



# IHO Stakeholder Forum

The view of the ship electronics industry

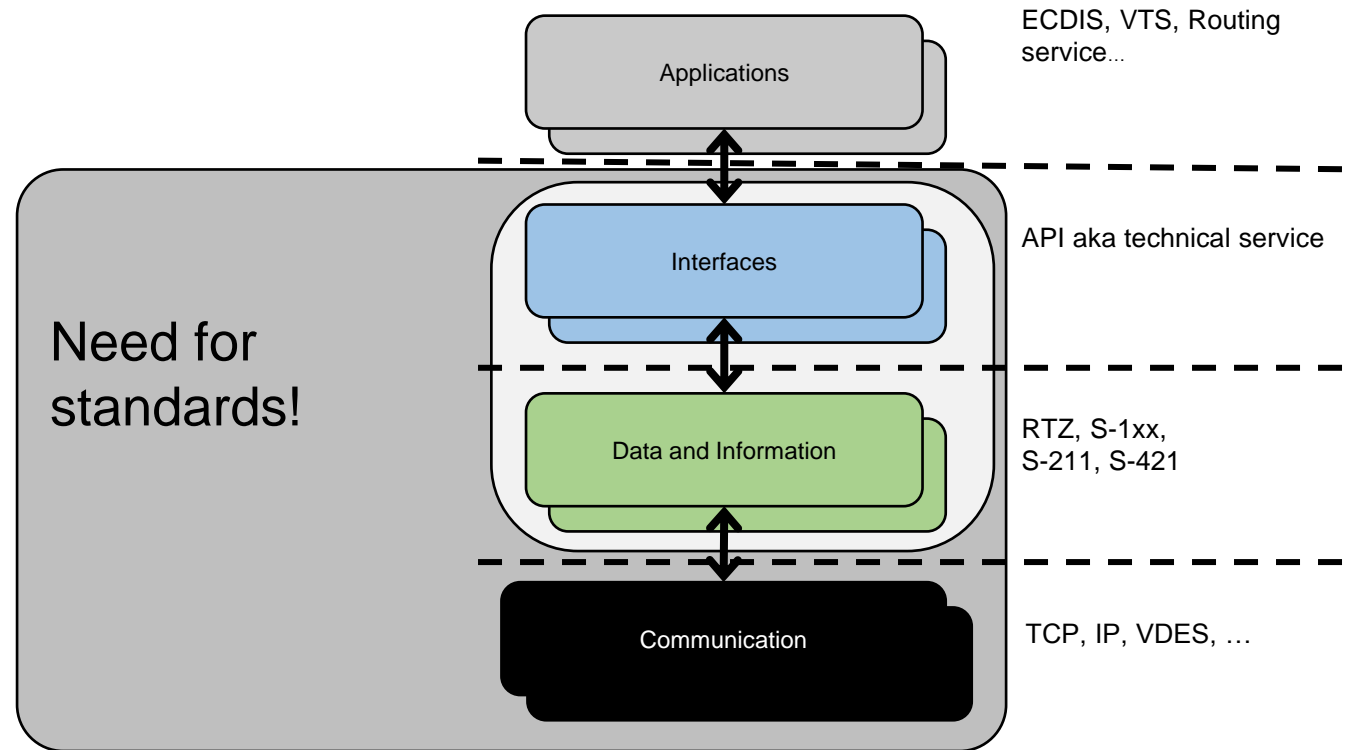
Michael Bergmann

Director, CIRM

# Need for Standardisation



# Where do we see Standards fit





## IMO S-Mode Guideline

Now:

Guidelines for the standardization of user interface design for navigation equipment



# CIRM S-Mode proposal development

- CIRM proposal was developed and shared with the relevant working groups
- During 2018 the proposal was evaluated by mariners
- The validation included interviews, surveys, card-sorting exercises, web-based simulators, etc.
- Results were used to improve/refine the CIRM proposal.
- Improved CIRM proposal was presented to the S-Mode correspondence Group and integrated in the final input paper for IMO NCSR6

