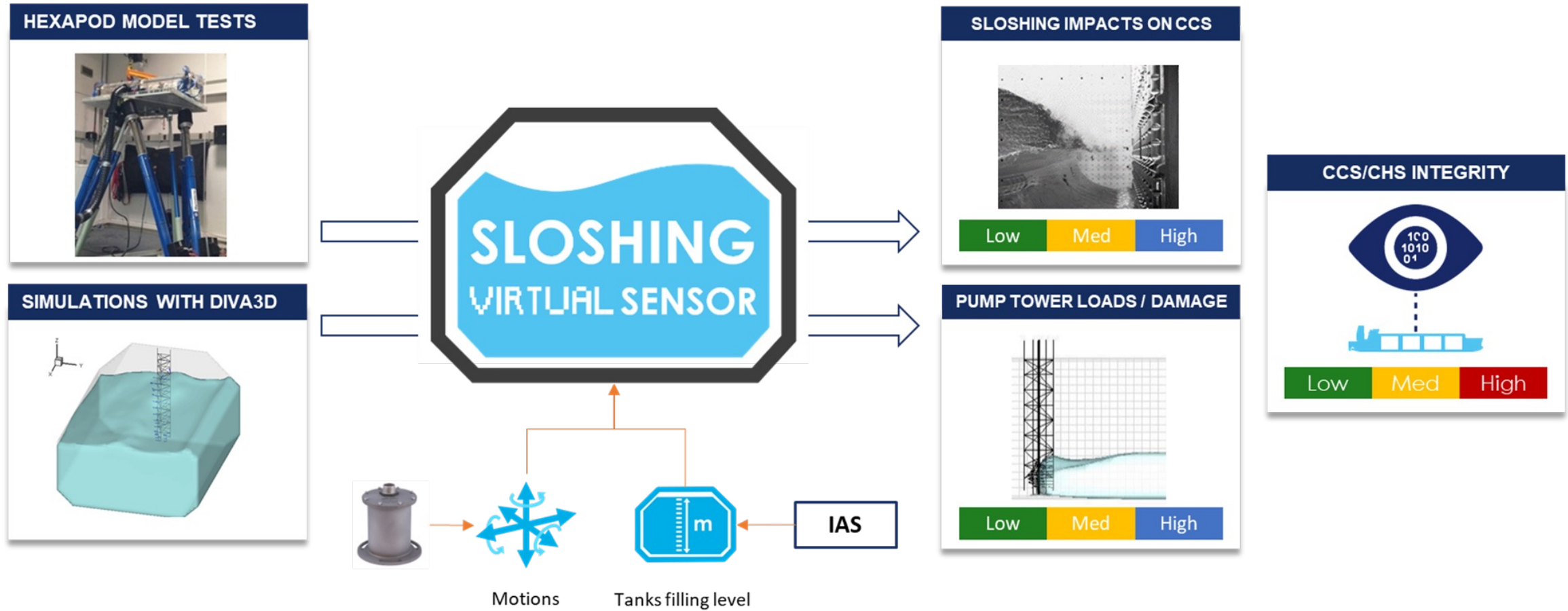
Weather Routing-Voyage Optimization



Real time Fleet Performance Monitoring Centre



CARGO TANK PREDICTIVE MAINTENANCE



Extend tank inspection period beyond 5 years

PRODUCT CATALOG

Monitoring & analysis

Fleet monitoring - Map

Data discovery

Fleet monitoring - KPIs

Smart reporting

Voyage monitoring

Voyage management (targets)

Charter Party Monitoring

Performance analysis

ShaPoLi (EEXI)

BunkerXChange

Schedule evaluation

Geofencing

Performance optimization

Machinery optimization

Trim optimization

Weather routing

Real-time fleet perf. center

Carbon intensity index (CII)

CII monitoring

CII projection

CII simulation

Sensors

All sensors

LNG features

LNG cargo monitoring **LNGc** **LFS**

LNG Calculator **LNGc** **LFS**

Emergency departure **LNGc**

Heel management **LNGc**

LNG Ageing **LNGc** **LFS**

Pump tripping **LFS**

Cargo conditioning **LNGc**

LNG Optim **LNGc**

Sloshing management **LNGc**

Roll over prevention **LNGc**

HEARS Connect **LNGc** **LFS**

Sloshing Virtual Sensor **LNGc** **LFS**

POWER **LNGc**



Ascenz Marorka?

