



Enabling safer voyages with data and cloud connectivity

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Presenter



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Agenda

- 1 Connectivity at Sea – The big picture
- 2 Revolutionizing stability management with data on the Cloud
- 3 Practical Application with real examples
- 4 Future with Cloud Connectivity
- 5 Discussion & Questions

Connectivity at sea so that ships don't disappear beyond the horizon

- Just as any modern office or production site ashore, new built ships depend on digital solutions that require connectivity.
- The benefits of connectivity at sea are taking over the cost. These include, amongst others, transparency, crew welfare, and most important of all safety.
- Fleet Operations Centres, emergency response services and ports require access to real-time ship data to ensure safe operations and appropriate actions in case of distress.



When you transfer ship data to a cloud platform

- **Increased situational awareness** on shoreside, monitoring safety and operations in real-time
- **Shared overview onboard and onshore** – Readily available for key operations with constant updates for better coordination and efficiency
- **Standardised and integrated data pool** on one platform
- **Comprehensive fleet operational profile** – Collect and combine data from many onboard systems with API (Application Programming Interface).
- **Tamper-proof** system backup and historical data storage
- **Building block** for semi-autonomous decision support systems



Real Impact on Ship Operations with Data on the Cloud



Enhanced shoreside support & better decision-making



Better emergency preparedness & faster response



Calculations, simulations and planning on the cloud



Trend analysis & benchmarking



Easier reporting & compliance



Predictable & planned operations

How this translates to daily onboard and onshore operations

Illustrated with real onboard and onshore application

Example 1: Ship stability and safety management

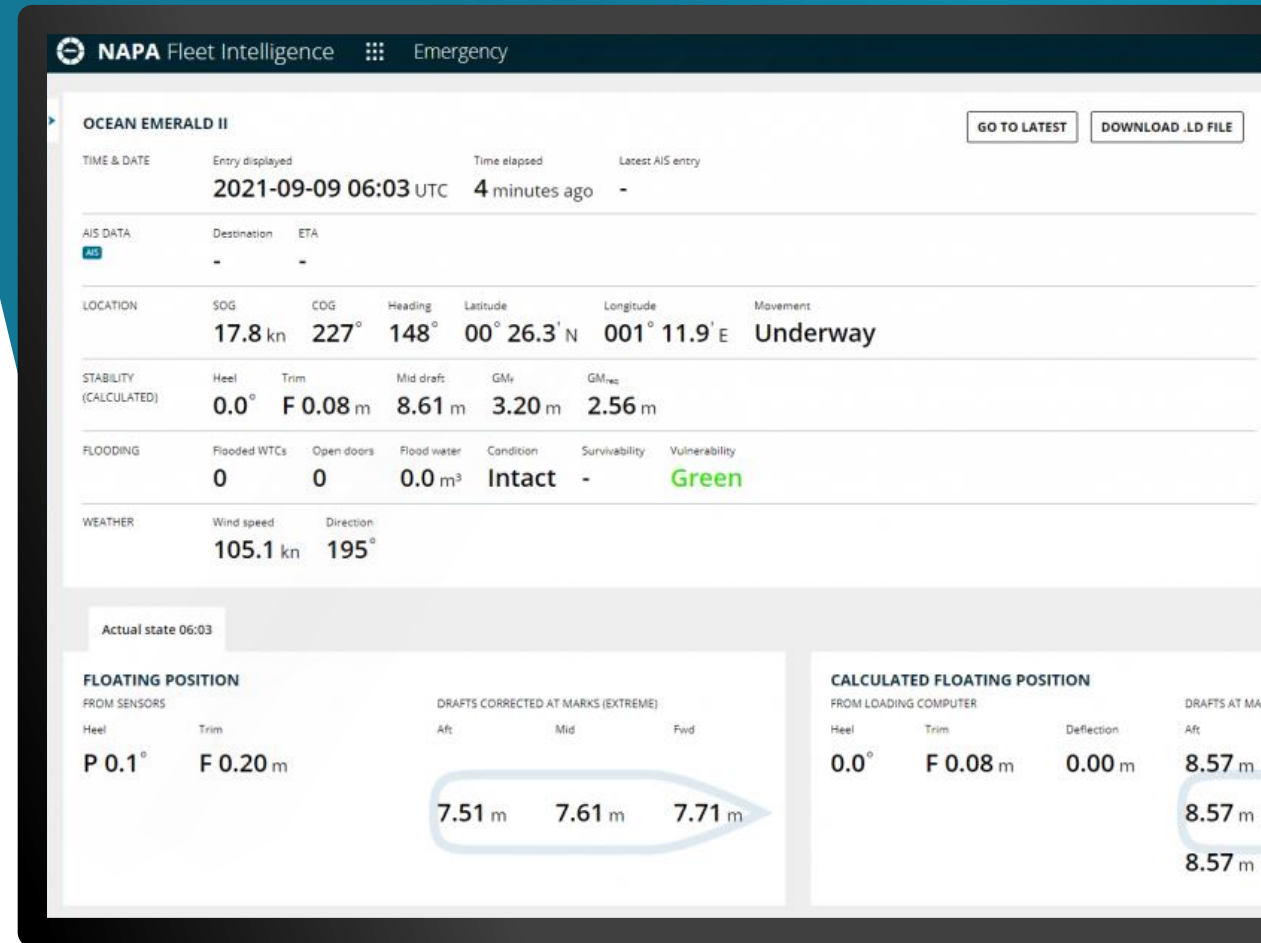
Data-driven safety and optimisation with cloud solution

