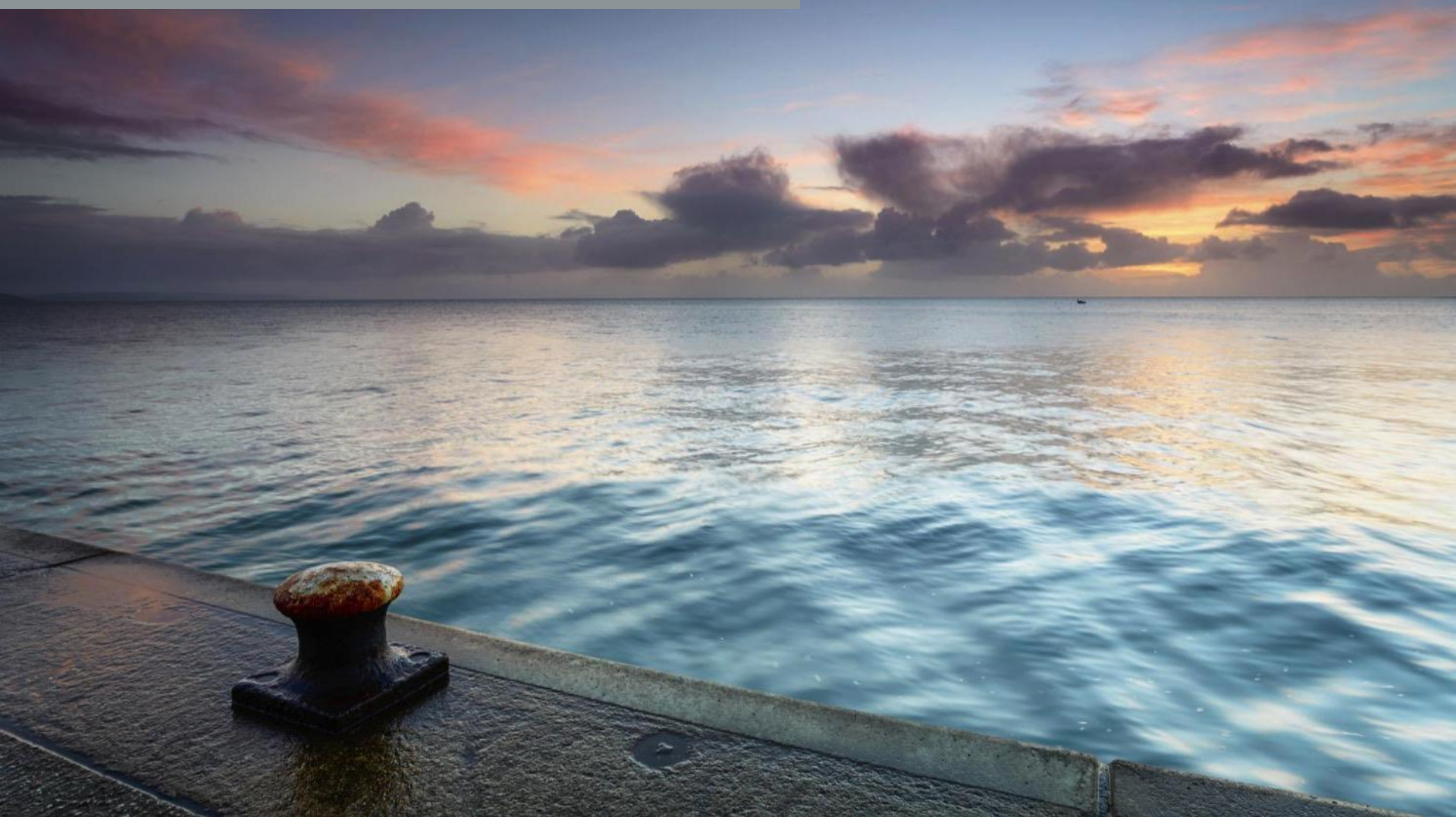


MRV RINA Solutions




Stefanos Chatzinikolaou
Manager, Research & Innovation, RINA Hellas

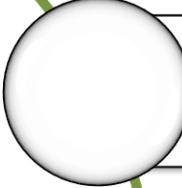
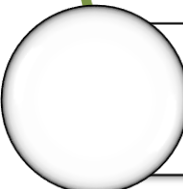
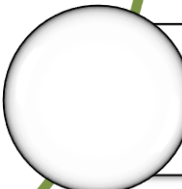