References

Tailer-made AI

Our approach

Use cases

Integrated voyage mgt



Architecture

Cybersecurity

Data quality

NEWS

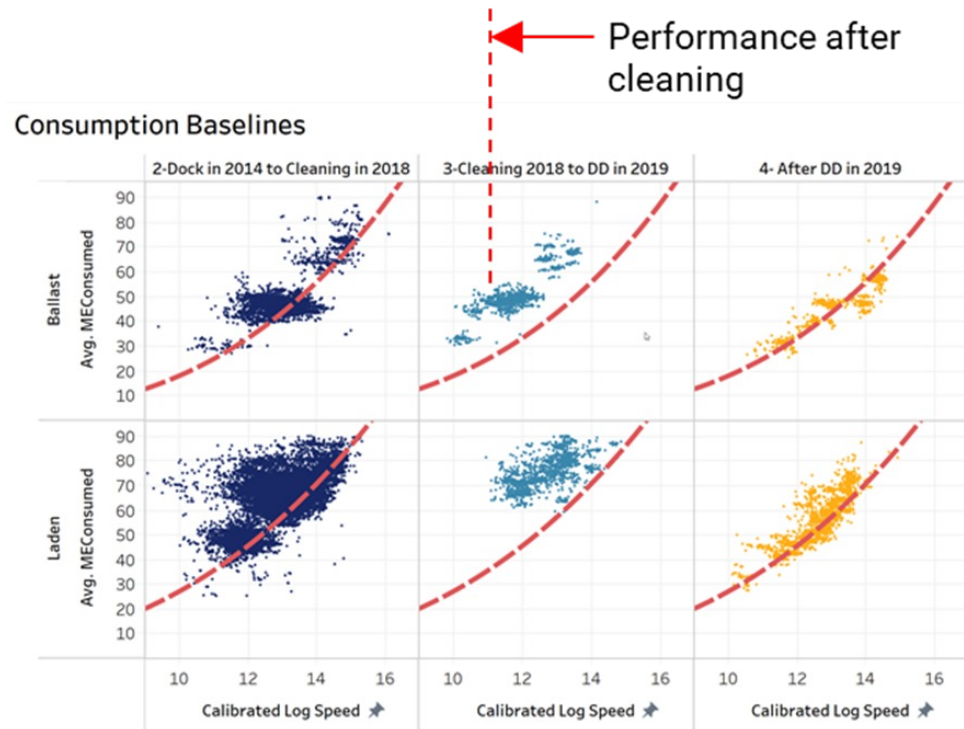


Case Studies



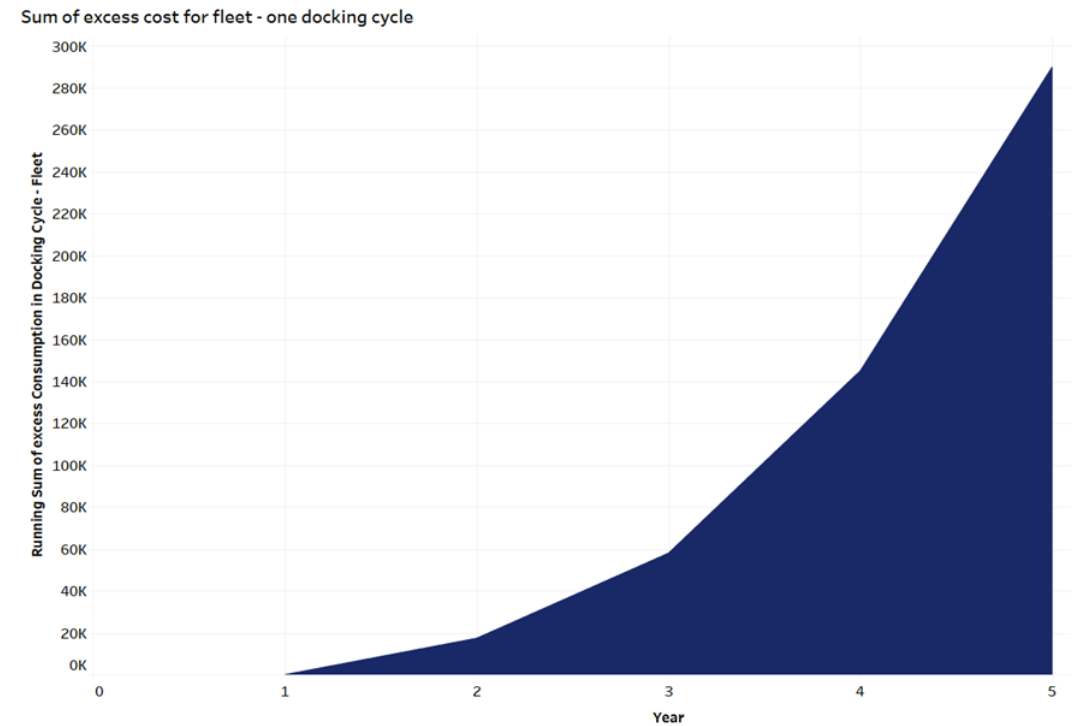
HULL FOULING

COATING PERFORMANCE ANALYSIS



Data shows that performance of vessel is far from baseline after cleaning.

COST OF HULL RESISTANCE FOR ENTIRE FLEET



Average annual cost of resistance for this particular fleet amounts to 58,000 MT of Fuel \approx 30 M USD

OFFSHORE VESSELS: EFMS

- **Key problems:** Lack of accurate operational data.
