MARITIME

AIS in Fleet Performance Management and Business Intelligence

Status Update – MARIKO Leer Workshop

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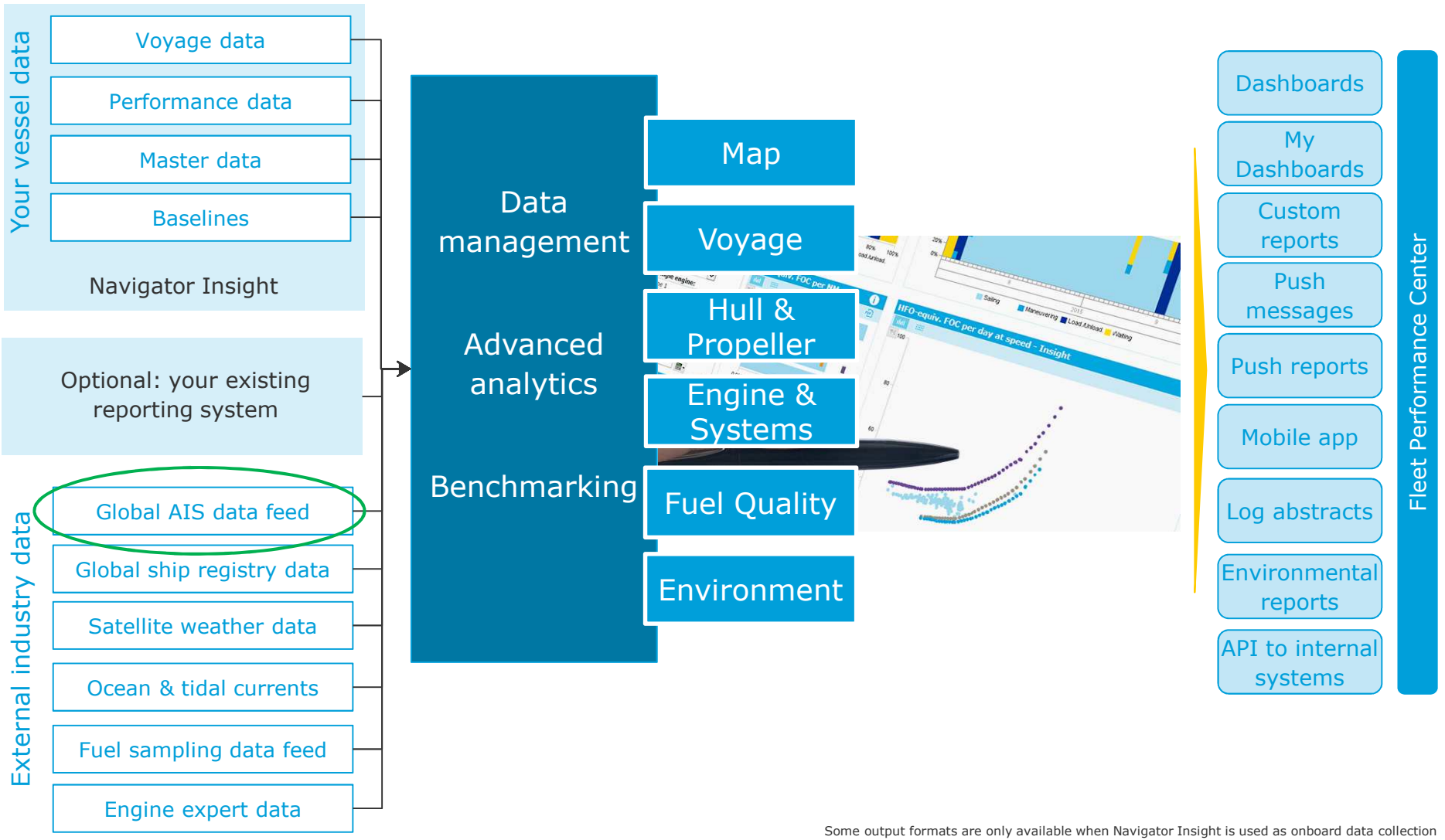
AIS in Fleet Performance Management ECO Insight

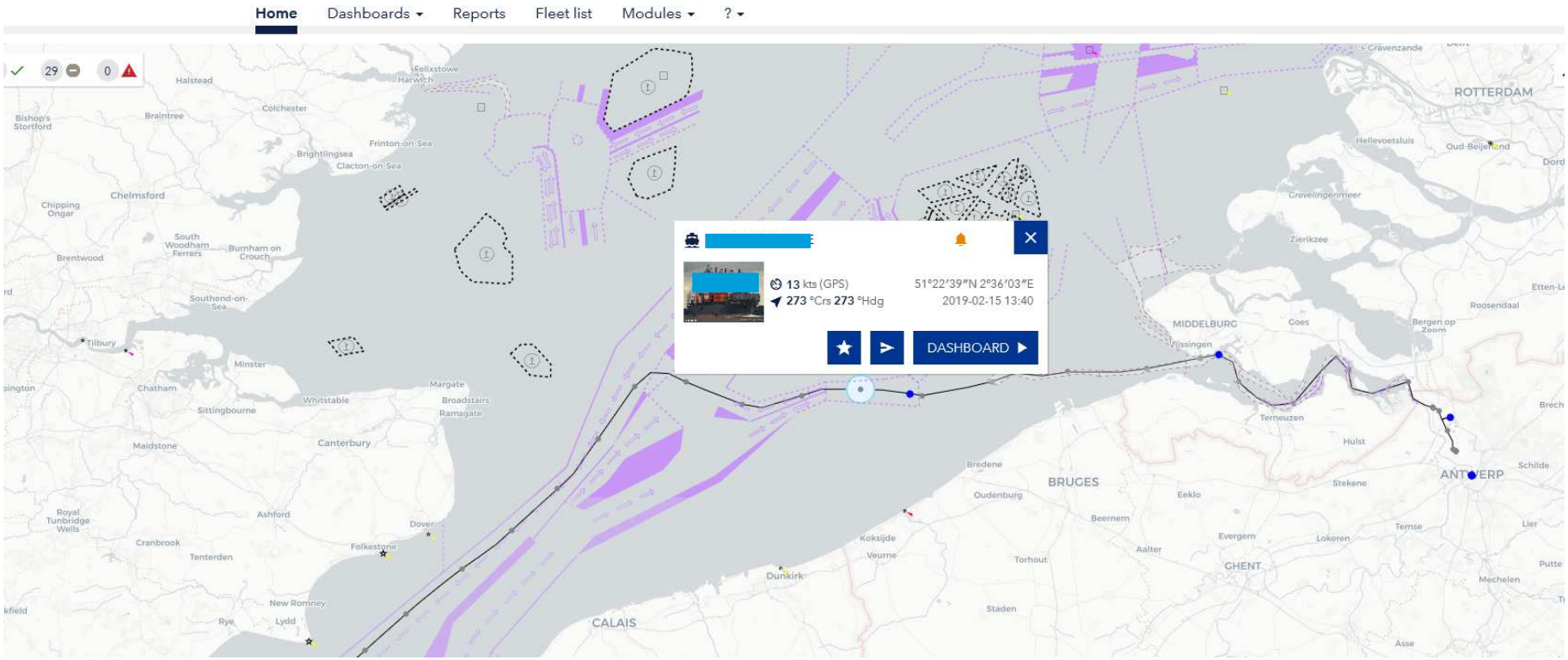
- Integration of global terrestrial and satellite AIS data supports
  - Plausibility checks
  - Benchmarking of individual ships to comparable ships in world fleet (e.g. General cargo ships, 10,000gt – 19,999gt)
  - reported positions compared to GPS positions
  - Speed loitering issues
  - Alerting of speed variations
  - Generate speed profiles
- AIS in mobile FPM application
  - Know, where your ship is sailing
  - Get instant crucial info about speed, ETA, etc
- AIS signals can also be used for EU MRV and IMO DCS verification purpose
  - Avoid manual auditing of logbooks
  - Automatically compare consumption plausibility