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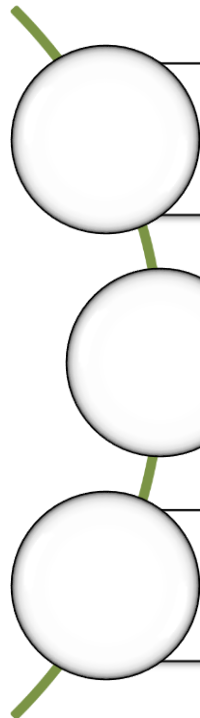
Contents



	MRV Update
	Monitoring Plan
	RINA Activities



Contents



- MRV Update
- Monitoring Plan
- RINA Activities



RINA Activities

- RINA is participating in the ESSF WG as one of the three IACS representatives
- RINA has applied to its national accreditation body to become a “verifier”
- RINA has developed methodologies and tools for accurate and reliable data acquisition for MRV use (SMART DSS of InfoShip EGO)
- RINA can already offer pre-verification of the Monitoring Plan according to the EU MRV



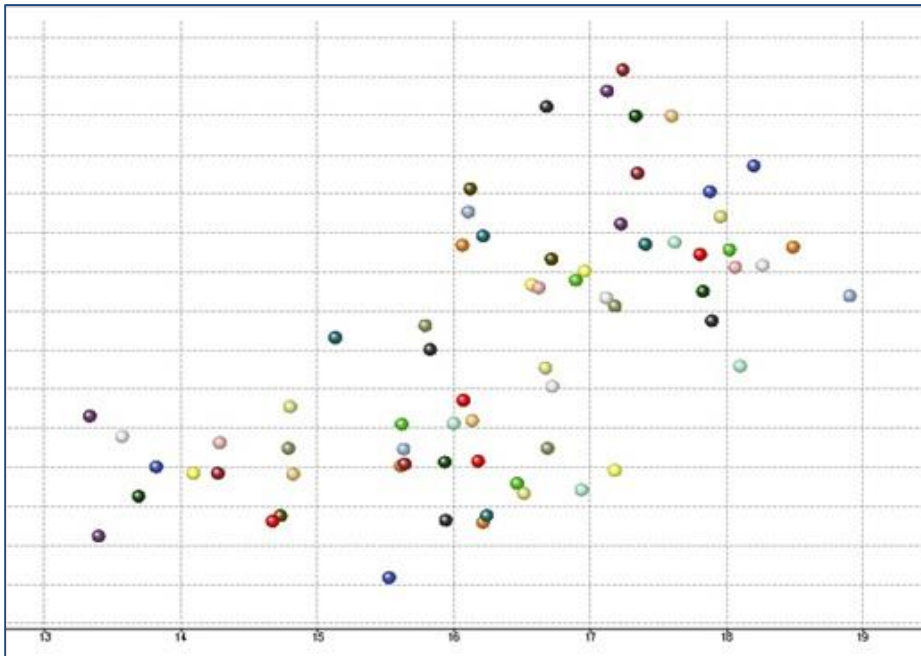
RINA Activities

- Provision of a [standard e-form](#) for the development of the Monitoring Plan (according to EU).
- If the Company decides to keep forms already in use, check if these contain all the required information
- Automatic acquisition of these forms and creation of a database
- Filtering, processing and comparing operations are possible on data collected through a business intelligence tool
- Reporting in accordance to EU MRV