- **Our Solution:** Coriolis Flow Meters to capture engine consumption and bunkering data were installed.
- **Results :**
 - Better Correlation between fuel costs and actual consumption, reducing fuel cost by ~10%.
 - Full view of operations enabling transparency in operations
 - Reduce Bunkering disputes

- **Unexplained High Fuel Consumption.**

- **Installation of our EFMS solution.**

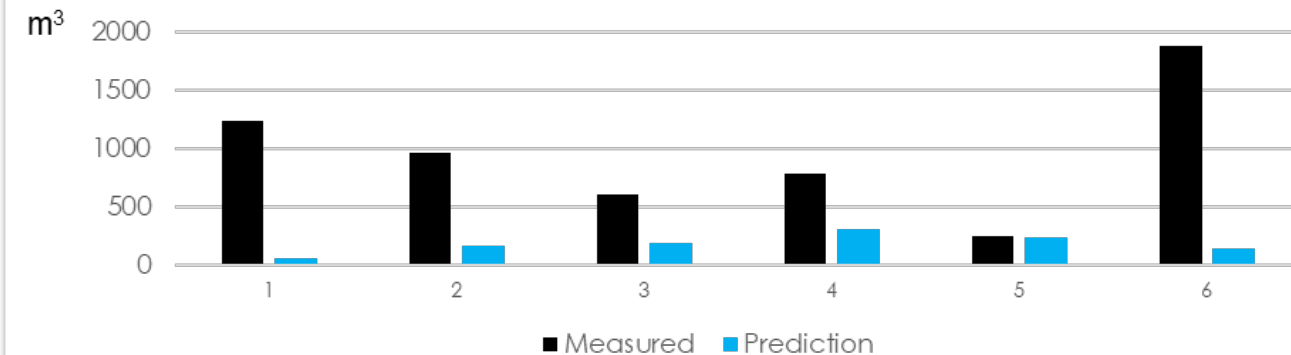
Baseline month (2019)	Measured month (2020)	Difference (Ltr)	Difference (%)
May	May	116,076	55.0
June	June	93,883	50.1
July	July	132,744	62.2
Aug	Aug	103,423	48.4
Sept	Sept	65,820	48.2
Average difference		102,389	52.8

