



HAMBURG SÜD
COLUMBUS SHIPMANAGEMENT

Fuel Efficient Ship Operation – How to Optimize Trim, Speed and Route

STG Ship Efficiency Conference, Hamburg



Christoph Gessner, 28th September 2015

■ ■ Why is fuel saving essential?

Cost side:

- Fuel costs have decreased significantly since Q4/14
- However, bunkers are still one of the biggest operational cost items
- However, the price advantages are taken by all competitors in the market
- Saving potential still exists, whilst other cost categories have less room for improvement
- Marginal savings do still have a large effect on cost improvements

Environmental protection side:

- Reduction of CO₂- emissions
- Target of Hamburg Süd: Reduction of CO₂- emissions per transported teu km by 45% from 2009 to 2020
- Social responsibility and customer expectation: Detailed, competitive and improving CO₂ footprint



■ Which fuel saving techniques are applied?

- Slow- steaming
- Excellence in operating / performance optimization
- Weather routing
- Trim optimization
- Hull optimization & hull/propeller maintenance
- Engine optimization

„Fuel savings can only be achieved by combining the optimum technology with responsible operations and proper monitoring of the taken action“



Fleet Operations Center – opened 1st of February 2015



Excellence in operating

The Mission:

Maximize fuel savings



- Operating the vessel during the Ocean Leg passage
 - Coordination of route, speed and arrival time with the vessels command
 - Nautical expertise
 - Performance monitoring and optimization
- => Optimization potential mainly lifted by route & speed optimization
- Optimization-level: Constant RPM, as constant speed (over ground) is insufficient
 - Aim is to optimize on constant M/E load
 - Communications flow coordination and channeling of information
 - Review and feedback of taken action



