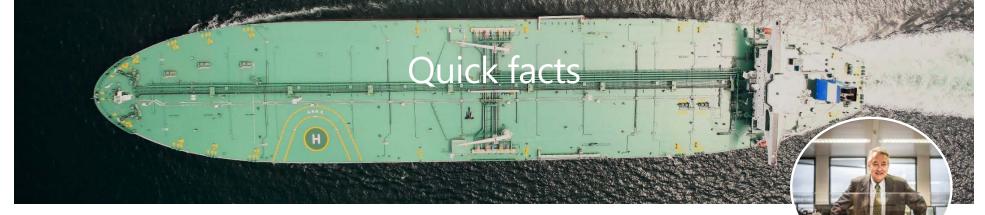


Rudi Vander Eyken, Head IT & Innovation





NYSE

The world's largest, independent quoted crude tanker platform

71 VESSELS*



2 FSO 3 million barrels



2 V-Plus 3 million barrels



42 VLCC 2 million barrels



*Average age on 30 June 2019: 8.5 years

International company Founded by the Saverys family Headquarters in Antwerp EVENENT EV

2,900 EMPLOYEES

- Approx. 2,700 seafarers of many different nationalities
- Approx. 200 shore employees



"DIGITAL TRANSFORMATION" 2020

Euronav has the ambition to invest in Digital Transformation :

- And become the leader (front runner) in adopting/embracing digitization within the "Maritime Industry"
- So "Digital Transformation" and "Innovation" becomes part of our DNA

Our future challenges & opportunities in the market

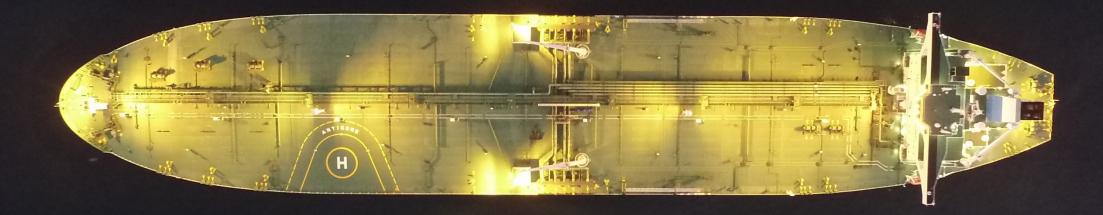
- IMO 2020 & Zero Emission targets by 2050
- Fuel prices (LFSO)
- Reduce Fleet OPEX
- Improve overall efficiency



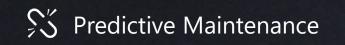


Euronav embarks for the future of data intelligence through optimized IoT connectivity ...

FAST (Fleet Automatic Statistics & Tracking) Why?