- **The difference in reported fuel consumption and measured fuel consumption showed an average difference of 52.8%, which is about 0.5M USD/vessel/year.**

HEEL OPTIMIZATION

- Tendency to over estimate heel needed for transit and tank conditioning.
- Key items to model-
 - Heel evaporation,
 - LNG for consumption,
 - LNG for cooling down,

- On analysed trips, our model calibrated would have reduced ROB by 70% (750m³/trip)



Heel Control Panel

Tank Status
Describe how the tanks will be used

Tank 4 Tank 3 Tank 2 Tank 1

Heel-Out

Cooling Down
Cooling down (days): 2
Speed during cooling down (kn): 17

Charterer Margin (m³)
0

Voyage speed profile Basic Advanced

Edit speed and manage your trip duration

Days at anchorage (0-10 kn): 0
Days at economic speed (10-14 kn): 0
Days at high speed (14-16 kn): 0
Days at full speed (16-18 kn): 20

Power curve
Apply correction: +5%

m³/d

— Consumption +5%
— Consumption baseline

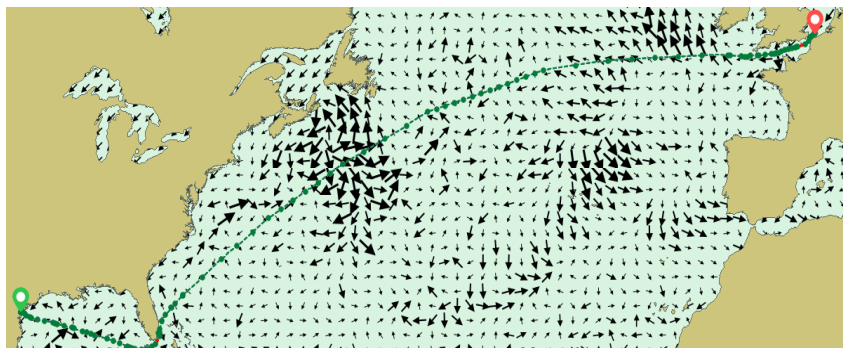
Results

Estimated LNG Heel: 3173 m³

Predicted cooling down quantity: 359 m³

LNG for propulsion BOG in ballast Cooling down

Cargo conditioning



Route	USCRP → FRDKK
Distance (nm)	5027
Volume_i (cbm)	171340
Loading temp (°C)	-160.2
LNG comp (%mol)	C1 : 96.4 N2 : 0.04



Reliq forbidden

Unl. Temp.	Speed (kn)			
	11.5	14.1	16.2	18.6
-159.4	1 241	1 404	1 497	1 819
-159.6	1 576	1 404	1 497	1 819
-159.8	1 911	1 503	1 497	1 819
-160.0	2 245	1 838	1 591	1 819
-160.2	2 579	2 172	1 926	1 819



Reliq authorized

Unl. Temp.	Speed (kn)			
	11.5	14.1	16.2	18.6
-159.4	1 140	1 404	1 497	1 819
-159.6	1 187	1 404	1 497	1 819
-159.8	1 233	1 418	1 497	1 819
-160.0	1 280	1 465	1 510	1 819
-160.2	1 326	1 511	1 556	1 819

- Reliq forbidden

- 294k\$* between extremes

- Reliq. Authorized

- 152k\$* between extremes

REFERENCES

Trusted by *major shipping players* across the world...