ECO Insight Fleet Performance Management
more than dashboards, outside-in-view on vessels performance

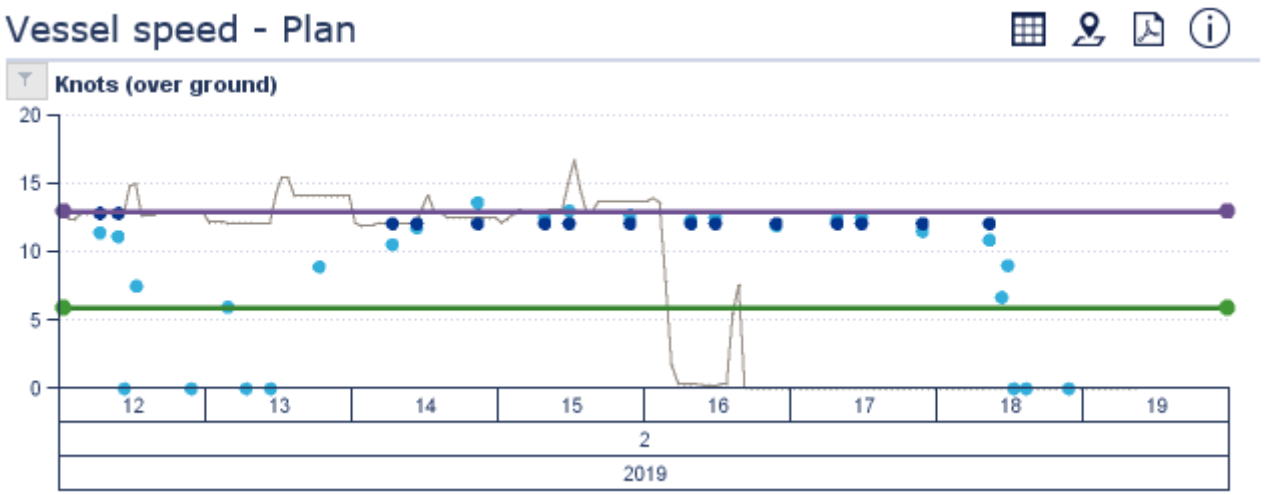


Some output formats are only available when Navigator Insight is used as onboard data collection

ECO Insight
AIS track vs. reported positions



ECO Insight
compare AIS speed to required C/P speed and reported speed

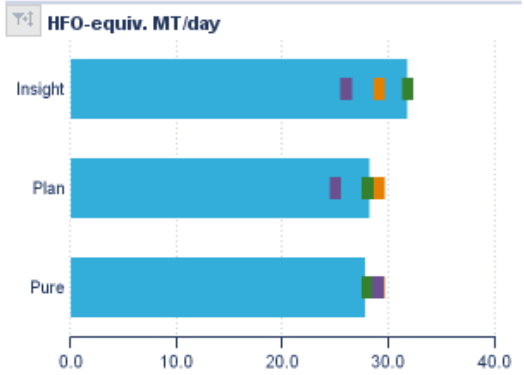


AIS BI

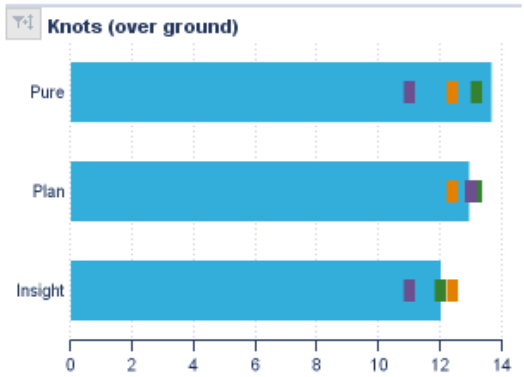
ECO Insight
consumption and speed benchmarking towards comparable ships