Claims Management



FAST Platform

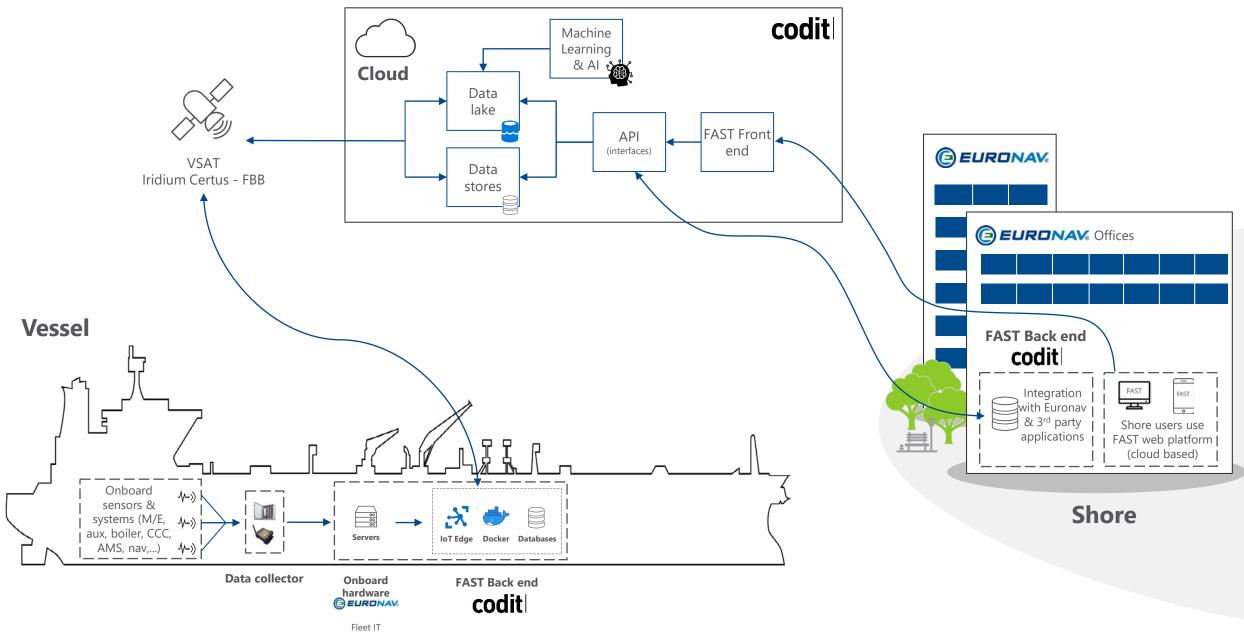


| tap Report Archive Voyage Arch | | | | | | | | |
|--|-----------------------|----------------------|--------------|-----------------------------------|--|---|----------------------------|--------------|
| S Cap Queles | Sandhenard Happerts & | L documents Timerary | Cargo | Status Sex - Sex Passage | | | IIII Vesse's local time 10 | 120 72/04/99 |
| Totals | Hydrostatic | Data | | Cargo Tanks | | | | |
| (a Ladar) bol mt m | | ent Trim | Displacement | | | No1 C.O.T. (P) GC WTI C.O. | Add loading discharge | L con |
| Total cargo 65 94 % | | 2.0 0.4 | 120,284 | 4 | | ROB | | |
| 113,587.04/ 172258 ef | | | | NoTCOT(P) | Net C.O.T. (S) | Metric tona (118) | 6,536 | |
| | Draft | 2021-03-23 | - 2021-04-22 | 60 WTI C.O. (25.2010 = 010 (0) | 0 2520°C × 0°C | Barrels (955) Cubic meters (m ⁴) | 51,337 8,161.93 | |
| • 0CWTLC0. 65.94% 113.587.04 m | | comp | | 75% | 75% 51234/57/879 888 | Cargo properties | | |
| do will C.O. 05 94 % 113,387.04 m Available 32.06 % 55.25.58 m Margin 2 % 3,445.17 m | 70 | We | - free | No2COT (P) | MEZCOT (5) GC WTI C.O. (0) 2520°C = 0°C | API Dravity ("API) | 43.2 | |
| | 5 | V | | GC WTI C.O. 25/2010 = 010 ① | | Load temperature ("C) | 25 | |
| | | | | 12200 = 00 0 | (0 4540° + 0°C) | Load temperature ("F) | 77 | |
| | | | | 745 | 785 | Heated Target temperature (°C) | No N/A | |
| | | | | 68.322/91.736 164 | 44290/91/736 Mil | Target temperature ("F) | N/A | |
| Cargo Operations | 12 2021-04-22 [] | | | 500 C WTI C.0. 25207C ≈ 07C ⊙ | Nel C.O.1 (0) GC WTI C.O. O 25207C = 07C | | | |

| Q 🕕 Diodona | Vessel Dathocard | Reports & documents | itnerary | Caron | Benker | ۲ | Status sec. sec Passign | | III Vessel's local time (| 16(17 27/04/2021 | UTC +02:0 |
|---------------------------------|---|------------------------------|--------------|-------------|--------|------------|----------------------------|---------------------------|---------------------------|------------------|-----------|
| Reports & Docume Voyage 2102 | nts Selected voyage details: Lone -> | Hound Point 08/04/2021 - 20: | SQUTC +02:00 | ⇒ row | | | | | | | |
| C 600 00/04 to 22,04 | Pert: Lome 32/64/6/22/84 | C Dea 22/04 to in Progress | * | & Port Lome | > E | 3 54 | → | → <u>∩</u> ¹ m | la 🕹 Port | Flushing | |
| 🕑 wati | val report ag for noon report submission | | | | | | | | | | |
| Sea Passage | Drifting | | Dotting | | | I Drifting | Geo Passage | | | | |
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| Ses Passage | | | | | | | | | | | |
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| Map Report Archives Vio | v <mark>oge Archve</mark> Versul EasHenard – Pogerts I | Librameta Riversy | Cargo Austar | O Status first Audered | | Juli Vessel's local time 16-20: rocal case and the second s |
|----------------------------|---|--|--------------------|-----------------------------------|---|---|
| Voyage 2102 Voyage | voyage dataits: Larne \ni Hound Por | z 08/04/2021 - 19/30 UTC +01:09 | ⇒ now | | | |
| Proceeding Orders | | People | | | | Voyage number: 2102 |
| No voyage o | iders. | | | | | |
| | | | | D: | | |
| Port Calls | саторония длождальной и | ony mpo | | ч | | Show past port call |
| 🔮 🍊 Kot | Port Country Tego | ETA / ETB (JJ) 21/03/2921 - 67/00 UTC | 2+00:00 Primary Pu | | | ÷ |
| 1. Travel Info | 2. Estimated Times | 3. Estimated RCBs | | 4. Purpose & Activities | 5. Terminals/anchorages/ship-to-ship | |
| ETD (LT) DE/04/2021 - H | 21/03/2021-07:00 | On antival VLSFO ROB NVA | G Ondeparture | Primary Purpose | There are no terminal activities registered yet | |
| | | | VLSFO ROB N/A | Discharging Planned Activities | | |
| | 06/04/2021-18:30 | N/A 107 | ULSFO HOR | Armed Guards | | |
| | Est, port stay (hvs) | | N/A | | | |
| | 443 | LSM60 R08 1040 | LSM30 ROB 700 | Crew Change | | |
| | | HEFC ROD H | HSFO ROB | Clarbage Disposal | | |
| | | 2364 | 2334 | Provisiona | | |