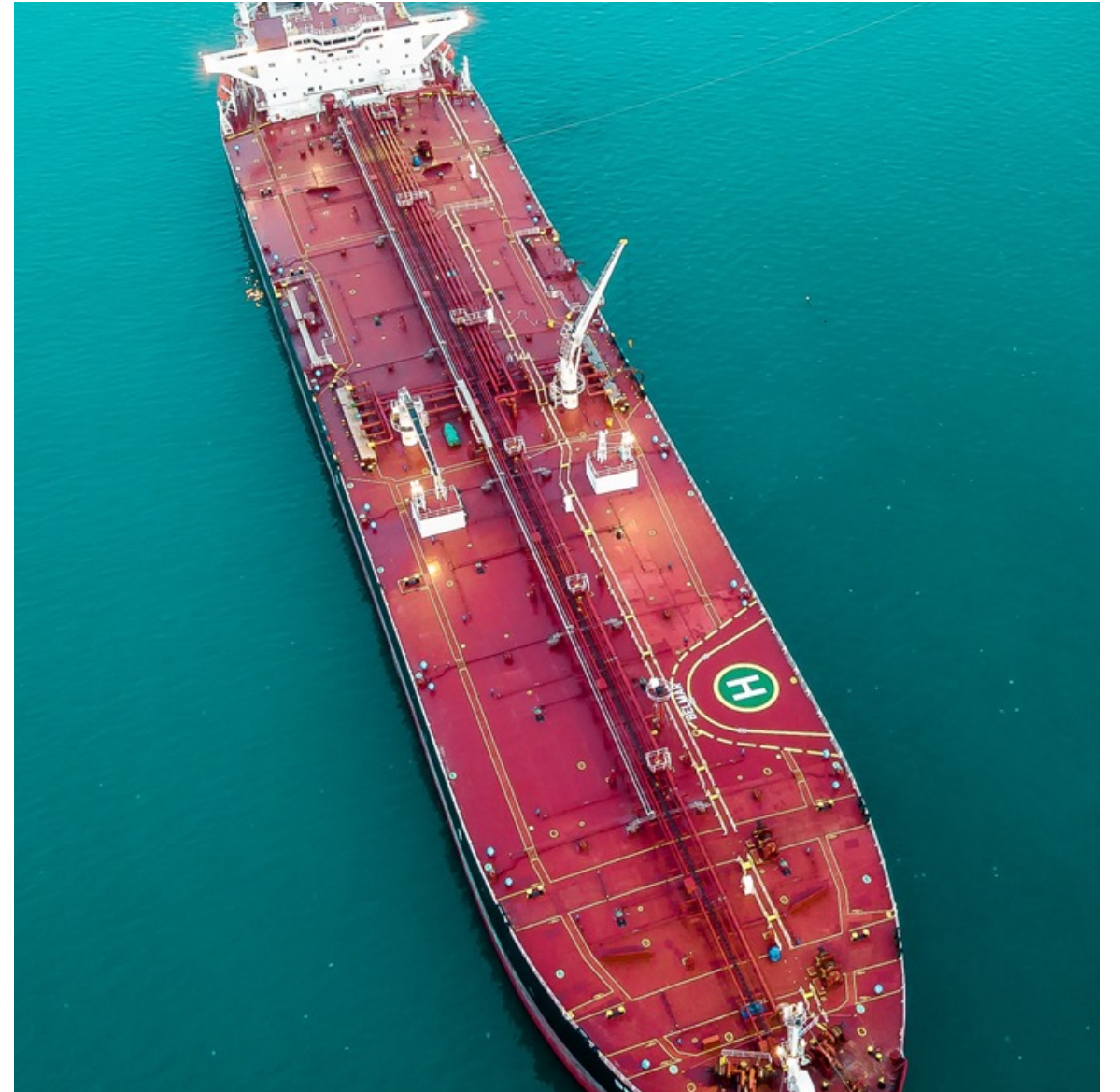


J.P.Morgan



DIGITALIZATION: THE PROCESS

- End to End Provider: Extensive list of solutions.
- Customised Approach: Vessel Type, company type.
- Integration capabilities & Interoperability.
- Empower your vessel into a Smart Vessel.





Thank You

