

Presentation of **danaos** WAVES

Fleet Performance Monitoring System



**Since 1989 the Danaos “vessel performance” software module has been used to evaluate hull, engine and propeller efficiency, together with time charter party speed performance claims calculation.*

***2012/Apr Edelman: Finalist for the highest award in Operation Research on “Fleet optimization”*

www.observatory.gr/files/meletes/TPE_B2_MeletesPeriptwshs.pdf

Specialized software for shipping!

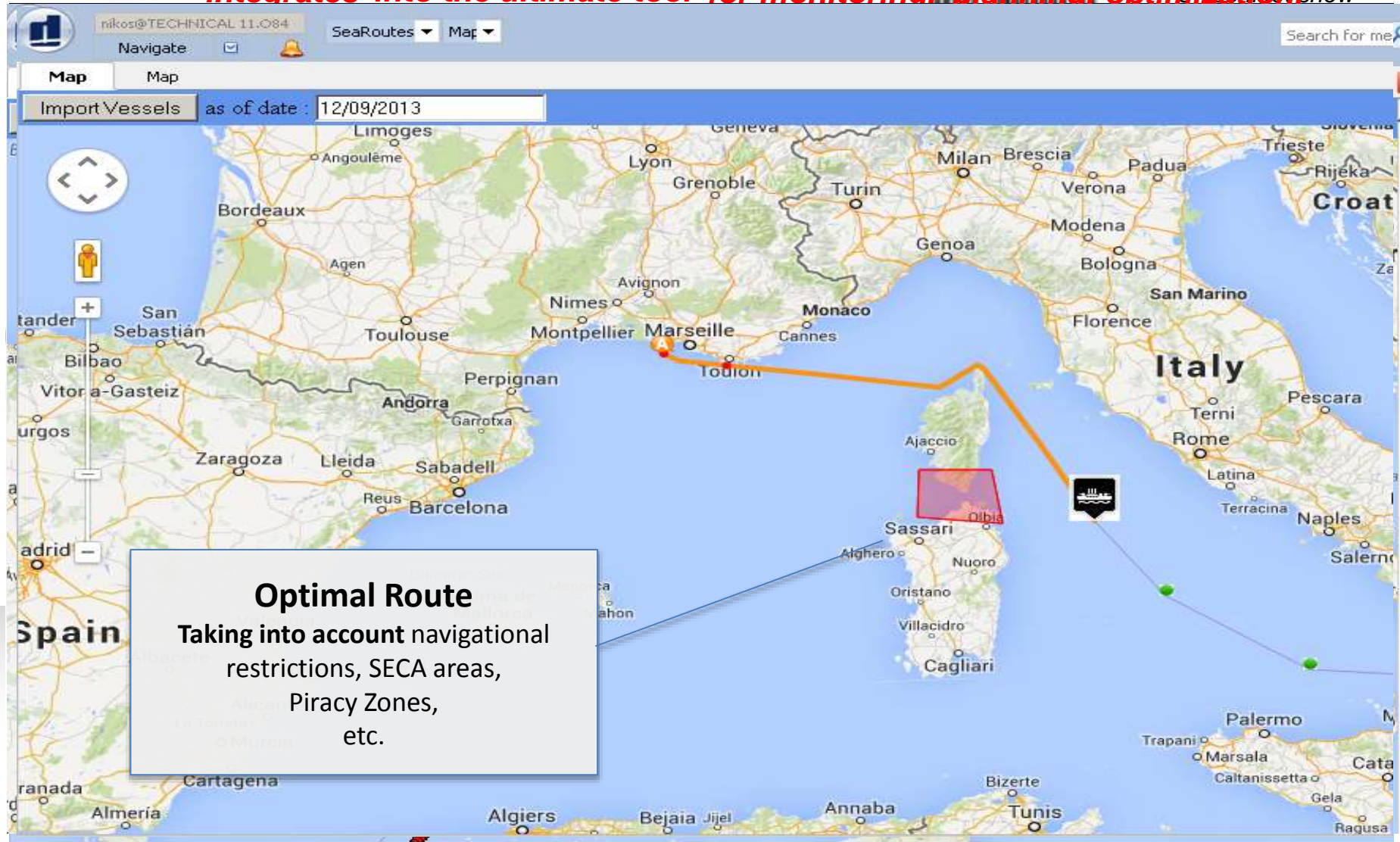
WAVES **AIMS TO**

- Record and optimize fleet utilization by proposing the best speed and route for better financial and environmental results.