Fleet Operations Center – suboptimal speed-profile



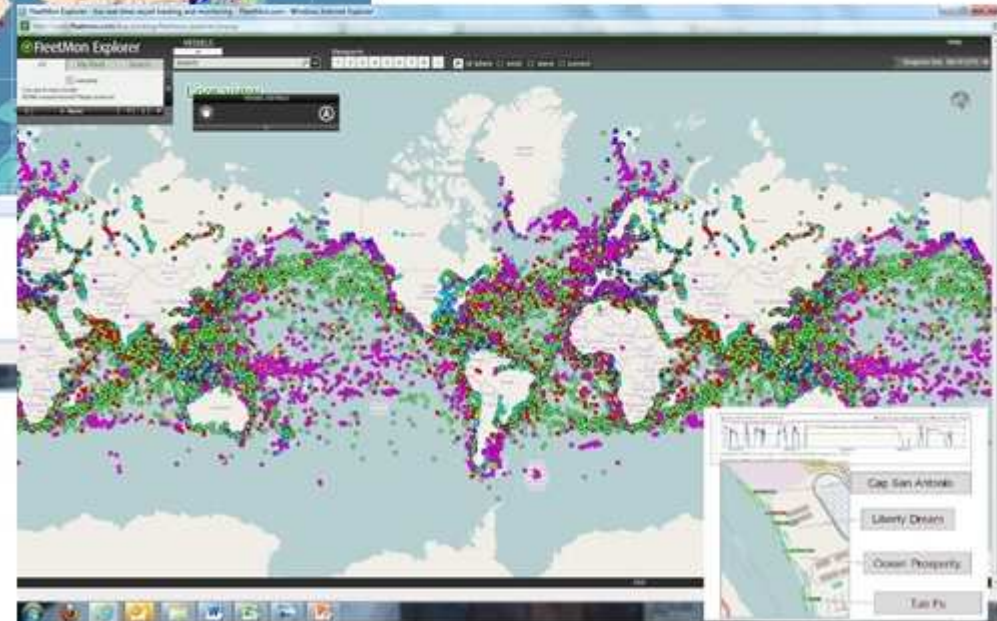
CASE

- commenced with too high speed
- stopped ME speed up to recover time loss

Voyage Monitoring Tools



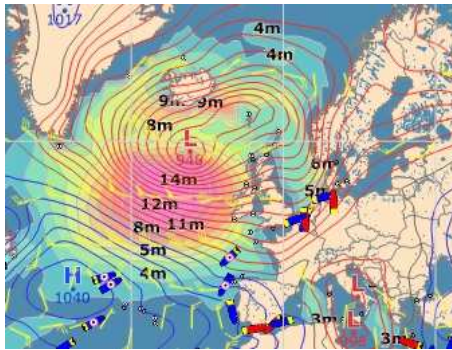
Decision Support Systems



World fleet AIS Satellite position tracking