Ranking of vessels

FOC per day

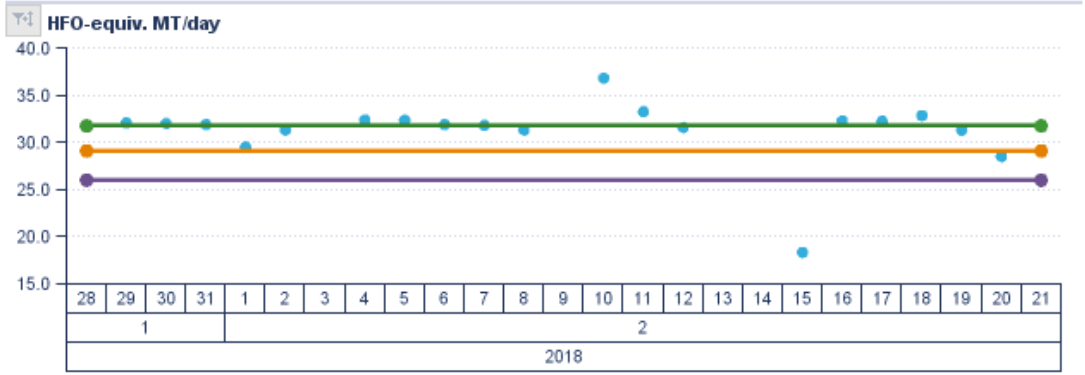


Vessel speed

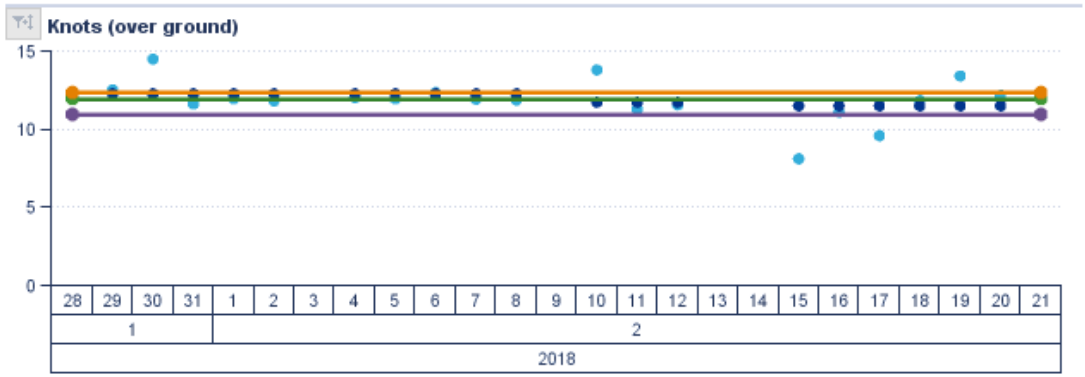


Explore single vessel

FOC per day - Insight



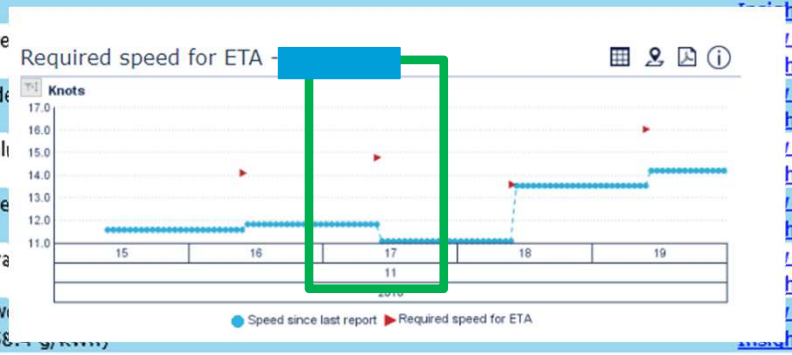
Vessel speed - Insight



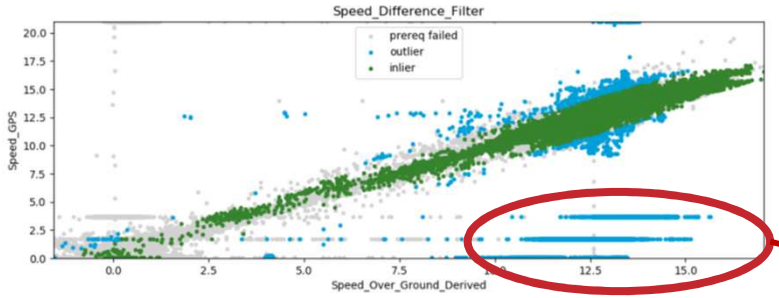
ECO Insight
AIS based alerts

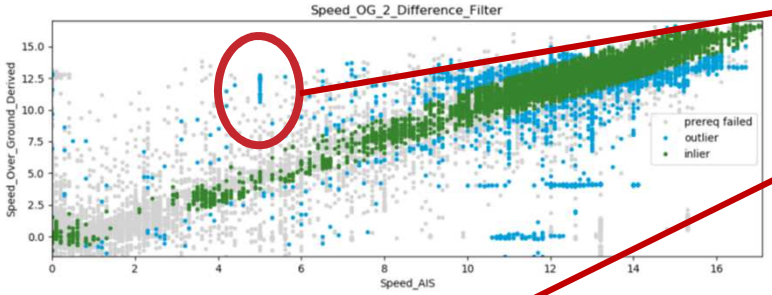
Daily Alerts:

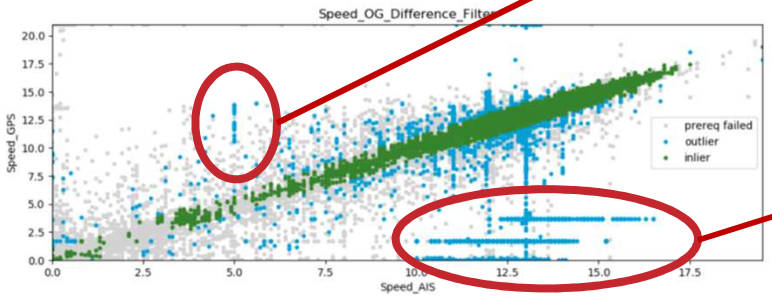
Vessel	IMO	Date [UTC]	Alert	Dashboard
	9102071	04.12.2018	(V08) Speed not suitable for required ETA; speed sailed last 24.0 hrs: 14.5 kn; speed required for ETA was: 13.0 kn (threshold: +/- 12.8 kn.	Show in ECO
	9680097	21.11.2018 12:00	(R02) Last event was reported 13.8 days ago (threshold: 48.0 hours); last event: Arrival; 21.11.2018 12:00	Show in ECO Insight
	9719264	01.12.2018	(R02) Last event was reported 3.4 days ago (threshold: 48.0 hours); last event: Arrival; 01.12.2018 20:45	Show in ECO Insight
			5) Mean vessel speed during reporting period according to AIS data was below 30 % of reported speed (threshold: 45.0 %). orted vessel speed: 11.1 kts.	Show in ECO Insight
			Comment: 2nd AE operated for 7.0 hrs;	
	9680114	04.12.2018	(AE05) AE consumption of 4.32 t/d is 16.8 % above C/P value (3.70 t/d); (threshold: 0 %)	Show in ECO Insight
			(V08) Speed not suitable for required ETA; speed sailed last 24.0 hrs: 11.1 kn; speed required for ETA was: 14.8 kn (threshold: +/- 0.5 kn); new required speed for ETA: 13.6 kn.	Show in ECO Insight