Stability data shared in real-time

[The stability computer connects to the cloud platform](#) to revolutionize how ship operators manage daily vessel stability from the shoreside.

- **Live situational awareness, monitoring** and faster response with color-coded stability status overview.
- **Comprehensive fleet operational profile** by combining data with other sources such as AIS, e-Logbook and third-party systems.
- **Ultimate voyage planning** and deadweight management with simulations and data on cloud.
- **Benchmarking operational trends** across the fleet to spot optimization opportunities.
- **Historical data as feedback** for better efficiencies and ship design.

MONITOR AND ANALYZE YOUR SHIPS' OPERATIONAL, TECHNICAL, AND SAFETY PERFORMANCE



Example 2: Emergency Preparedness and Response

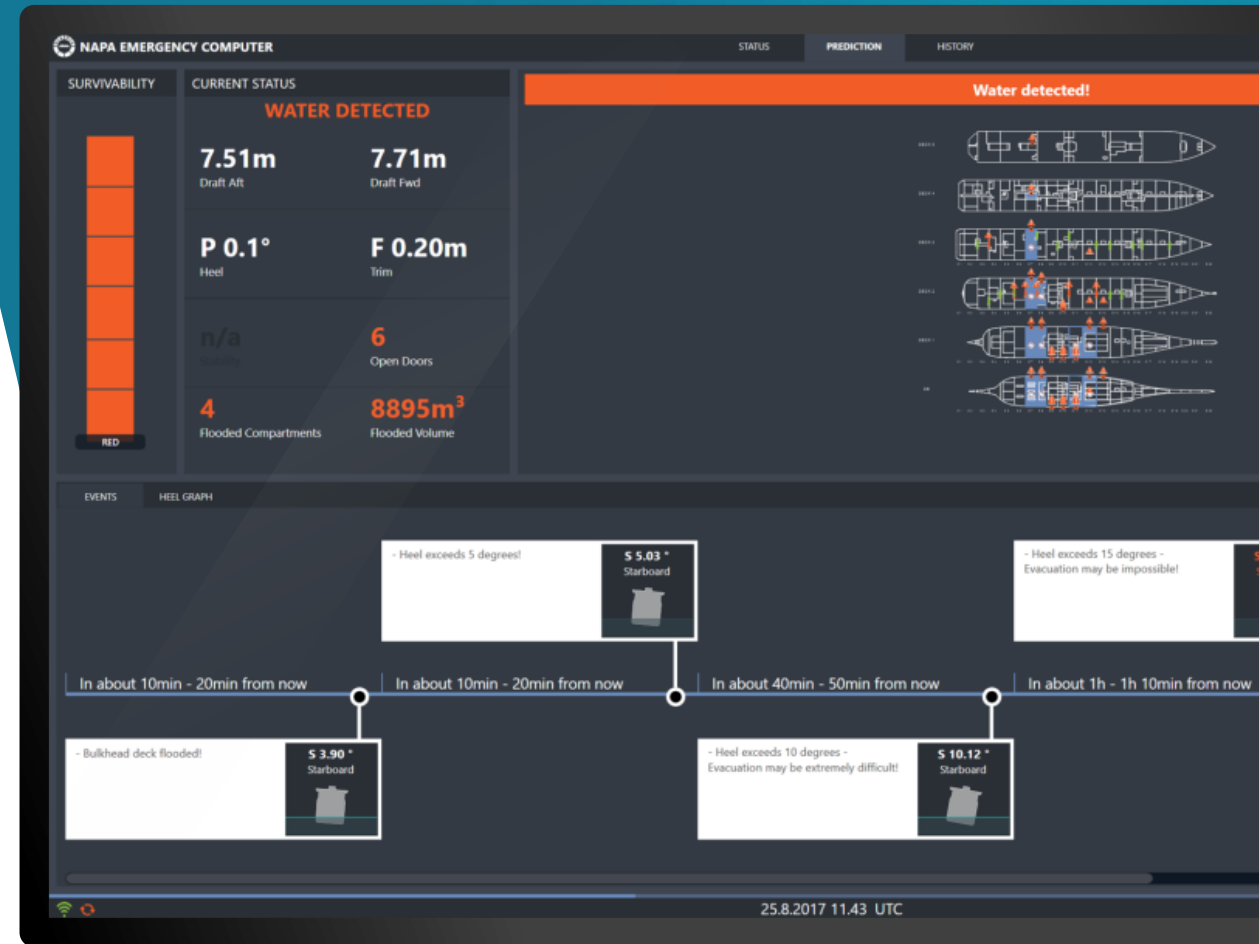
Monitor and reduce everyday risk; respond faster to emergencies with precision.