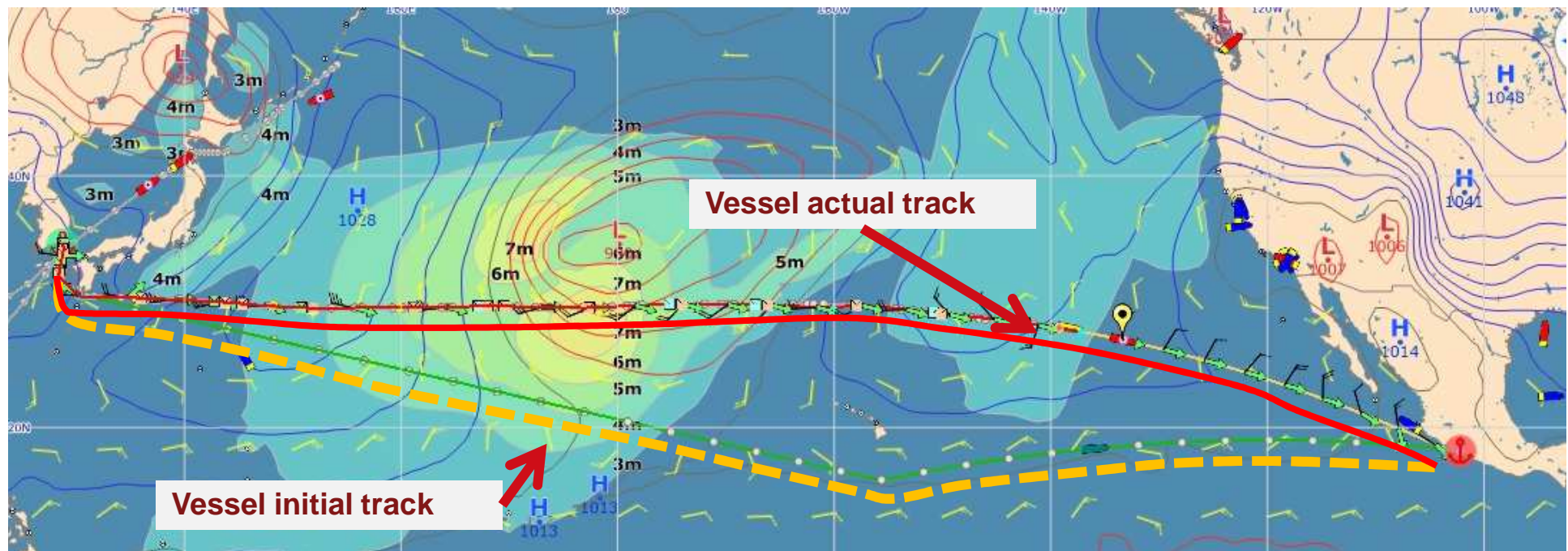


Fleet Operations Center – Monitoring Fleet Decision Support Tool



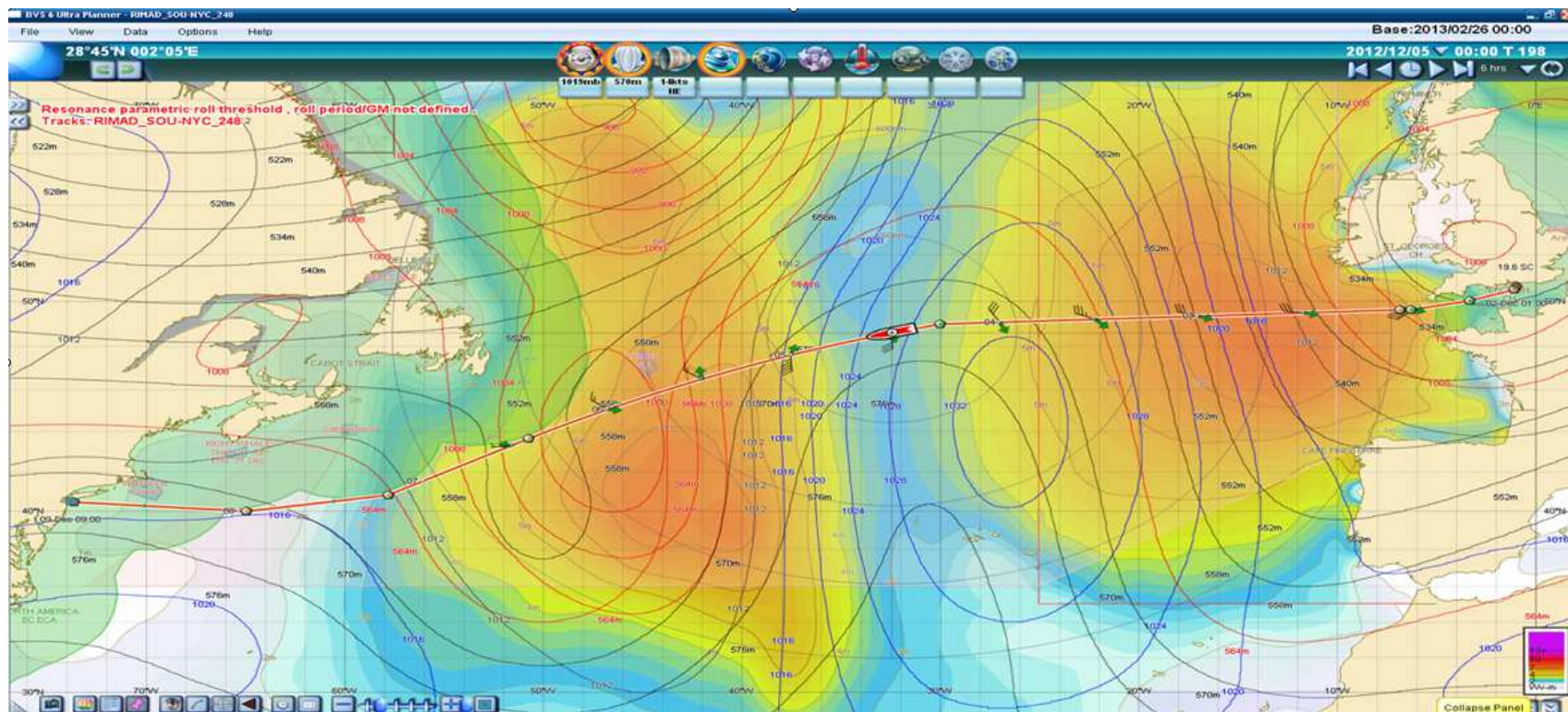
OPTIMIZATION

- Route & speed
- Considering vessel- & weather condition + schedule
- Vessel intended route +600nms
- Vessel was not impacted by low depression at all