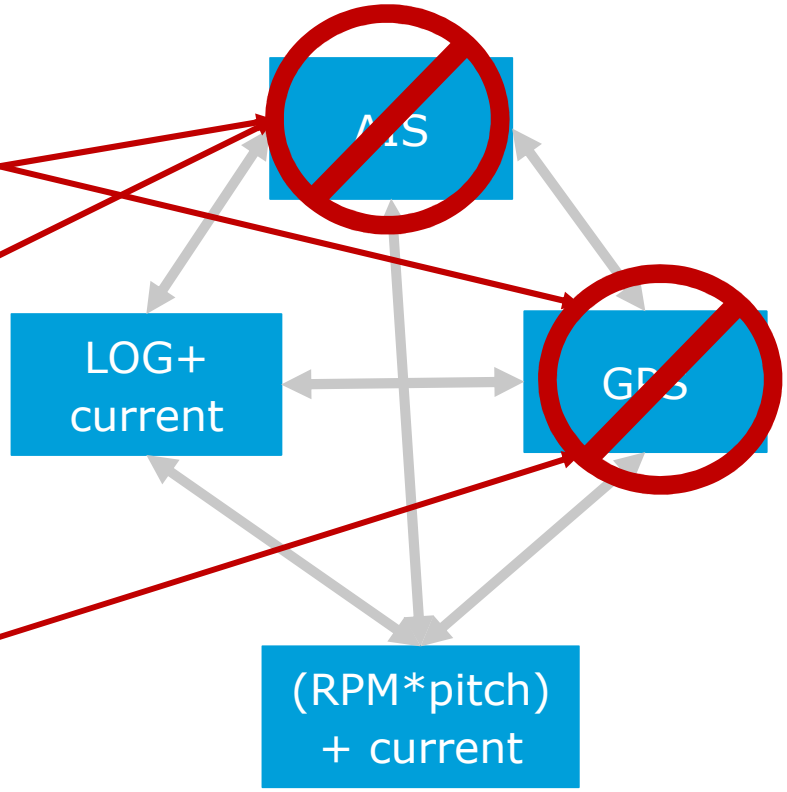


ECO Insight
Detect doubtful sensor readings, knowledge and structures in place to improve meaningful performance analysis









ECO Insight
easy to digest “end of voyage” push e-mail report

Voyage report
Insight (IMO 9253856)

Report executed Feb 1, 2018, 3:34:15 PM

Voyage number: 201402
Departure date/time [UTC]: 2016-09-25 03:00
Arrival date/time [UTC]: 2016-10-16 20:00
Departure port: GBTIL
Arrival port: BRSSZ

Vessel speed [knots]

Voyage summary

Measures	Total voyage	Sailing condition at < 5 Bft
Distance [NM]	4,648	2,865
Time [h]	522	229
SOG [kn]	8.9	12.5
Wind force median [Bft]	4	4
Sea state median [Douglas]	3	3
Current speed in vessel direction [knots]	0.085	-0.030
Nominal slip [%]	11.5%	12.1%
Total HFO-equiv. FOC [MT]	503	301
ME HFO-equiv. FOC/NM [MT]	0.095	0.097
ME HFO-equiv. FOC/day [MT]	20.3	29.1
AE/B HFO-equiv. FOC/day [MT]	2.8	2.3
ME load [% MCR]	46.8%	48.7%
AE running hours per day [h]	25.4	24.0
ME SFOC [g/kWh]	202.4	201.7
AE SFOC [g/kWh]	213.9	215.5
EEOI [g/(NM*MT)]	13.2	13.4

	HFO	MDO/MGO
Bunker remaining on board at end of voyage [MT]		

1

Provided by ECO Insight © DNV GL

Voyage statistics - 201402 - Insight

Voyage leg [Port from - to]	Voyage leg start	Voyage leg end	Mean draft [m]	Trim [m]	Cargo [MT]	Wind force median [Bft]	Current speed in vessel direction [knots]	Sea state median [douglas]
GBTIL - ?	2016/09/25 03:00	2016/09/27 10:30	6.9	2.4	5,880	3	-0.400	1
? - NOHRY	2016/09/27 10:30	2016/10/03 08:48	7.8	1.9	12,569	2	0.557	1
NOHRY - BRSSZ	2016/10/03 08:48	2016/10/16 20:00	9.8	0.7	29,240	4	-0.037	4
201402 - total			**8.8**	**1.3**	**22,061**	**4**	**0.085**	**1**

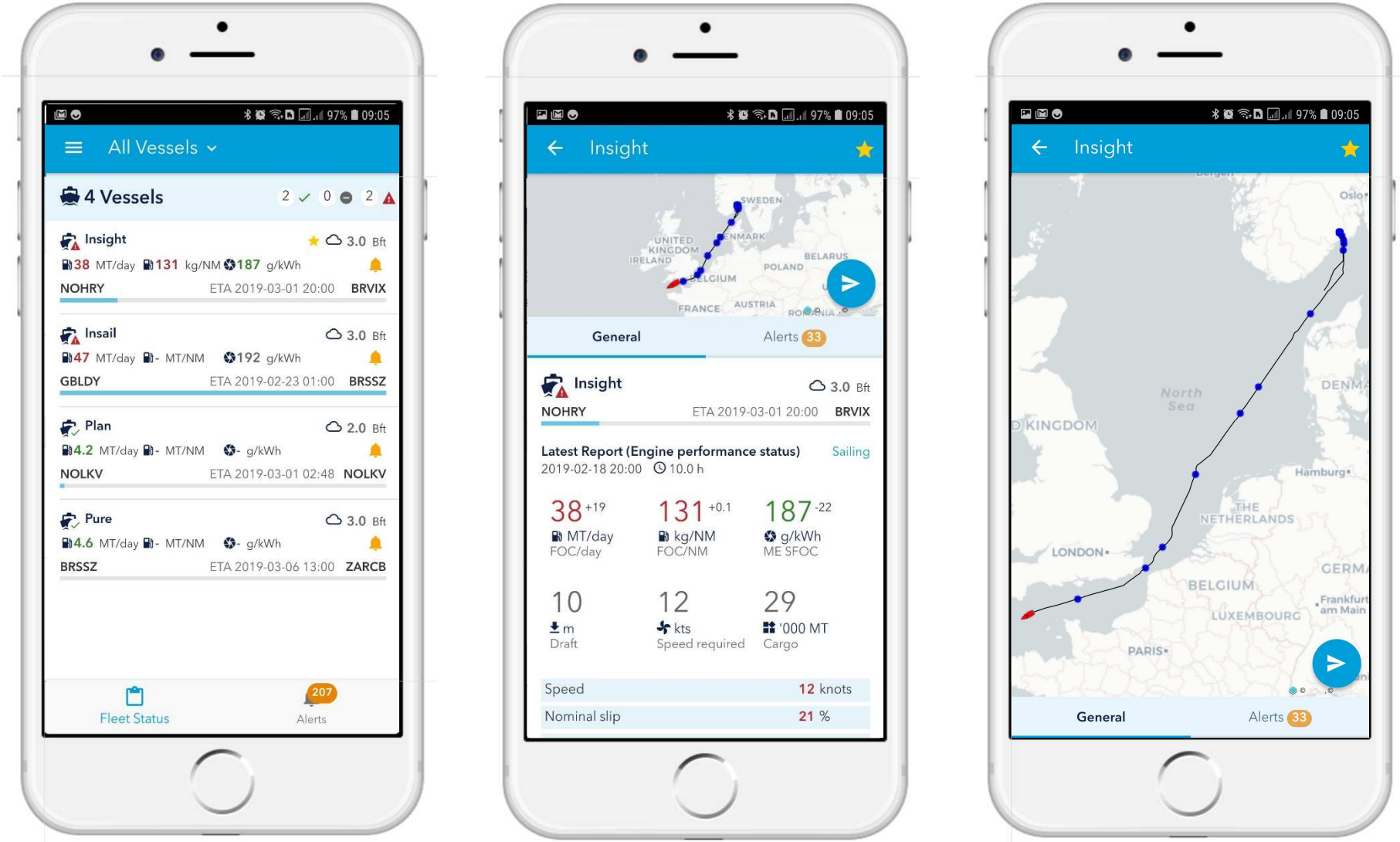
Speed and consumption - 201402 - Insight