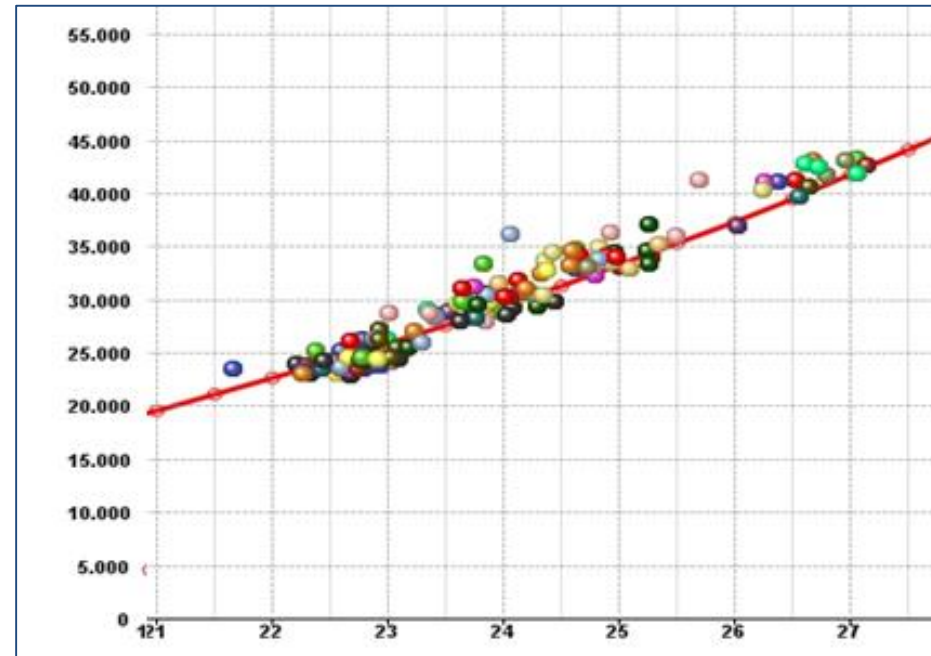


Data Collecting Benefits

- Data acquired continuously by a monitoring system have a higher degree of accuracy and reliability.



Data from Noon Report.



Data from Monitoring System.