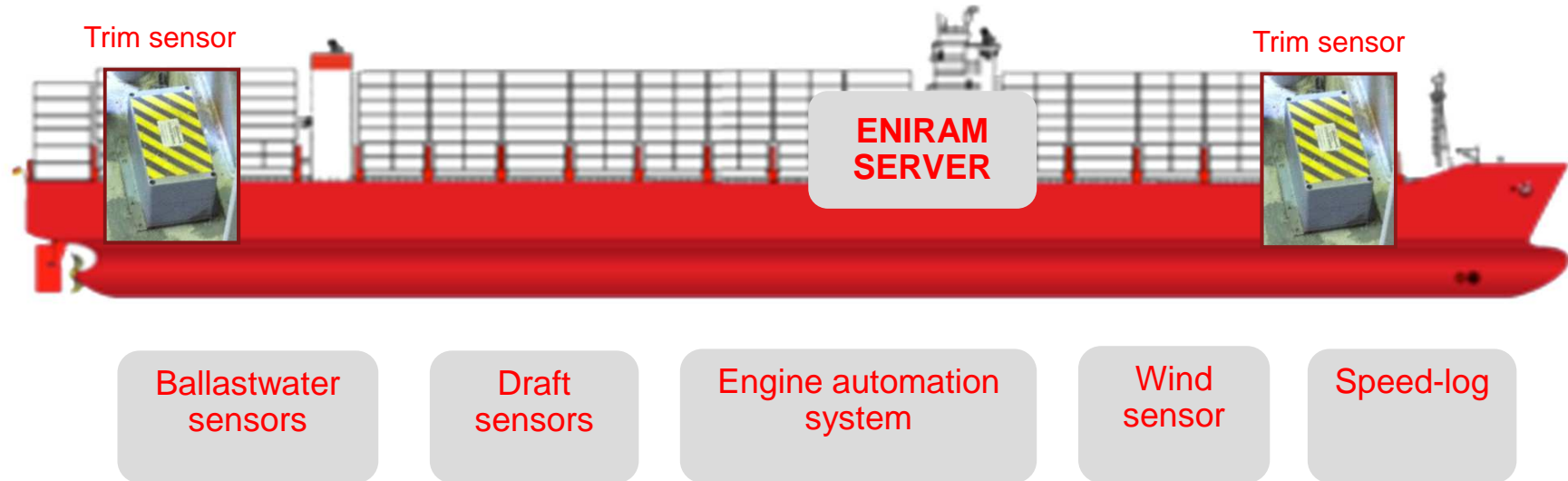


Weather routing software

- 1st step: Weather forecasting software installed on board of all vessel which permits dynamic route planning by Masters
- 2nd step: Shore-side routing support by 3rd party weather routing service
- 3rd step: Effective and timely controlling of chosen route