Voyage leg [Port from - to]	Distance [NM]	Duration [hours]	Avg speed (sailing) [knots]	Nominal slip [%]	HFO-equiv. FOC [MT]	HFO-equiv. FOC per NM (sailing) [MT/NM]	HFO-equiv. FOC per day [MT]
GBTIL - ?	107	57	9.5	6.5%	11.9	0.069	5.1
? - NOHRY	556	142	12.1	10.4%	58.8	0.084	10.0
NOHRY - BRSSZ	3,986	324	12.6	11.6%	432.3	0.108	32.0
201402 - total	**4,648**	**522**	**12.5**	**11.5%**	**503.1**	**0.105**	**23.1**

2

Provided by ECO Insight © DNV GL

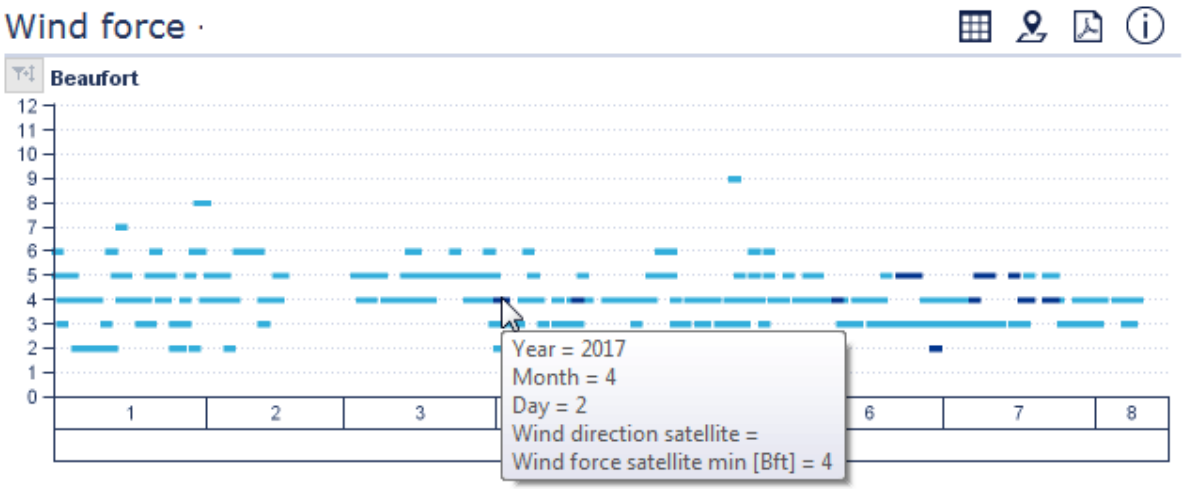
ECO Insight mobile app
Key performance data and track history always at hand



ECO Insight
not only AIS included, but also Wind and current for increased validity of conclusions

NOAA NATIONAL CLIMATIC DATA CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

- Satellite weather records in 6 h intervals
- Covering all oceans with wind force information on 0.25 / 0.5° grid



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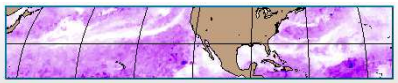
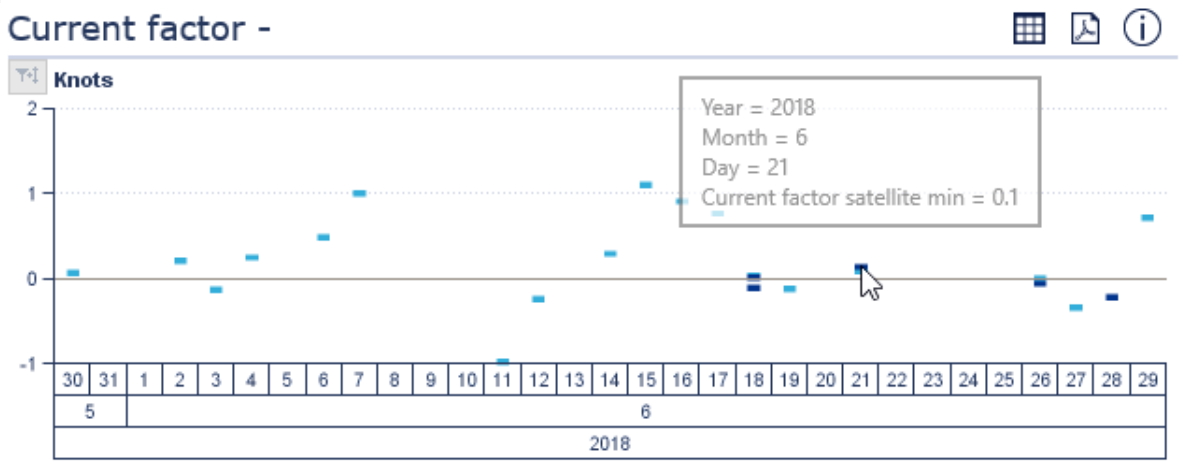