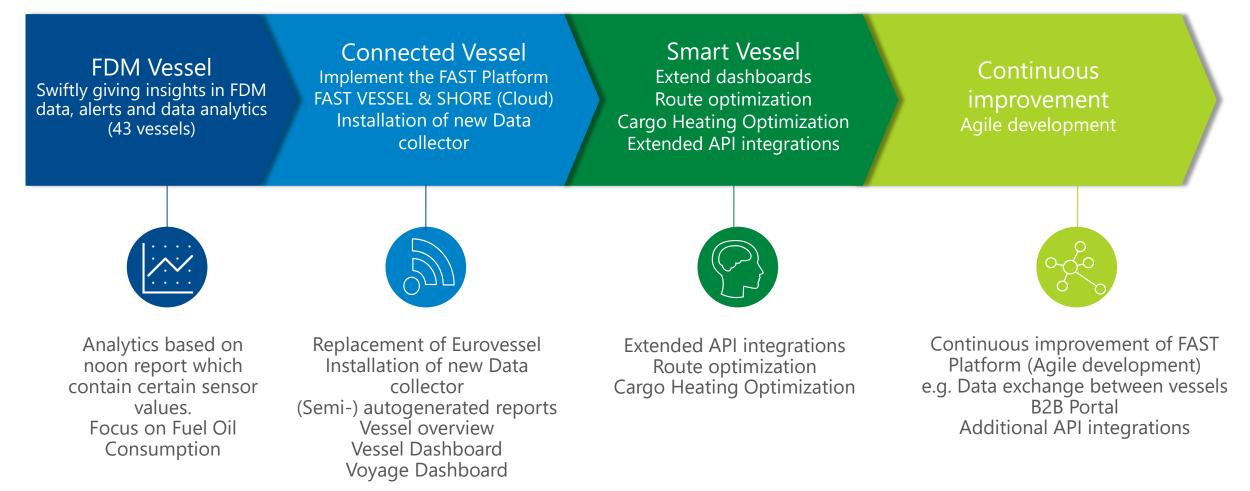






Phased strategy

with full focus on generating insights on Fuel Oil Consumption



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Technological Risks & Resilience Cybersecurity OT/IT Network

- Network Segmentation
- Firewalling

Onboard

sensors &

systems (M/E,

aux, boiler,

CCC, AMS,

nav,...)

-**∕**~)

M−)

0

Data collector

- Secured Access Control
- Improve overall efficiency



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Servers

Onboard

hardware

IoT Edge Docker Databases

FAST Back

codit

Technological Risks Limited Internet Capabilities



- VSAT Internet capacity is very expensive
- All vessel applications and innovation runs over 1 pipeline
- 1GB office line vs 2Mbps/500kbps internet is a big difference



- Backup systems (Iridium/FBB) have less capacity i.e. 128 Kbps
- On backup only e-mail / voice active



Euronav's Resilience Projects that enable innovation

- Cybersecurity is top priority !!
- Data / File Compression techniques
- Quality of Service on the internet line
- Optimized Secure remote connectivity for Support
- Segmentation IT/OT network environment
- A professional D/R process needs to be in place ... as last solution !!
- Close collaboration with our peers to find appropriate solutions