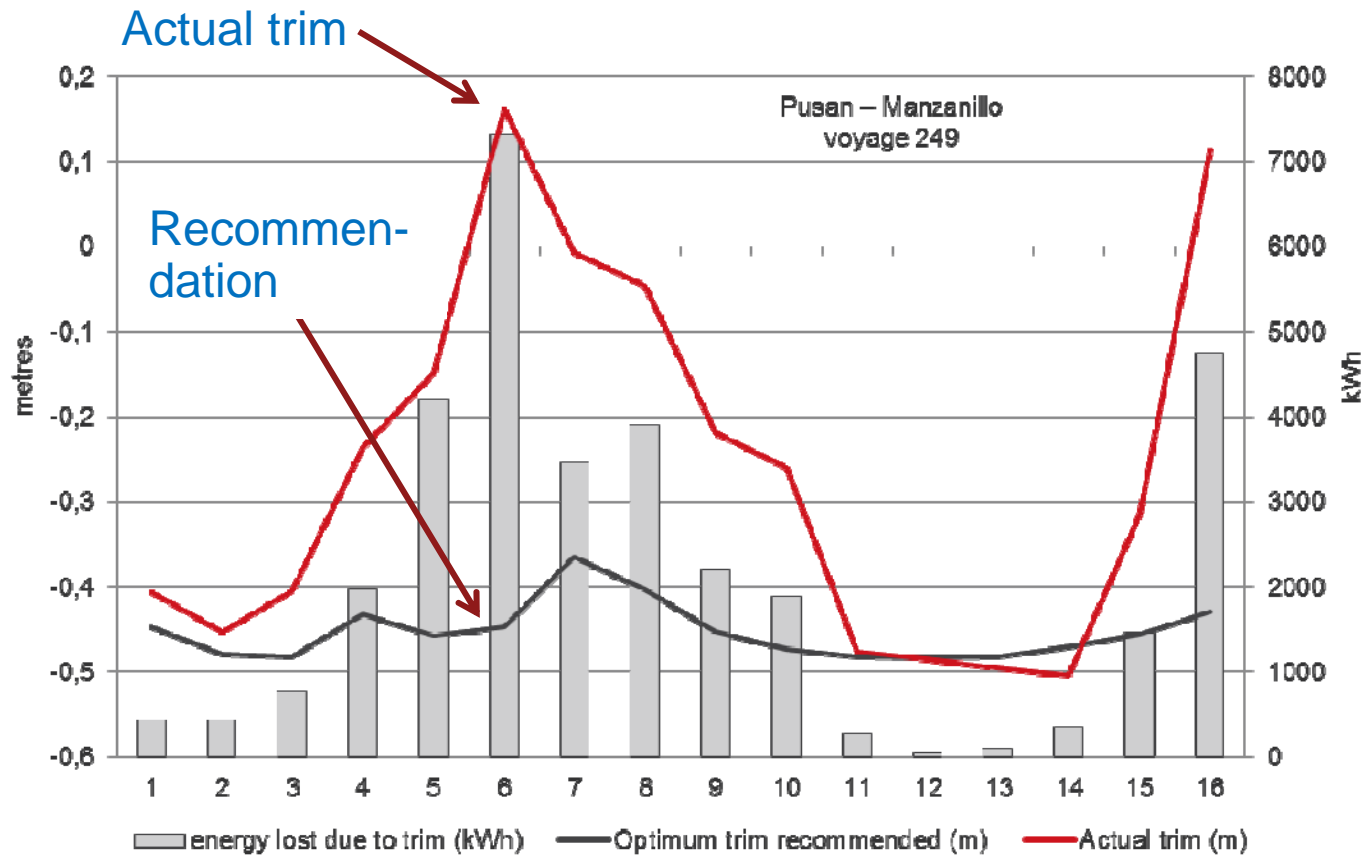
ENIRAM – Dynamic Trim Assistant



- Installed on board of 38 vessel between 5.500 and 10.600 TEU managed by Columbus Shipmanagement since 2010
- Crew acceptance level is good (up to 75%) due to intuitive handling
- Trimming by the bow is noted regularly
- Crew-feedback loop is developed in order to motivate usage and demonstrate incentive-character (sailing in ‚green-range‘ is positive)