- Record vessel fuel consumption, verify charter party compliance and evaluate hull, engine, and propeller efficiency.
- Offer the ultimate fleet “management dashboard” with ongoing voyage analysis, visualization of performance data, alerts for non-controlled risks like bad weather, piracy zones, stoppages, etc.
- Analyze alarms, identify causes, and propose mitigation actions
- Trigger condition-based maintenance
- Automate form filing onboard
- Assist regulatory compliance and reporting

Effectively control performance fleet-wide.

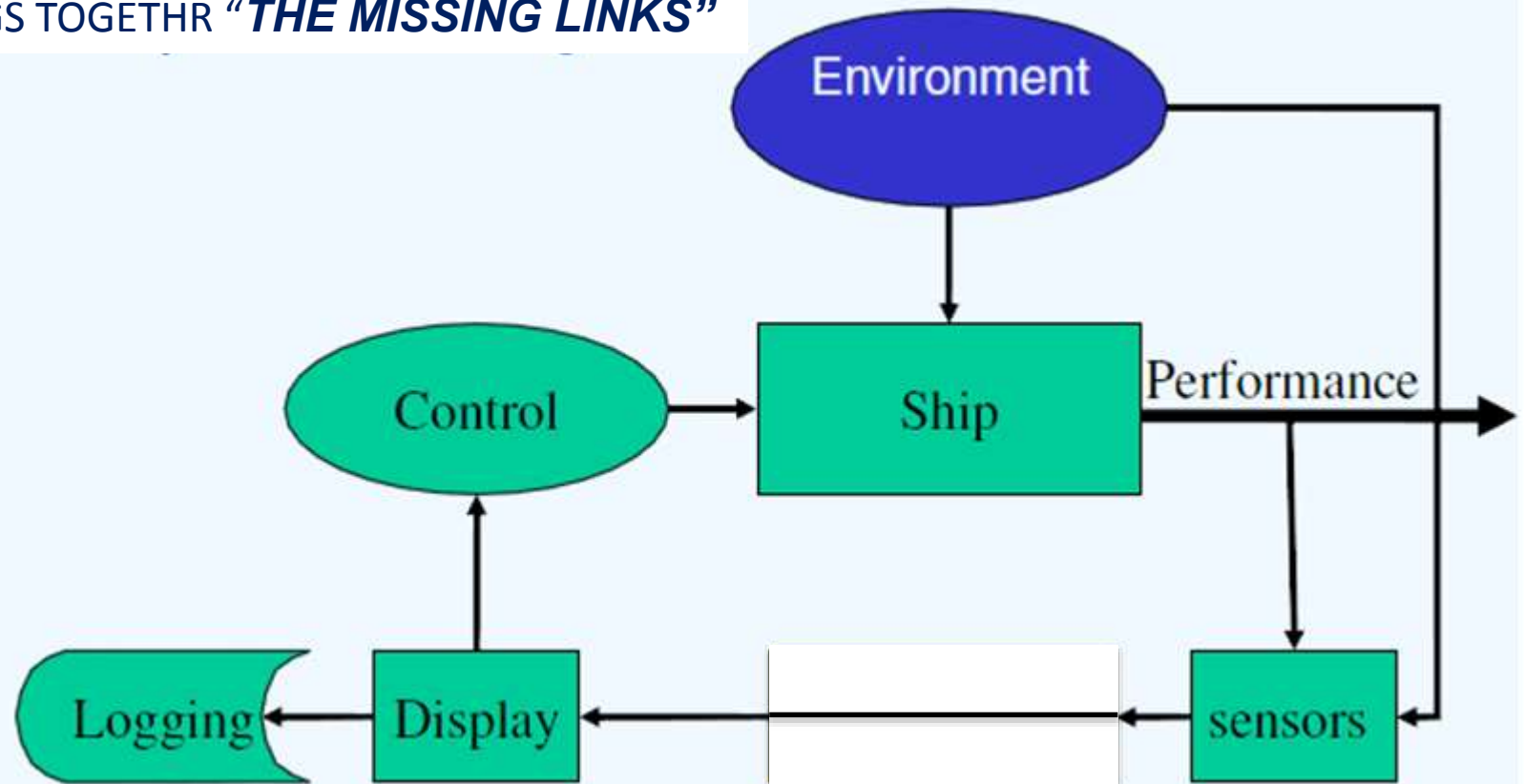
WHAT DOES **WAVES FLEET PERFORMANCE**

Integrates into the ultimate tool for monitoring, planning, optimization show



All in one!