Big Data Usage - Regression Analysis

Ship Variables

- Speed TW
- Displacement
- Trim

Environmental Variables

- Sea State
- Wind State

Target

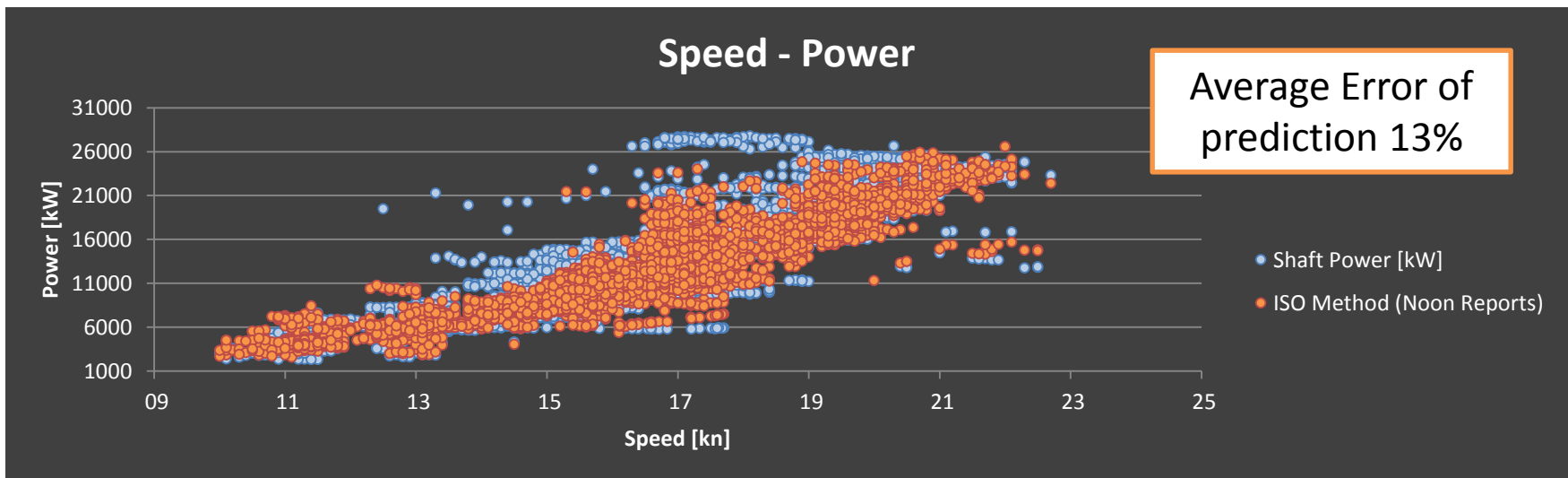
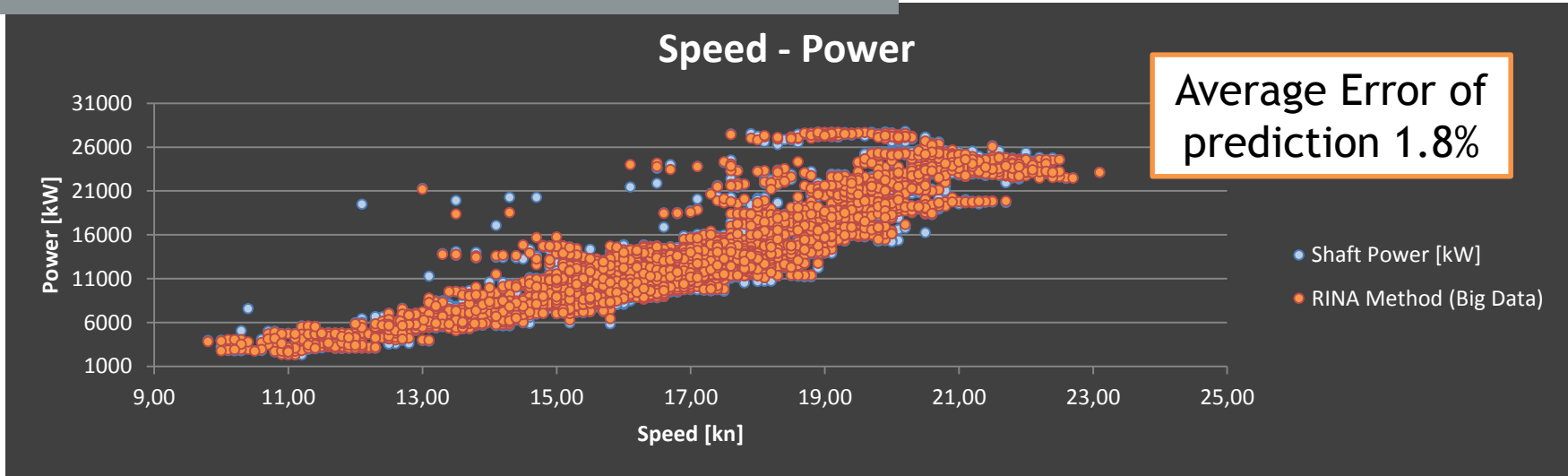
- Propulsion Power



Big Data Power Prediction

SMART DSS
Decision Support System

 **InfoSHIP**
EGO • Energy Governance
Powered by IB



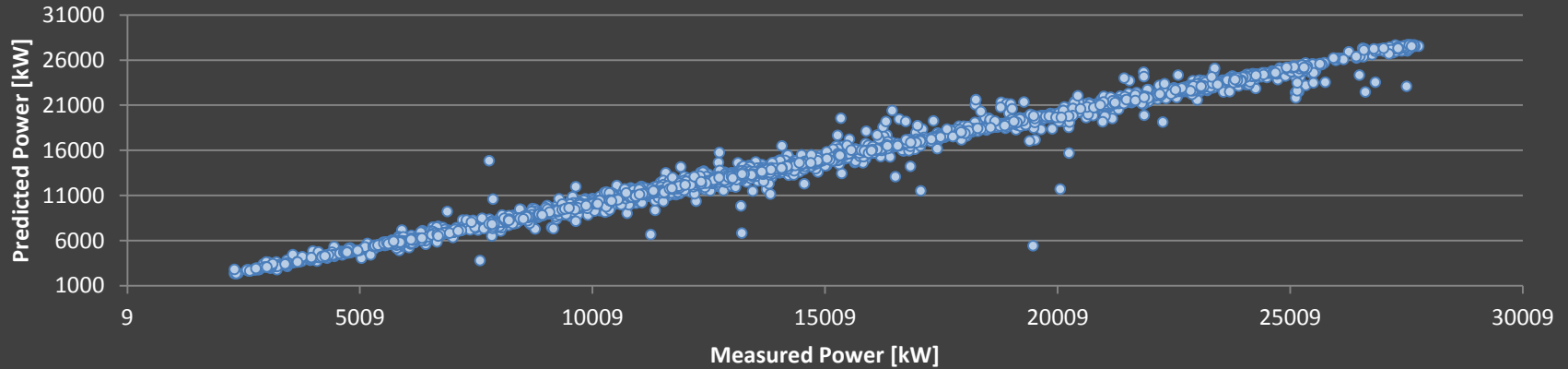
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Big Data Power Prediction

