E-NAVIGATION

A challenge for the Shipping Industry

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E-NAVIGATION

“e-Navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means .......”
E-NAVIGATION

1. For ships to comply with ‘integrated, harmonised’ requirements the global system must itself be harmonised.

2. “Global ‘pilots of e-navigation’ should apply techniques of harmonisation”.

[Image of ships on the ocean]
E-NAVIGATION

To what extent do e-navigation ‘pilot schemes’ consider harmonisation issues between schemes?

To what extend has the Baltic Sea project communicated with the Malacca Straits “Marine Electronic Highway” (MEH) project?
Current Status - Concepts

- IMO correspondence group (Gap Analysis)
- Utilize common data concepts (CMDS – Common Maritime Data Structure) based on IHO developed GI (Geospatial Information) Register
- Regulatory Framework to ensure maritime safety is met but leaving room for “Innovative Product Development”
- Base e-Navigation on “compelling needs” of stakeholders and users of the system
Outlook - Opportunities

• Development of the Regulatory Framework
• Development of a “Next-Generation-INS”, supporting product innovation
• Integration of shore based and ship side infrastructure for increased situational awareness
• Change of “type approval” approach
Outlook - Opportunities

Test bed system on Oil-spill response - Oil Flow Prediction
Outlook - Opportunities

• Increased situational awareness for navigational safety
• Automated ship reporting reducing bridge workload
• Real time situational analysis for optimization of load capacity and berth access
• Increase prediction and forecasting for improved ETA accuracy and operational performance
• Advanced VTS information for route and port optimization
CAUTION - AIS

Technology must be used appropriately:

- AIS is a valuable tool capable of supporting both ship and shore users of e-navigation.

Is AIS used appropriately at sea and ashore?
MAIB (UK) advises: AIS increasingly used to determine the risk of collision to the exclusion of making safe and effective use of radar and ARPA.

IMO Resolutions A.917(22) and A.956(23)
E-NAVIGATION – AIS
(Resolution A.917(22))

• To help identify vessels; assist in target tracking; simplify information exchange (e.g. reduce verbal mandatory ship reporting); and provide additional information to assist situation awareness; whether at a shore surveillance station or on board a ship.

• AIS should become a useful source of supplementary information to that derived from navigational systems (including radar) ....... and therefore (is) an important ‘tool’ in enhancing situation awareness of traffic confronting users.
IMD (EARLY) MEH MODEL

MEH INFORMATION FLOW SCHEMATIC

ECDIS:
- Vessels
- Port operators
- Maritime surveillance
- Environmental Monitoring

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- Vessels
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- Maritime surveillance
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VTIS
- Satellite imagery
- Winds, Currents, Tides (real-time)

Radar

GPS

MEH INFORMATION FLOW SCHEMATIC

Digital Products

MEH Node

Image Processing, Modeling/forecasting
E-Navigation Collaboration

- Test-bed for IHO S100 Data Registry (Pending Approval by MSC 90 in May 2012) in MEH region
- Flow of data/information between ship and shore
- Compare results between congested non-congested areas in different climates to develop unified GLOBAL solution
- Reduce need for superfluous information
- Report to IMO in 2012
CHALLENGES FOR THE SHIPPING INDUSTRY

DEVELOPMENT ENVIRONMENT

Trial data (real time or simulated should be kept separate from the ship’s primary navigation system.

OPERATIONAL ENVIRONMENT

Need for live validation of data used in ship’s primary navigation system.

Need for confidence in validation authorities in all locations.
CHALLENGES FOR THE SHIPPING INDUSTRY

Projects must/must be:

1. Fully justified and worthwhile
2. Avoid being one dimensional
3. Practical/achievable
4. Cost effective
5. Cautious on technology demonstration
6. Deliver safety/protection of the environment
7. Honest
E-navigation should support humans manage information to ensure good situational awareness and facilitate consistently good decision-making.

It should be clear that the major challenge is to embrace concern regarding the human element.
Thank You