BRINGS TOGETHER ***"THE MISSING LINKS"***



CHARTER PARTY

Voyage Plan

ROUTE
OPTIMIZATION

Waves concept!

WAVES ***INTEGRATES ALMOST EVERYTHING:***

➔ **Machinery monitoring and bridge equipment**

➔ **Performance monitoring systems**

➔ **Ship management systems**

(for maintenance status, technical & quality form information, etc.)

➔ **Ship operation systems**

(for charter party details and performance requirements, position reporting, etc.)

➔ **Weather and optimal routing systems**

➔ **HSQE systems**

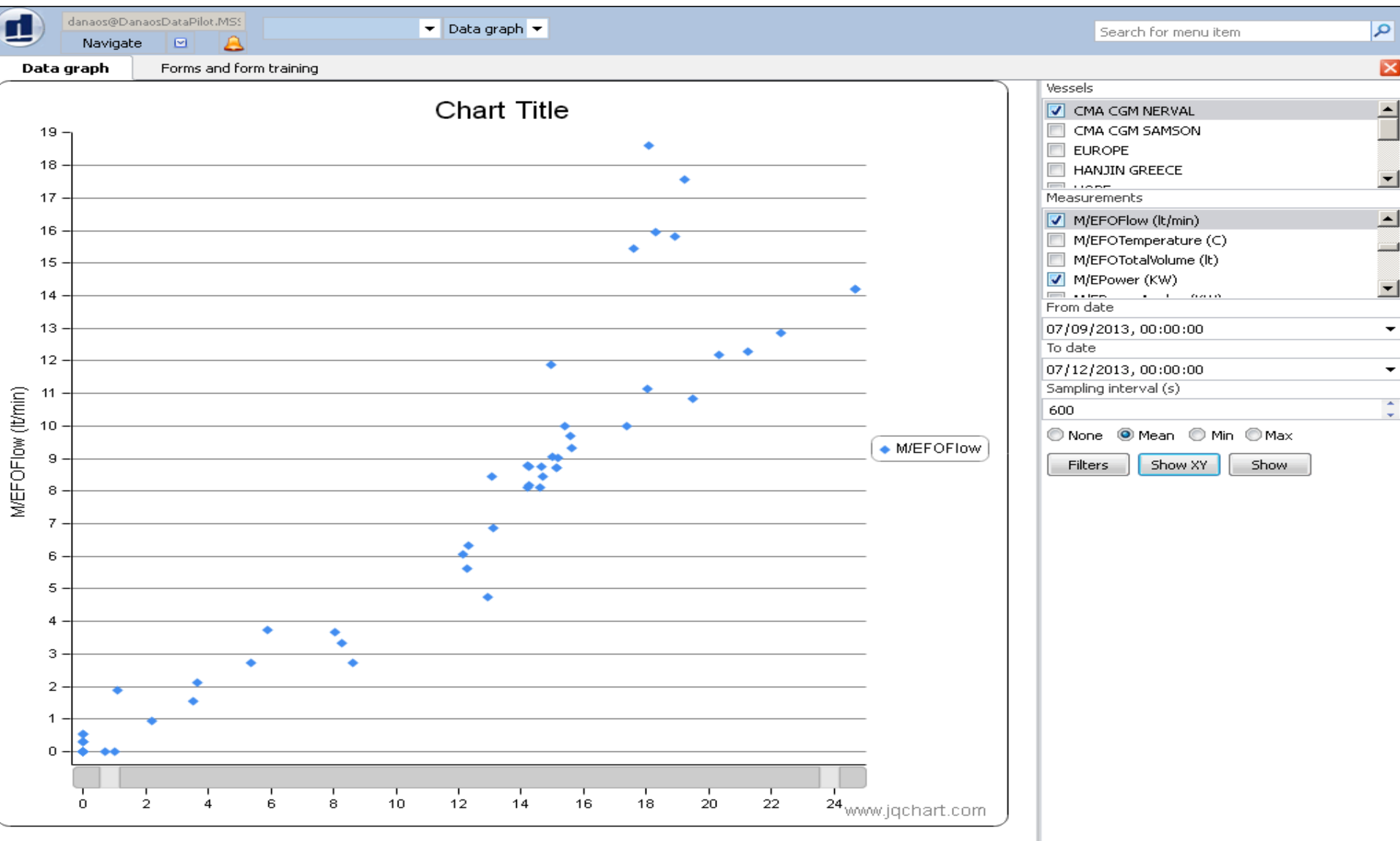
Offers a centralized, modern web system to control performance