# Update: Workshop on User Testing


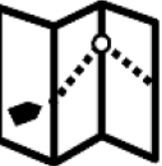




# IMO NCSR6

- Input paper from „S-mode correspondence group“
- Discussed a the proposed S-Mode Guideline Draft
- Agreed on a name change to  
Guidelines for the standardization of user interface design for  
navigation equipment
- Complete the guideline and send it to IMO MSC for approval

# Aspects of this guideline

## NAVIGATION-RELATED TERMINOLOGY AND ICONS OF FUNCTIONS (HOT KEYS AND SHORTCUTS)

Explanation	Term	Abbreviation	Icon (hot key)
To set display brilliance	Display brilliance	BRILL	
To select ECDIS mode (for multifunction displays)	ECDIS	ECDIS	
To select Radar mode (for multifunction displays)	Radar	RADAR	
To select Conning display or to select "navigation control data" task of the INS (for multifunction displays)	Conning	CONN	









# Aspects of this guideline

## Control of Chart display functions

Explanation	Term	Abbreviation	Hydrographic symbol	Proposed icon (hot key)
To show accuracy related symbols	Accuracy	CATZOC		
Selector for viewing group layer	All isolated dangers	ISODNG		
	Archipelagic sea lanes	ASL		
	Boundaries and limits	BNDLIM		<b>BND LIM</b>
	Buoys, beacons, aids to navigation	ATON		
	Cautionary notes	CTNNTE		
Chart boundary shown	Chart boundary	CHTBND		

# Aspects of this guideline

## Icons and terminology for groups of functions (Shortcuts)

Group of functions	Term	Abbreviation	Icon (Shortcut)
To set collision avoidance limits and other target-related parameters (including CPA, TCPA, etc.)	Target settings	TGT SET	 TGT
To set radar controls (including tunings, anti-clutter, etc.)	Radar settings	RADAR SET	 RADAR
To set chart related limits and other chart-related parameters (including safety contour, safety depth, areas with special conditions, own ship check area, etc.)	Chart safety settings	CHT SF SET	 CHART
To set trial manoeuvre parameters	Trial Settings	TRIAL SET	 TRIAL
To add or remove information from the ECDIS display	Chart display settings	CHT DISP SET	
To provide additional mariner's information	User Chart	USR CHT	 IISFR

# Aspects of this guideline

## **Other aspects:**

- LOGICAL GROUPING OF INFORMATION
- FUNCTIONS THAT MUST BE ACCESSIBLE BY SINGLE OR SIMPLE OPERATOR ACTION
- DEFAULT AND USER SETTINGS
- PRESENTATION OF NAVIGATION-RELATED SYMBOLS
- PRESENTATION OF NAVIGATION-RELATED TERMS AND ABBREVIATIONS



# Bridge Display of the Future?

Thoughts of CIRM Members



# What will the bridge displays of the future look like?

How will digital information from shore be displayed to the navigator?

What will be the evolution process of equipment made by CIRM members?

How will this affect the services provided by shore authorities?

## How will digital information from shore be displayed to the navigator?

*In future, systems and data will become more integrated*

*Situational awareness displays will evolve and improve*

*Integration requires a change in thinking about how we display data*

*Autonomous shipping will influence the future design of bridge displays*

*Integration of data sources will be transparent for the bridge team*

## What will be the evolution process of equipment made by CIRM members?

*We need to expand our conception of the term 'manufacturers'*

*Systems need to be able to integrate in a variety of ship ecosystems*

*There will be great opportunities for innovation of back-of-bridge displays*

*Manufacturers must ensure human factors are considered during design*

*Systems will evolve in response to integration*

How will this affect the services provided by shore authorities?