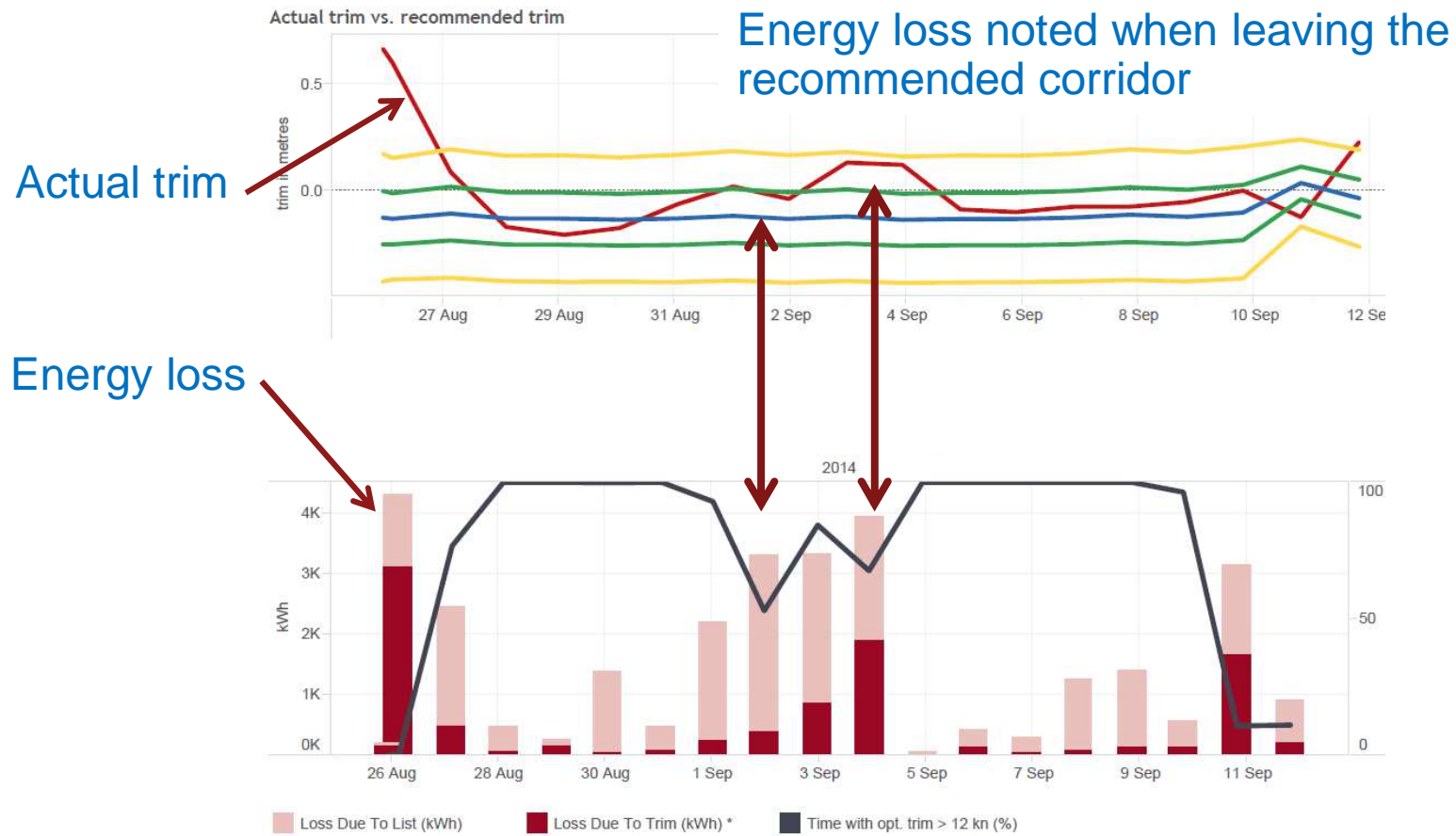
ENIRAM – Dynamic Trim Assistant



A correlation between energy consumption due to trim and the trim performance is given.