(Information can be accessed from anywhere based on security privileges)

***** No company can afford multiple systems for vessel performance monitoring.***

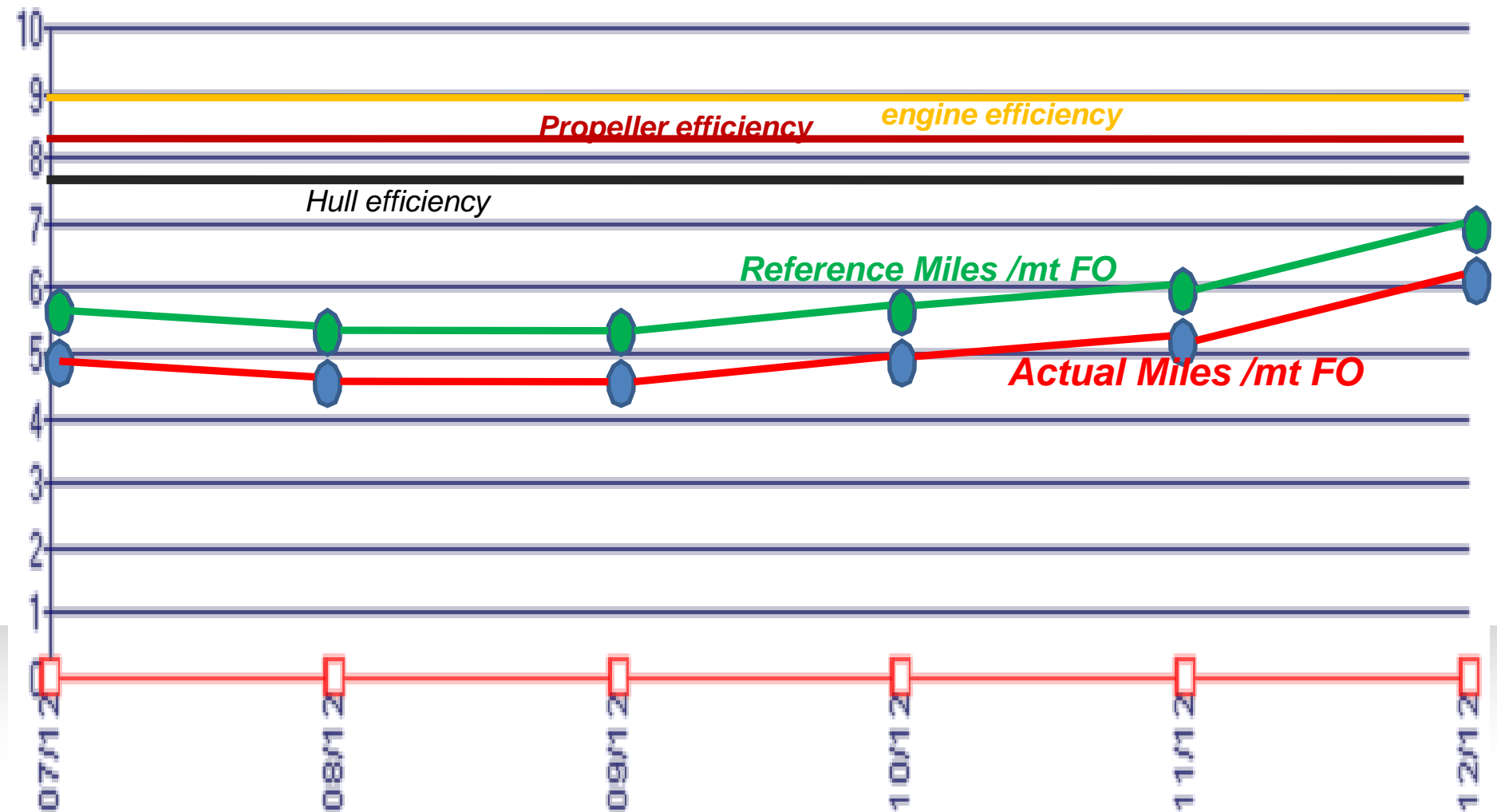
The single monitoring cockpit!