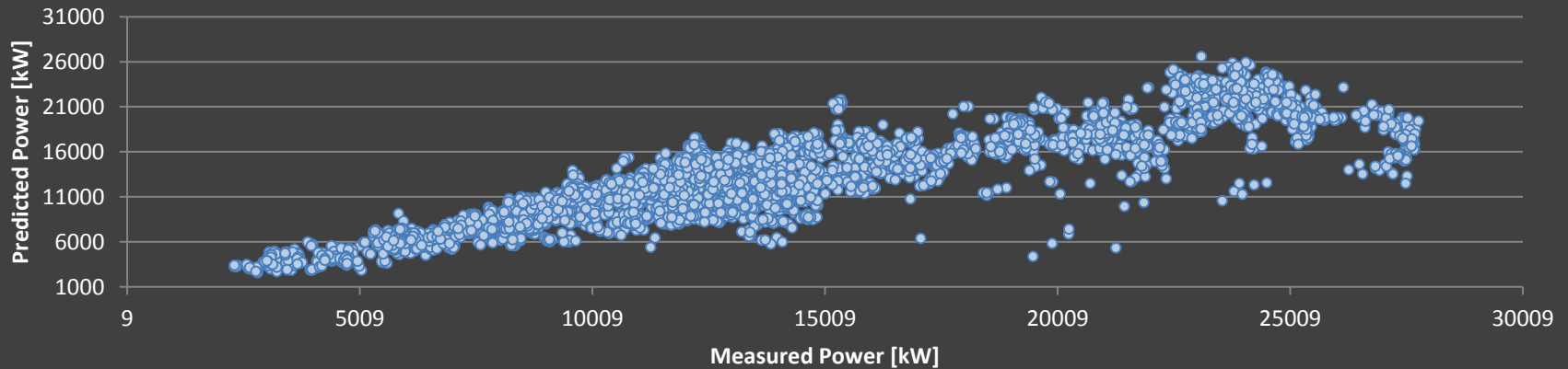
SMART DSS
Decision Support System

 **InfoSHIP**[®]
EGO • Energy Governance
Powered by IB

RINA Method (Big Data)