Faster response to emergencies

To respond faster and with precision, the shore must automatically get alerted of the conditions onboard, saving the crew's crucial time to focus on action-taking instead of communication with ERS.

- **Exact situation awareness** with Vessel TRIAGE categorization, if damaged.
- **Decision support** with dynamic survivability prediction on a timeline.
- **Special advisory cards** for handling flooding.
- **Live condition updates** to shoreside, as-it-happens on board.
- **Faster response** based on actual damage information shared with Emergency Response Service (ERS).

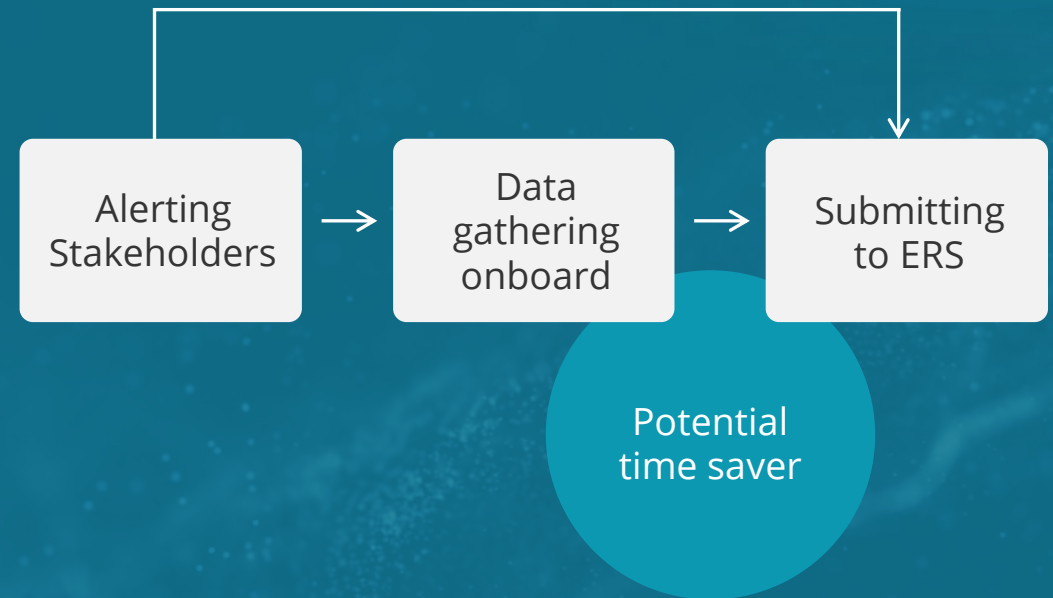
SAVING TIME ONBOARD TO EMERGENCY MANAGEMENT
INSTEAD OF COMMUNICATION WITH ERS



Faster response at shoreside

Emergency response services (ERS) can at any time download new stability situation files and analyze, without depending on onboard input.

- Stability related data in the cloud gives **time-saving potential** onboard for gathering data to be sent ashore
- This will in-turn enable emergency service to deliver advice **faster response**



Example 3: Logbook data used for shipping monitoring

Data-driven safety and optimisation with cloud solution

Industry drivers to Electronic Logbooks?