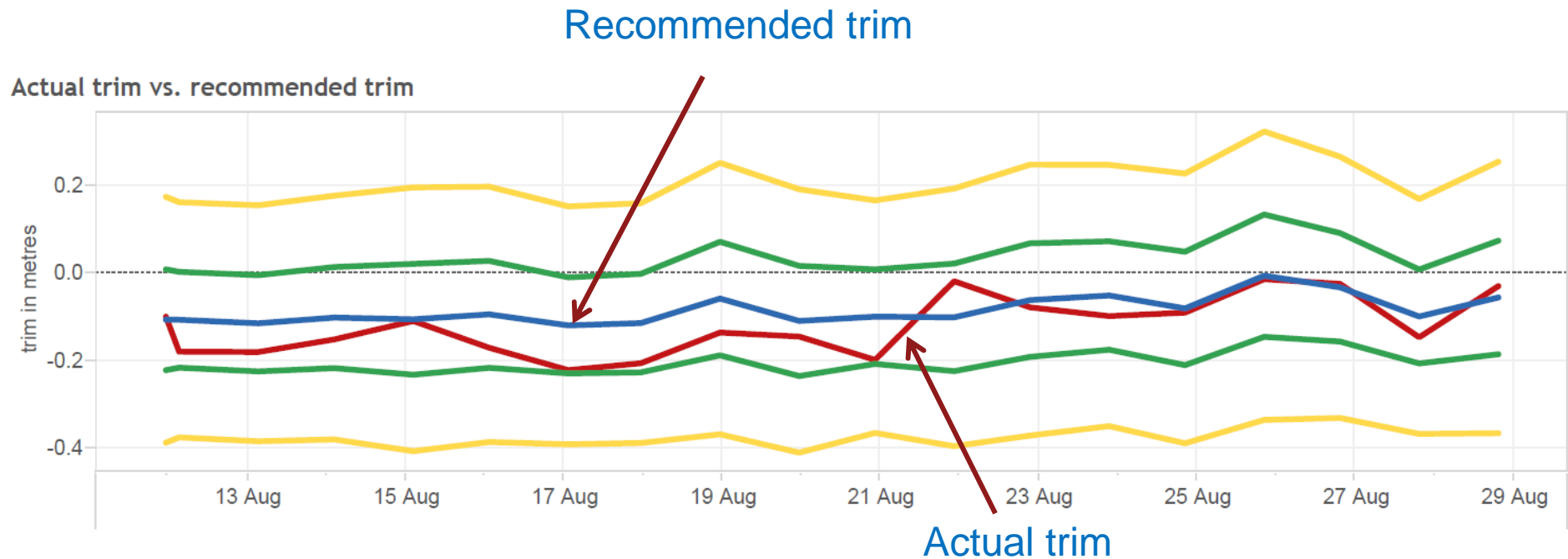
ENIRAM – Dynamic Trim Assistant



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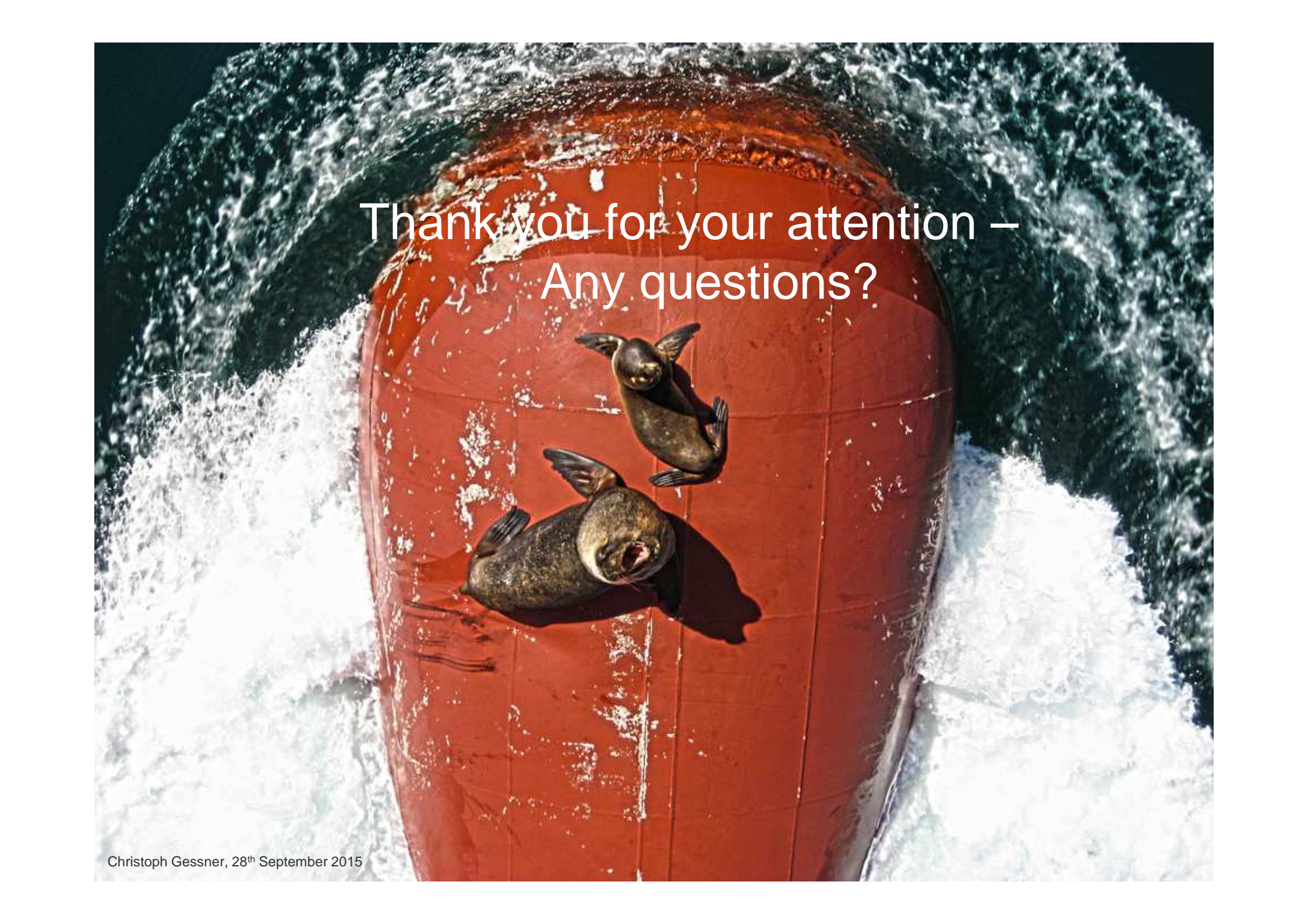


ENIRAM – Dynamic Trim Assistant



Vessel following a dynamic-developing recommendation due to changing voyage operational conditions (e.g. changing speed)



A photograph showing two seals resting on a large, red, cylindrical buoy in the middle of the ocean. The buoy is surrounded by white, churning water, likely from a boat's wake. The seals are dark-colored with lighter patches on their heads. One seal is in the foreground, looking towards the camera with its mouth slightly open. The other seal is positioned slightly behind and above it. The background consists of dark blue water with white foam from the boat's wake.

Thank you for your attention –
Any questions?