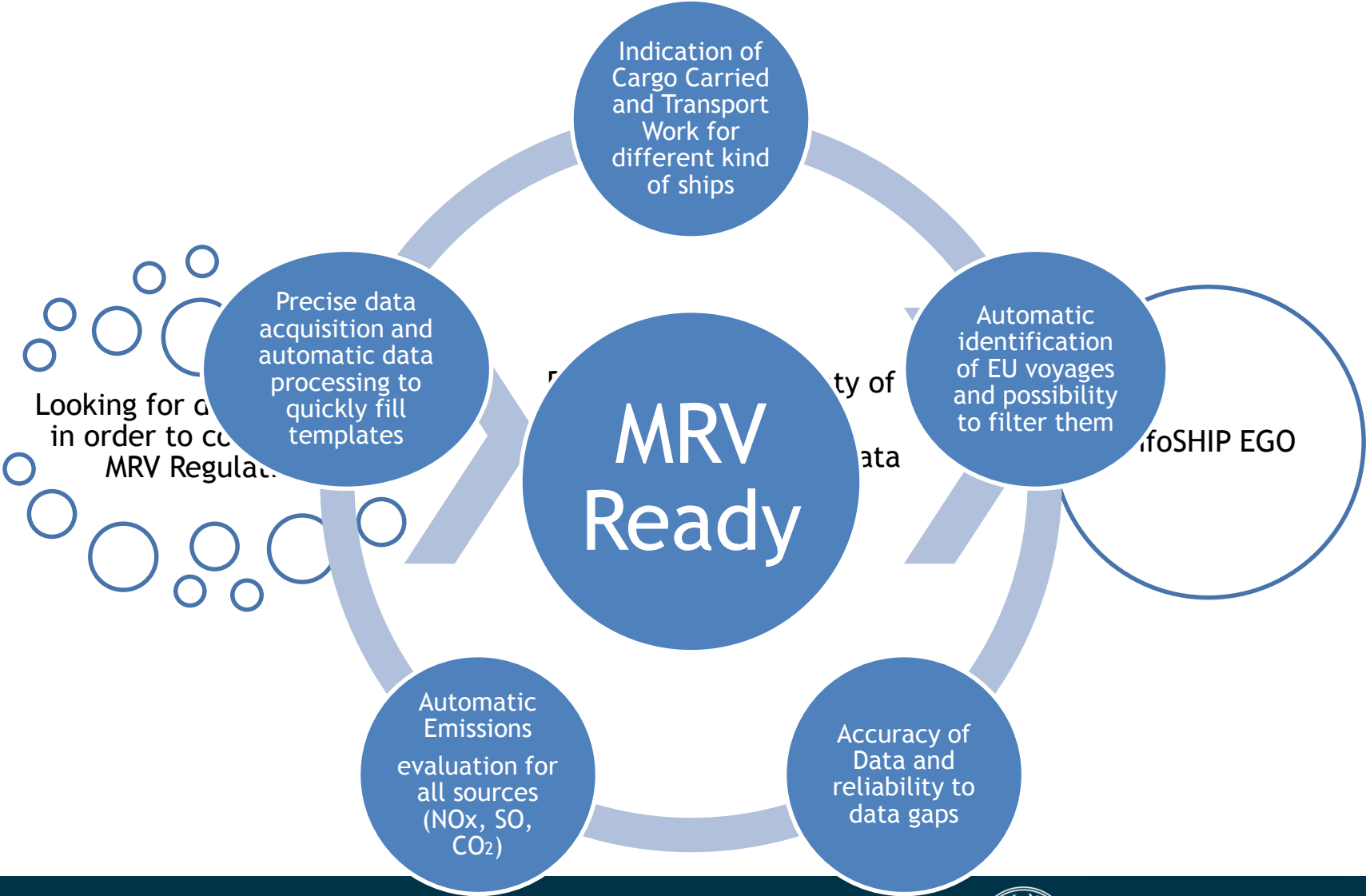
ISO Method (Noon Reports)



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Reporting to face Forthcoming Regulations



RINA solutions



EGO



RINA Solutions

SMART DSS Decision Support System



With the new InfoSHIP®EGO - Smart DSS (Decision Support System) shipping companies can decide to install a permanent monitoring system onboard newer and better equipped vessels or stay with manual reporting on older vessels and those not equipped with sensors.

Data from inhomogeneous data sources are merged in a database and filtered, processed and analyzed by a business intelligence tool irrespectively if these are generated through a noon report or by RINA InfoSHIP®EGO.



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DECISION SUPPORT SYSTEM (DSS)

Data recorded automatically by DC and manual input from Voyage Planning Tool are transferred ashore and merged to create a MySQL database.



- The database can be browsed locally or published on the web through Qlik View Server and accessed remotely from any PC.
- DSS tool is available also for mobile as it's a full web application.

SMART - DSS

Filtering MRV voyages

SMART DSS
Decision Support System



Route

Period comparison

Flowmeter

Steady Propulsion

Management

- CHARTERED
- CYPRUS MANAGEMENT
- SORRENTO MANAGEMENT

Fleet

Group

- AGRIGENTO
- AGATA
- AMERICA
- AMY

Ship 1 out of 532

- MSC Alghero
- AGGELIKI P
- AKERDIJK
- ALEXANDRA RICKMERS
- ALLEGRO
- ANASTASIA

Data source

- EGO
- VRS

15/03/2014 11/07/2014 17/11/2014 11/03/2015 28/06/2015 17/10/2015 02/02/2016 20/05/2016 06/09/2016 23/12/2016