MONITORS *ENERGY (FUEL) UTILIZATION ONBOARD*



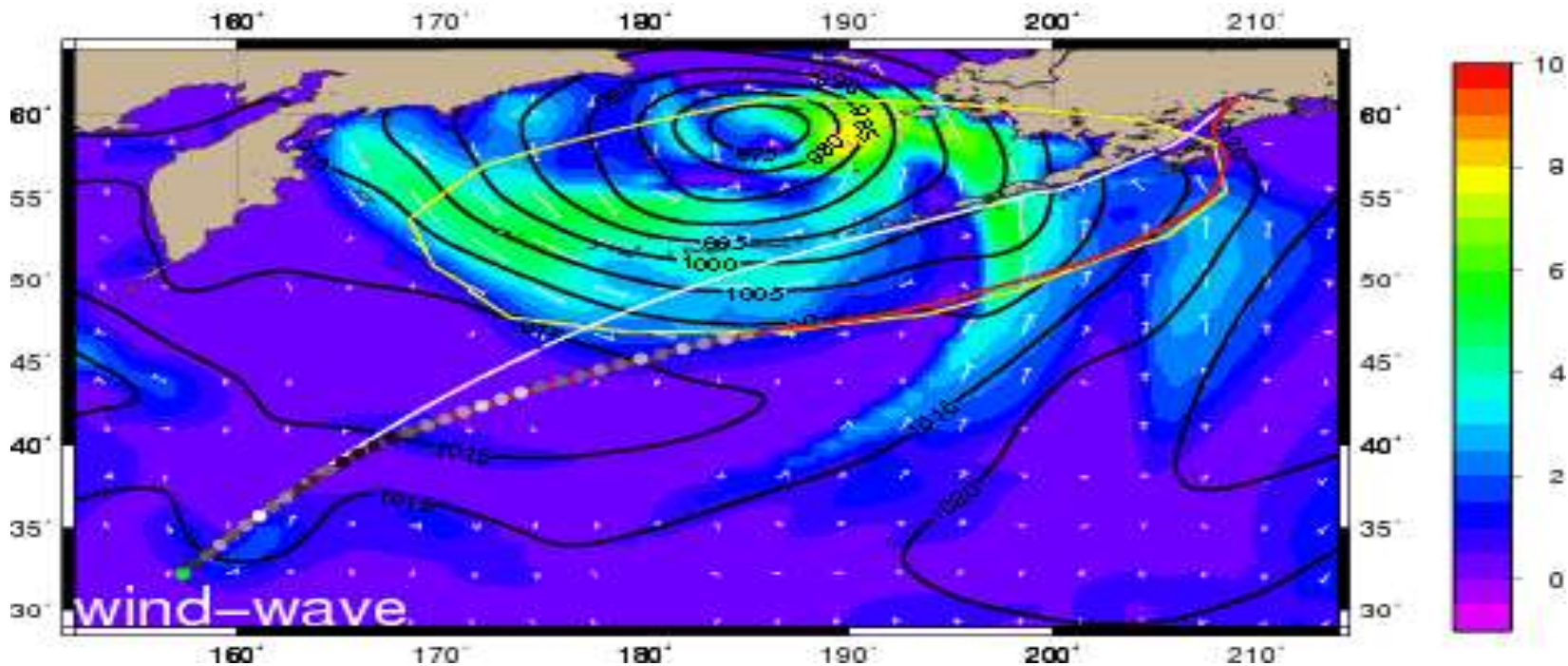
Real time data & vessel reports analysis

MEASURES *HULL, ENGINE & PROPELLER EFFICIENCY*



Compare for improvement !