- Hybrid Coordinate Ocean Model
- Combining global and tidal currents



ECO Insight
fast way to an industry leading performance management

Speed

- Predefined, industry best practice dashboards
- Hosted web based portal with a user friendly layout
- Easy to roll out onboard solution

Low CAPEX

- Use the existing processes in your shipping company
- No additional IT or hardware investment onboard
- Flexible subscription based pricing

Benchmarking

- Own vessels, vessel groups, fleet
- AIS data from the world fleet
- Weather and Fuel quality benchmarks

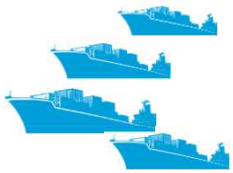
Advanced Analytics

- Highly precise ship model with CFD computations
- Enabling viable hull fouling prediction and good normalization of measured data

Advanced Emission Mgmt.

- Comprehensive collection of environmental relevant data onboard (emissions, disposals, ballast water, sludge, etc)
- Data feed to NGOs and regulators possible (e.g. CCWG, ESI, CSI, EU MRV, IMO DCS, China DCS)

DNV GL individual advisory services: Sometimes you wished you had more and faster insights at your fingertips for decision making



Network & fleet

- How do partners/ competitors run their networks – which vessels used, which ports called with which timing?
- How many offhire & lay up days do others have?

Port operations

- Which ports/ terminals have larger/ smaller congestion issues?
- Do partners/ competitors manage port operation faster? Why?
- Will the targeted berth be available on time?

Voyage operations

- How do partners/ competitors perform in terms of slow steaming and constant speed – how does that affect their fuel bill?
- How well are others performing regarding schedule integrity?

Overall operations

- What is the operational cost breakdown of other players?
- How much time do others spend in port and anchorage compared to us? How does this affect average speed?

Bunker operations

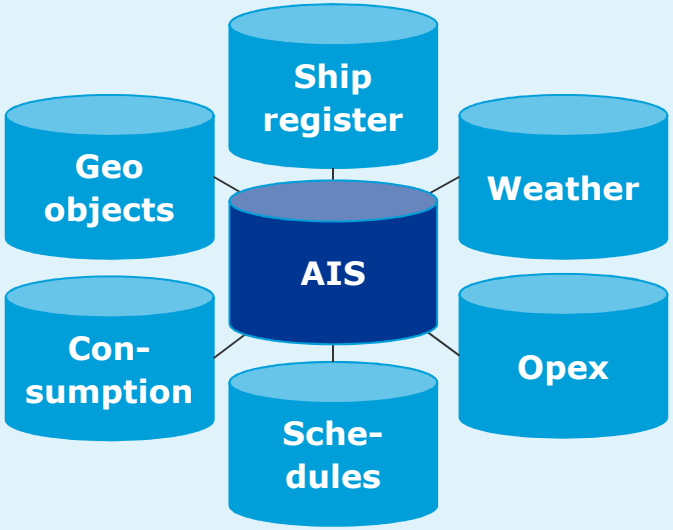
- Which bunkering footprint do partners & competitors have?
- How efficient do others bunker?

Our Business Intelligence service offers answers

Typical AIS market offerings

- **Visualization** of ship tracks (incl. berths) and vessel related data
- **Speed and draft** profiles over time

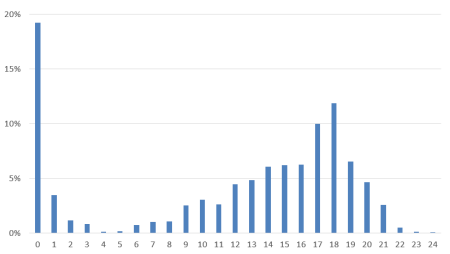
DNV GL approach



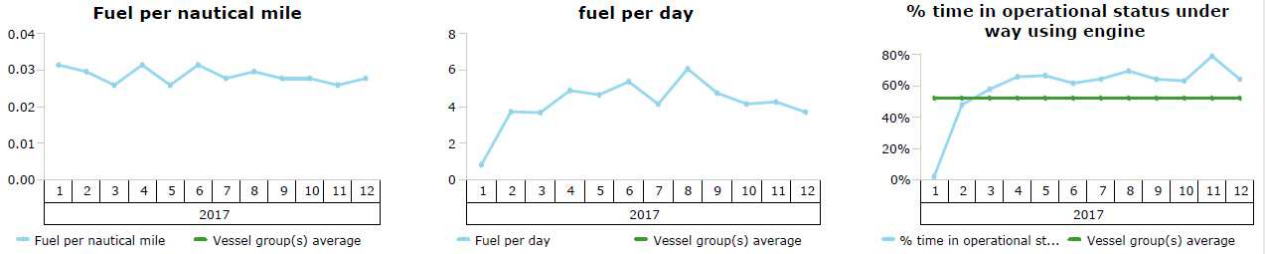
- **Increase performance**
  - Audit/monitor own operations
  - Benchmark operations against competitors
- **Improve business decisions** building upon deep market insight

Voyage Benchmarking
Benchmark own, partners' and competitors' performance: speed parameters, speed/draft and navigational time shares

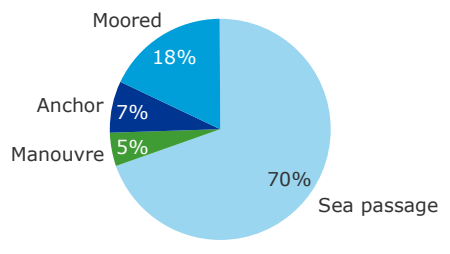
Speed distribution



Fuel oil consumption



Time shares



Speed / draft profile (newbuild spec, retrofit)