Selected Period: from 29/11/2016 to 15/12/2016

Voyage Number	Departure Port	Arrival Port	MRV Voyage
ALGH000303	Kaect (King Abdullah E...)	Kaect (King Abdullah E...)	NONE
ALGH000302	Mundra	Tangeri Med	IN
ALGH000301	Valencia	Valencia	OUT
ALGH000305	Aarhus	Aarhus	NONE
ALGH000304	Aabidjan	Aabidjan	NONE
ALGH000300	Acajutla	Aden	NONE
ALGH000299	Aden	Aden	NONE
ALGH000298	Aden	Agadir	NONE

MRV Voyage

- NONE
- IN
- OUT

Voyage Number:
Departure Date: from
Arrival Date: to

Previous Next

Route of

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SMART - DSS

Cargo loading

SMART DSS
Decision Support System



- Automated and Noon Report Comparison;
- Period Comparison Available.



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SMART - DSS

Emissions results

SMART DSS
Decision Support System



- Automated and Noon Report Comparison;
- Period Comparison Available.



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SMART - DSS

Emissions reporting

SMART DSS
Decision Support System



Dump Area

Dimension Base
 Voyage Date
 Hour 5 minutes

Period comparison

Flowmeter

Steady Propulsion

Management

- CHARTERED
- CYPRUS MANAGEMENT
- SORRENTO MANAGEMENT

Fleet

- 2
- 1
- 3
- 4

Group

- DYMPHNA
- AGATA
- AGRIGENTO
- AMERICA

Ship 1 out of 353

- MSC Katyani
- MSC Adele
- MSC Adriana
- MSC Agrigento
- MSC Alabama
- MSC Alghero
- MSC Army



- Navigation
- Environmental
- Cargo & Loading**
- Trim
- Propulsion
- Consumption
- Generation
- PE
- Other Equipments
- Fuel Technical Data
- Emissions



Report for 5 minutes

5 minutes	Phase	Latitude	Longitude	Displacement at Departure [t]	Displacement [t]	Draft Aft at Departure [m]	Draft Aft [m]	Draft Mid at Departure [m]	Draft Fore at Departure [m]	Draft Fore [m]	Tons of Cargo [t]	Windage Area Tra.	Windage Area Lon.	Deadweight [t]	Full TEU
26/09/2016 13:10:00	MAN	53.534167	9.906083	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 13:05:00	MAN	53.535567	9.90605	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 13:00:00	MAN	53.537083	9.905417	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:55:00	MAN	53.5413	9.895433	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:50:00	MAN	53.541967	9.877267	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:45:00	MAN	53.544083	9.8594	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:40:00	MAN	53.546733	9.8442	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:35:00	MAN	53.549817	9.827217	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:30:00	MAN	53.553617	9.806567	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:25:00	MAN	53.557517	9.78535	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:20:00	MAN	53.560383	9.76375	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:15:00	SEA	53.562217	9.740983	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:10:00	SEA	53.564283	9.717133	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:05:00	SEA	53.566533	9.692833	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 12:00:00	SEA	53.568833	9.66895	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 11:55:00	SEA	53.571867	9.646783	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 11:50:00	SEA	53.579467	9.625617	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 11:45:00	SEA	53.590633	9.604883	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 11:40:00	SEA	53.6034	9.584883	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 11:35:00	SEA	53.614317	9.561567	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 11:10:00	SEA	53.687233	9.491	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 10:55:00	SEA	53.73115	9.44775	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 10:45:00	SEA	53.755617	9.403483	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 10:40:00	SEA	53.774483	9.392833	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
26/09/2016 10:35:00	SEA	53.794033	9.381733	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 10:20:00	SEA	53.84815	9.322787	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 10:10:00	SEA	53.873133	9.261317	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 09:50:00	MAN	53.879383	9.136467	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086
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26/09/2016 09:30:00	SEA	53.8603	9.032833	58621	58621	10.70	10.70	10.20	9.80	9.80	30064	1315.00	9969.00	35745	2086