Regulatory changes and
Flag approval for using
electronic logbooks



Stricter data reporting
requirements



Need for easier
data handling and
management

Recent changes around electronic logbook regulation

IMO Resolutions:

- A.916(22) Navigation related record keeping
- A.1052(27) Port State Control procedure
- MSC.333(90) Voyage data recorder
- MEPC.312(74) Guidelines for the use of electronic record books under MARPOL (and amendments to MEPC.314(74), MEPC.316(74) and MEPC.317(74))

The use of electronic logbooks is accepted by many major flag administrations



“It is recognized that the ERB allows ships to utilize available technology to reduce administrative burdens and contribute to the onboard environmental initiatives”

IMO - MEPC



Going beyond mandatory entries



Reliable and official data source



Secure data collection onboard and shoreside



Error-free and standardized record-keeping



Cutting-edge cloud services for real-time data sharing



Insights for performance monitoring & analysis



Identify new safety and efficiency opportunities



A nodal link to numerous onboard information unlocked and integrated with one tool.

Electronic logbook solutions create a massive data pool

1. Collects data from numerous sources:

- Manual entry
- Automation and navigation signal, plus third-party systems
- Calculated data: distances, average speed, wind speed.
- Fleet-wide log entries across all logbooks
- Other onboard systems

2. API option for fetching all this data to third-party systems.



Shoreside Data: Already being used

Cloud solutions can generate specialized reports:

- ESG Reports
- Technical Performance Reports
- Safety compliance ensured with digital records (drills, permit to work, etc.)
- Environmental reports like MRV / DCS / CII Reports

The screenshot displays the NAPA Fleet Intelligence Logbook interface. On the left, a sidebar titled 'LOGBOOK PARAMETERS' allows users to filter data by ship (Ocean Emerald II), date range (2021-04-01 to 2021-09-10), and book type (Compass Error Log is selected). The main area shows a table of logbook entries for Ocean Emerald II. Two entries are visible, both for 2021-06-02 at 00:00 (+09:00). The first entry shows a 'Deck | Compass Error Calculation Error Log' with a summary of errors: Mag Error -179.82 deg, Gyro Error -181.42 deg, Var -6.2 deg, Dev -173.62 deg. The second entry shows a similar calculation with Mag Error 1.6 deg, Gyro Error 0.4 deg, Var -5.7 deg, Dev 7.3 deg. Both entries include detailed data for Latitude, Longitude, Magnetic Heading, Gyro headings, and bearings.

SHIP NAME	LOCAL TIME	LOGBOOK	ENTRY
Ocean Emerald II	2021-06-02 00:00 (+09:00)	Deck Compass Error Calculation Error Log	Magnetic Error Calculation
Mag Error -179.82 deg, Gyro Error -181.42 deg, Var -6.2 deg, Dev -173.62 deg.			
Latitude	30° 15' 3" N	Gyro 2 heading	201.6 deg
Longitude	128° 42' 8" E	Observed Bearing	201.6 deg
Observations possible today?	Yes	True Bearing	20.18 deg
Magnetic Heading	200 deg	Gyro Error	-181.42 deg
Active Gyro heading	201.6 deg	Magnetic Error	-179.82 deg
Gyro 1 heading	201.8 deg		
Ocean Emerald II	2021-06-02 04:00 (+09:00)	Deck Compass Error Calculation Error Log	Magnetic Error Calculation
Mag Error 1.6 deg, Gyro Error 0.4 deg, Var -5.7 deg, Dev 7.3 deg.			
Latitude	28° 58' 40" N	Gyro 2 heading	198.9 deg
Longitude	128° 13' 44" E	Observed Bearing	198.9 deg
Observations possible today?	Yes	True Bearing	199.3 deg
Magnetic Heading	197.7 deg	Gyro Error	0.4 deg



Cyber security



Industry Requirements

- Considering and managing security is a requirement for all shipping companies today
- Systems and networks should be designed for cyber security
- Onboard computer-based systems must consider the entire lifecycle of the software



Solutions

- Latest programming technologies and components
- Encrypted data and communications
- Electronic signatures
- Continuously maintained - security patches released for maintenance agreement customers

What's coming up: More data, deeper insights, higher efficiencies



Combining data
between different
sources



Digital twin giving
feedback for better
ship design and
safety



More detailed
simulations with more
precise and real data



Continuous cyber
resilient data
infrastructure



THANK YOU

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Discussion & questions