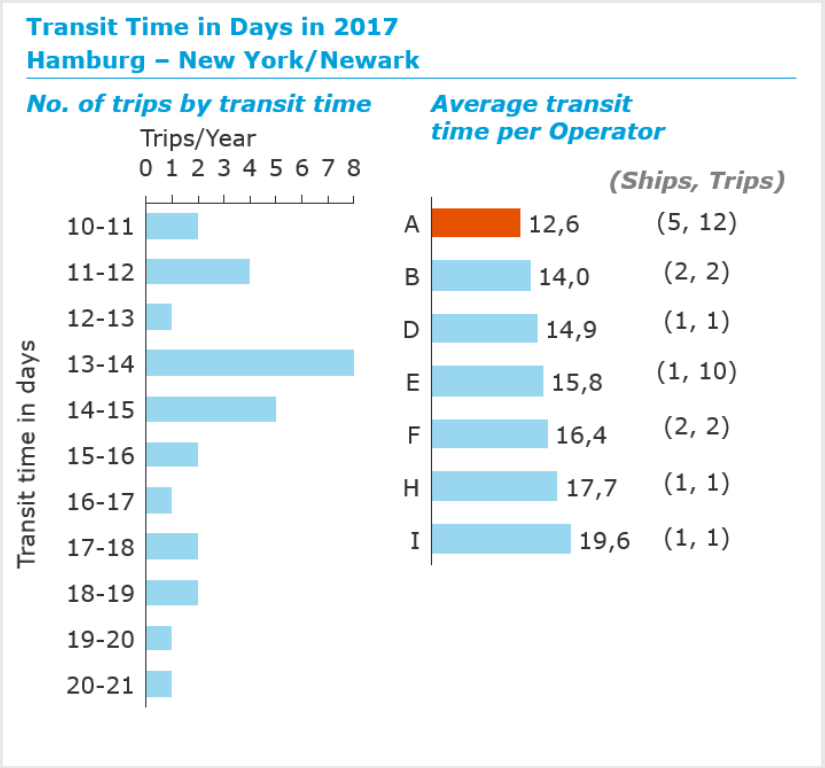
Speed (kn)

Draft (m)

T [m], v [kn]	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Sum
10	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.8%
10.5	0.1%	0.2%	0.1%	0.0%	0.4%	0.2%	0.0%	0.4%	0.4%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	2.0%
11	0.4%	0.2%	0.2%	0.5%	0.2%	0.6%	0.2%	0.3%	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	3.1%
11.5	0.0%	0.4%	0.4%	0.4%	0.1%	0.2%	0.5%	0.4%	0.4%	0.4%	0.1%	0.3%	0.2%	0.1%	0.0%	0.1%	0.1%	3.9%
12	0.3%	0.1%	0.3%	0.5%	0.3%	0.2%	0.9%	0.3%	0.3%	0.1%	0.3%	0.4%	0.5%	0.1%	0.0%	0.0%	0.0%	4.4%
12.5	0.3%	0.4%	0.4%	0.5%	0.4%	0.2%	0.2%	0.6%	1.8%	1.2%	1.6%	0.9%	0.6%	0.9%	0.1%	0.0%	0.0%	10.0%
13	0.3%	0.0%	0.2%	0.3%	0.2%	0.8%	0.5%	0.3%	0.4%	0.4%	1.1%	0.8%	1.0%	0.2%	0.3%	0.1%	0.0%	6.9%
13.5	0.5%	0.4%	0.3%	0.3%	0.3%	0.4%	0.3%	0.3%	1.0%	0.5%	0.8%	0.9%	1.5%	0.6%	0.2%	0.2%	0.1%	8.4%
14	0.4%	0.6%	0.3%	0.6%	0.5%	0.4%	0.4%	0.9%	0.4%	1.3%	2.2%	1.7%	1.9%	1.6%	0.9%	0.6%	0.1%	14.8%
14.5	0.5%	0.2%	0.2%	0.3%	0.5%	0.2%	0.6%	1.2%	0.5%	1.7%	1.9%	2.1%	1.7%	0.7%	0.4%	0.4%	0.1%	13.3%
15	0.1%	0.1%	0.2%	0.3%	0.4%	0.5%	1.2%	3.0%	1.2%	0.4%	1.7%	1.0%	1.8%	0.7%	0.5%	0.4%	0.0%	13.4%
15.5	0.2%	0.2%	0.3%	0.4%	0.4%	0.7%	0.9%	1.5%	0.8%	1.0%	1.9%	1.6%	1.0%	1.6%	0.7%	0.6%	0.0%	13.6%
16	0.1%	0.0%	0.2%	0.0%	0.0%	0.1%	0.0%	0.4%	0.6%	0.3%	0.5%	0.6%	0.5%	0.2%	0.3%	0.2%	0.0%	4.2%
16.5	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.0%	0.4%	0.2%	0.2%	0.0%	0.0%	1.2%
Sum	3.2%	2.7%	3.1%	4.0%	3.5%	4.5%	6.0%	9.8%	8.4%	7.5%	12.5%	10.2%	11.3%	7.0%	3.6%	2.6%	0.3%	100.0%

Transit Time & Terminal utilization
Benchmark transit times and terminal utilizations

Transit times



Terminal utilization

Hour	Monday	Tuesday	Wednesd	Thursday	Friday	Saturday	Sunday
0	61%	58%	55%	57%	62%	60%	63%
1	61%	55%	56%	56%	58%	57%	65%
2	59%	56%	57%	57%	58%	56%	65%
3	61%	56%	55%	58%	58%	56%	66%
4	60%	56%	55%	57%	58%	57%	64%
5	60%	56%	54%	61%	57%	57%	66%
6	61%	54%	55%	61%	58%	59%	65%
7	61%	58%	56%	59%	58%	59%	69%
8	61%	58%	58%	58%	58%	62%	70%
9	59%	59%	57%	61%	59%	62%	68%
10	59%	59%	59%	62%	61%	62%	67%
11	61%	61%	56%	63%	61%	67%	68%
12	60%	62%	57%	62%	62%	63%	63%
13	62%	60%	58%	63%	61%	63%	62%
14	60%	60%	60%	64%	61%	62%	64%
15	60%	62%	60%	64%	59%	61%	64%
16	60%	62%	57%	64%	62%	61%	63%
17	59%	60%	59%	65%	60%	61%	64%
18	60%	62%	60%	65%	60%	62%	64%
19	60%	60%	58%	64%	61%	62%	65%
20	58%	59%	59%	64%	60%	64%	63%
21	58%	56%	58%	61%	58%	65%	63%
22	59%	58%	58%	62%	62%	65%	62%
23	59%	58%	58%	62%	62%	64%	62%

ETA on VeraCity
Predict the next 3 ports and estimated time of arrival

Port arrival prediction (ETA)

Prediction of every vessels next three ports of arrival.

Estimated time in Ports.

Updated 4 times per day.