OPTIMIZES *VOYAGE PLAN* (*TIME, FUEL, RISK*)



Based on

- Vessel sea keeping, main engine & propeller characteristics
- Most accurate weather forecasts
- Charter party clauses & market parameters (FO price, TC)
- Navigation restrictions

Optimize for better results!

RECORDS *CHARTER PARTY COMPLIANCE*

Timecharter Speed and Performance Claim Calculation Form (ROB)

Vessel: TRADER

Voyage: T 001

C/P Date:

	Wind	Sea	Current	Swell	Hire rate:	15000.00	\$/Day	Fuel Prices	FO:	358	DO:	630	GO:		\$/MT
BALLAST	5	5	1		Speed:	13.75	Knots	Consumption	FO:	11.28	DO:	0	GO:		MT/Day
LADEN	4	4	1		Speed:	11	Knots	Consumption	FO:	10	DO:	0.2	GO:		MT/Day

Date / Time	Port Name	Miles	Hours	Speed	Ind	Wind	Sea	Current	Adv	Swell	FO	DO	GO	Bad	Excl
04Apr2007 18:00	Antalya	0.0	00:00	000		000 / 00	000 / 00	000 / 0.0		000 / 00				No	<input type="checkbox"/>
05Apr2007 12:00		265.0	18:00	332 14.72	T/C	157 / 05	157 / 04	000 / 0.0		157 / 01	12.40	0.40	0.00	No	<input type="checkbox"/>
05Apr2007 21:00	Aliaga	115.0	09:00	011 12.78	T/C	/ 00	/ 00	/ 0.0		/ 00	13.87	0.27	0.00	No	<input type="checkbox"/>

Leg Summary all weather: **380.0** **27.00** **14.07** **12.89** **0.36** **0.00**

Weather up to Beaufort 5 **380.0** **27.00** **14.07** **12.89** **0.36** **0.00**

BALLAST SPEED CLAIM: Time lost in days: -0.027 at 15,000.00 USD/day= **-397.73** USD

PERFORMANCE CLAIM: Excess Fuel mtn: 1.810 at 358.00 USD/mtn= **647.98** USD

Excess Diesel mtn: 0.400 at 630.00 USD/mtn= **252.00** USD

Excess Gas Oil mtn: at USD/mtn= **0.00** USD

Date / Time	Port Name	Miles	Hours	Speed	Ind	Wind	Sea	Current	Adv	Swell	FO	DO	GO	Bad	Excl
06Apr2007 22:00	Aliaga	0.0	00:00	000		000 / 00	000 / 00	000 / 0.0		000 / 00				No	<input type="checkbox"/>
07Apr2007 12:00		175.0	14:00	112 12.50	T/C	315 / 04	315 / 03	090 / 0.8	Y	315 / 01	15.94	0.17	0.00	No	<input type="checkbox"/>
08Apr2007 12:00		295.0	24:00	076 12.29	T/C	315 / 04	315 / 03	090 / 1.0	Y	315 / 01	12.10	0.00	0.00	No	<input type="checkbox"/>
08Apr2007 23:15	Iskenderun	150.0	11:15	13.33	T/C	315 / 05	315 / 04	000 / 0.5		315 / 01	16.11	0.36	0.00	Yes	<input checked="" type="checkbox"/>

Leg Summary all weather: **620.0** **49.25** **12.59** **14.11** **0.13** **0.00**