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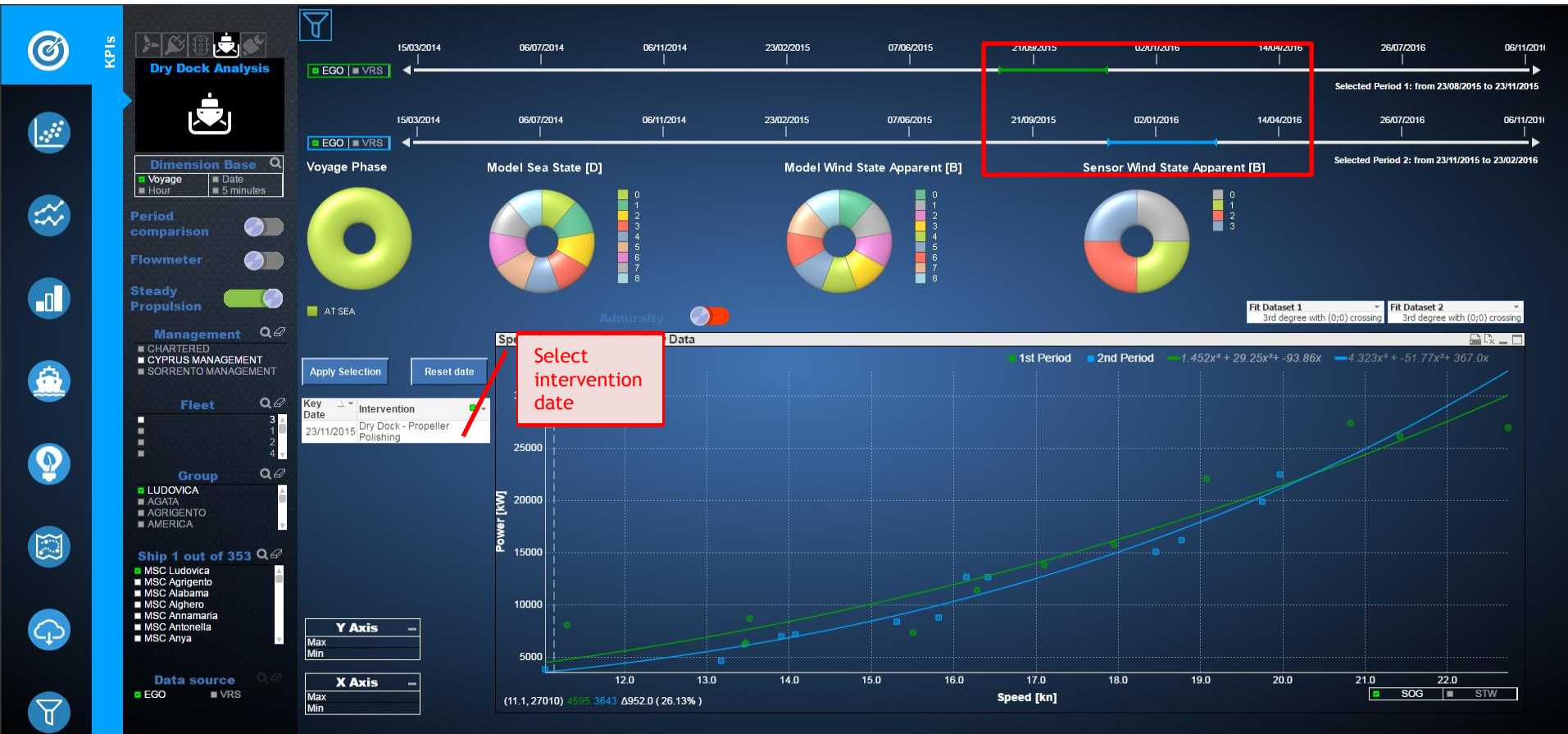
More than just MRV reporting...

EGO



Intervention Analysis - Dry Dock

- Select intervention date from pre-loaded list;
- Three months before and after intervention are automatically filtered;
- Weather filters visible in the dashboard.



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Intervention Analysis - Engine

- Select intervention date from pre-loaded list;
- Three months before and after intervention are automatically filtered;
- Weather filters visible in the dashboard.





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