Free-Trial: €0.00 / month ▼

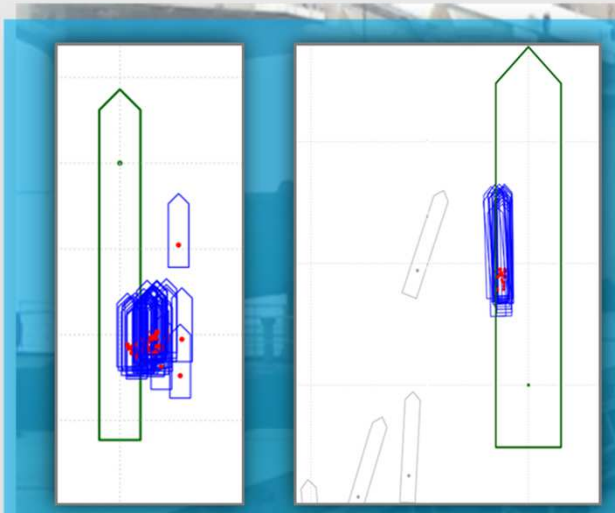
VAT not included

Place an order

Request info/quote

Understand bunkering footprints

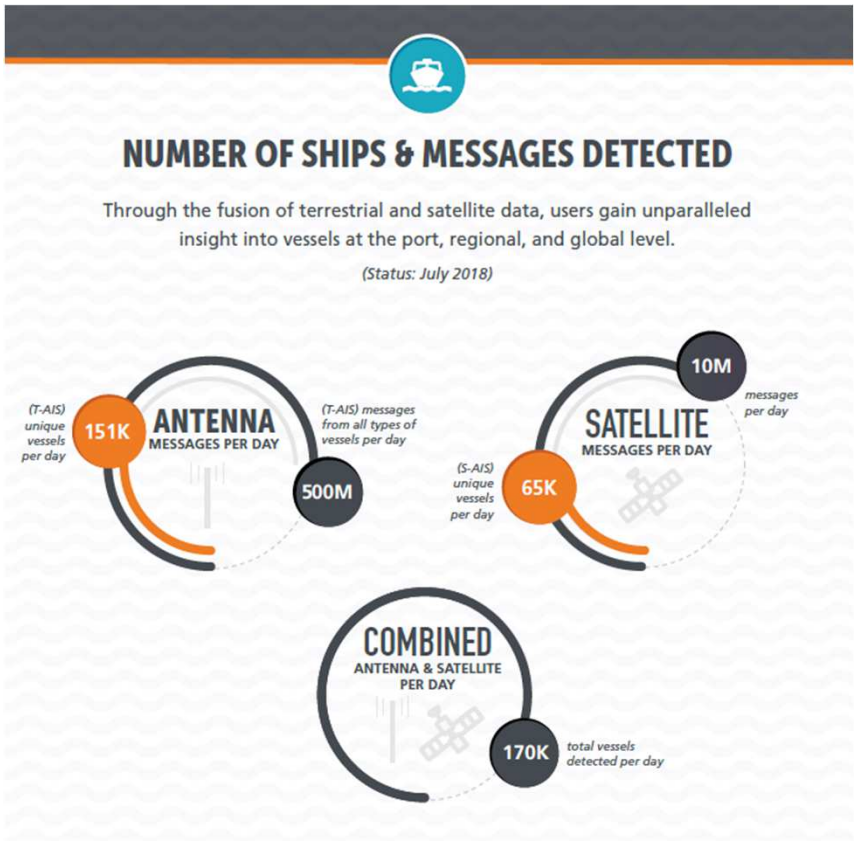
Bunker operations

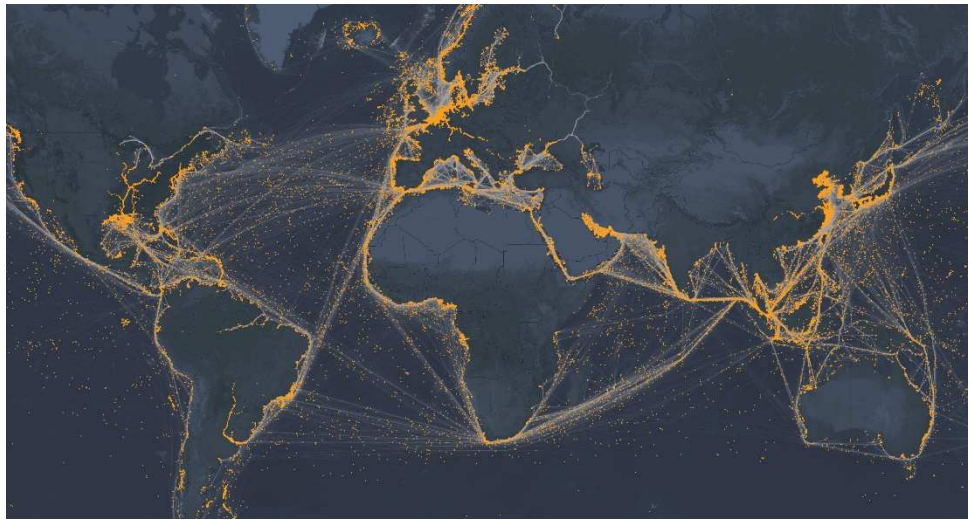


Combining high resolution AIS data with data about vessels to identify;

- Where bunkering took place
- Which barge & ship
- Start and end time

Where do we get our AIS data from?
Vesseltracker





3000+ self owned antenna
5000+ ports
Fusion of **Satellite AIS**
10+ Years of **Global History**
Choice of SAT provider: **ExactEarth and/or Orbcomm**

vesseltracker.com A Genscape Company GENSCAPE

DNV·GL

Vesseltracker
Owned antenna network

- Technical superiority
  - They configure all our antennas themselves, with software that can self-diagnose and repair technical problems without human intervention
  - More online antennas and more complete data

- Data quality and (cyber-)security
  - Each message received get can be traced to the antenna that received it
  - Full control over data quality
  - Identify issues like duplicate values, spikes, and spoofing at the source

- Active expansion
  - The global antenna team actively seeks out new locations based on client needs
  - Provide a true representation of shipping activity from around the world

- Incentivized hosts
  - Antenna hosts are maritime professionals who use Genscape Vesseltracker themselves and have a strong incentive to keep their antennas online
  - Antenna hosts sign long-term agreements before they receive any hardware to guarantee our coverage over the long term

  - Interested to host an antenna? https://www.vesseltracker.com/en/static/antenna-partner.html

vesseltracker.com A Genscape Company GENSCAPE

Interested in more details?

We are looking forward to your enquiry

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