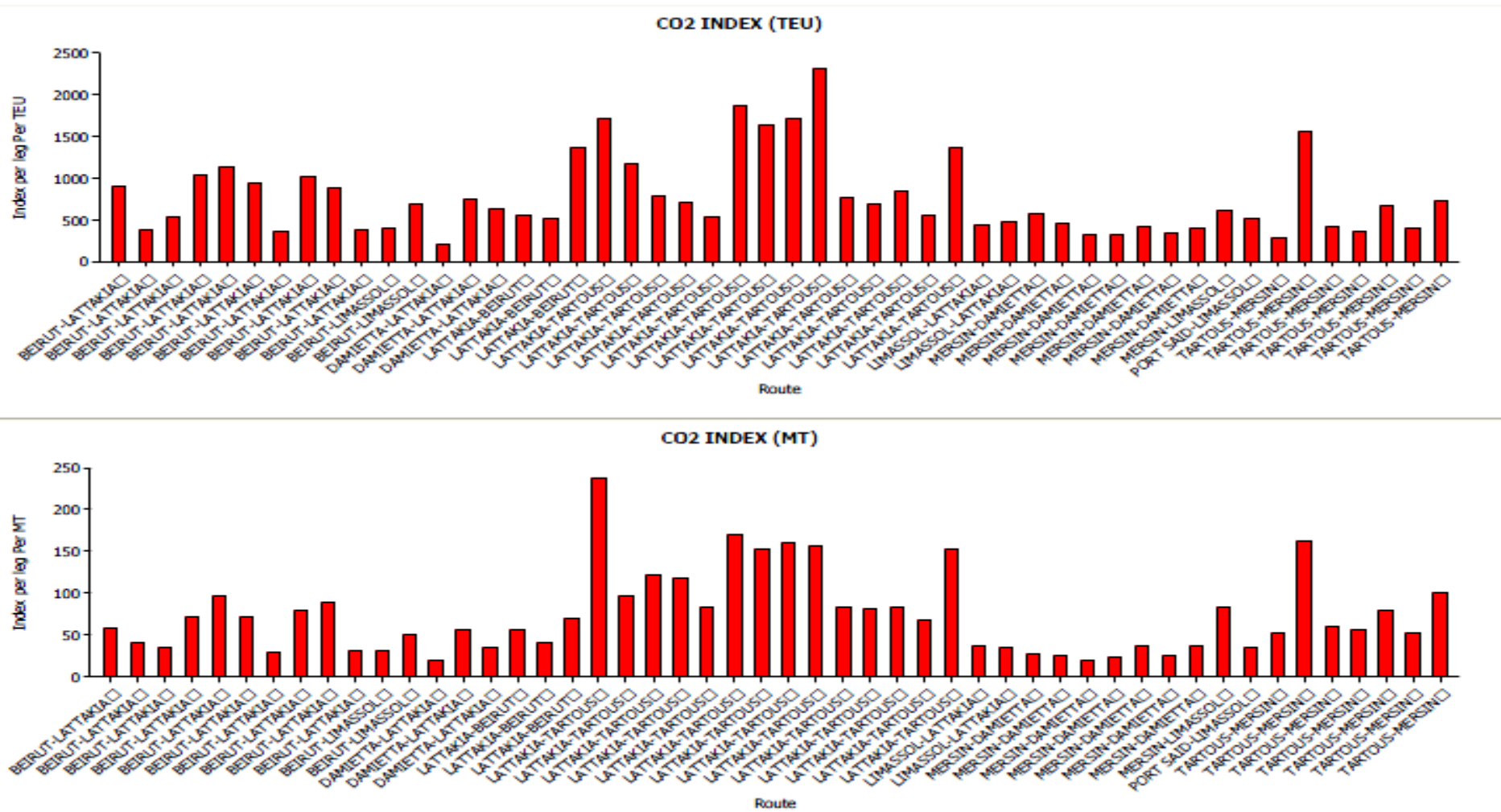
Weather up to Beaufort 4 **470.0** **38.00** **12.37** **13.52** **0.06** **0.00**

LADEN SPEED CLAIM: Time lost in days: -0.197 at 15,000.00 USD/day= **-2,954.55** USD

PERFORMANCE CLAIM: Excess Fuel mtn: 5.567 at 358.00 USD/mtn= **1,992.87** USD

Meets charter party performance requirements!

SUPPORTS **REGULLATORY COMPLIANCE**



SCx, Nox, CO2, Seemp, MRV, etc.

ADDITIONALLY

- ➔ Can support specialized analysis for:
 - ➔ Trim optimization
 - ➔ Lubricants consumption in conjunction with liner wear
- ➔ Can produce all Key Performance Indicators
 - ➔ For Technical condition
 - ➔ Quality
 - ➔ Environmental
- ➔ Can analyze Alarms
- ➔ Can automatically produce majority of forms on board and ashore

Towards a fully automated system!



www.danaos.gr

IT Group



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Thank you....!