*Shore authorities need to be aware that more data will be required*

*Increased pressure on data volume, coverage and quality*

*Shore data will be collected in a shipboard database and distributed*



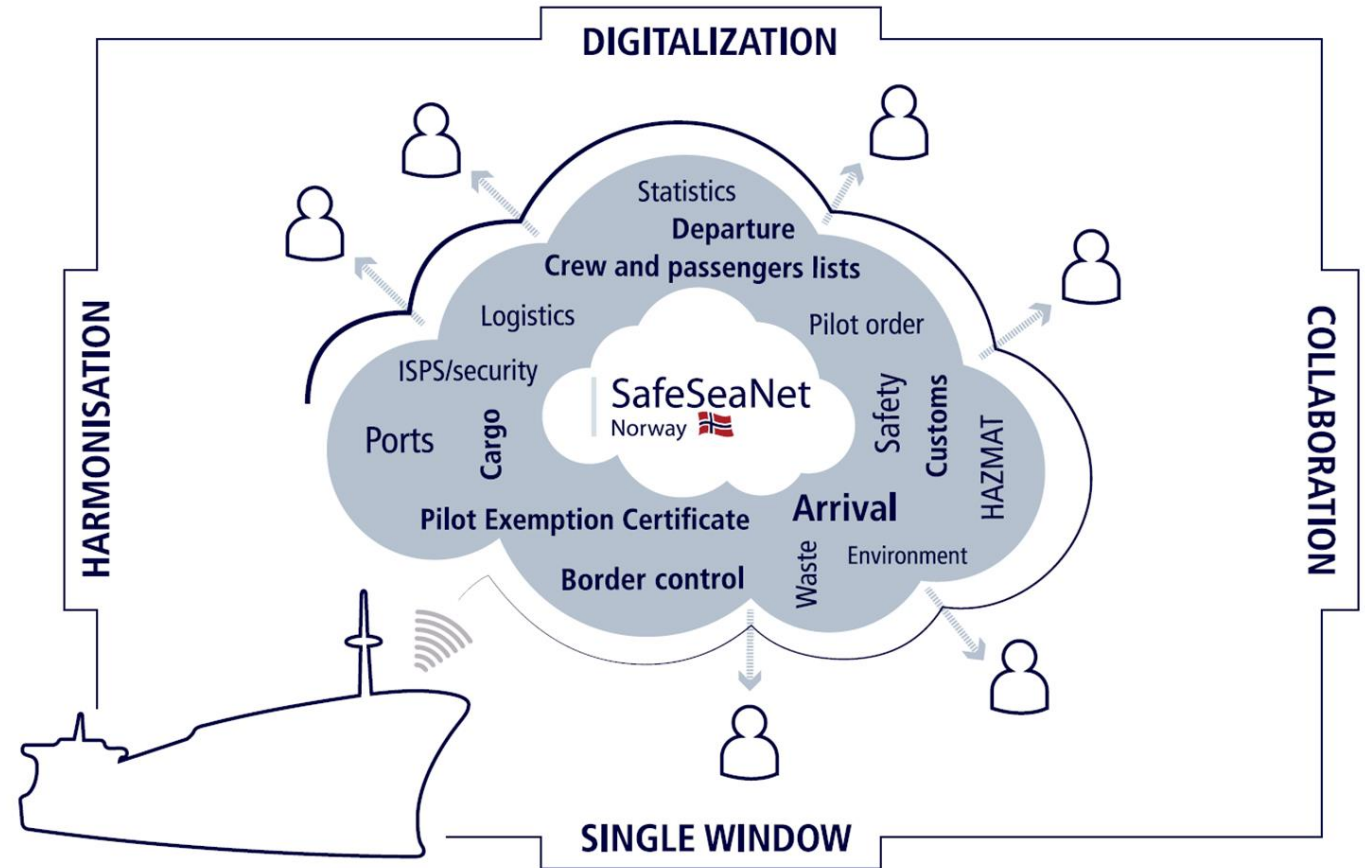


# Integration of diversified data streams



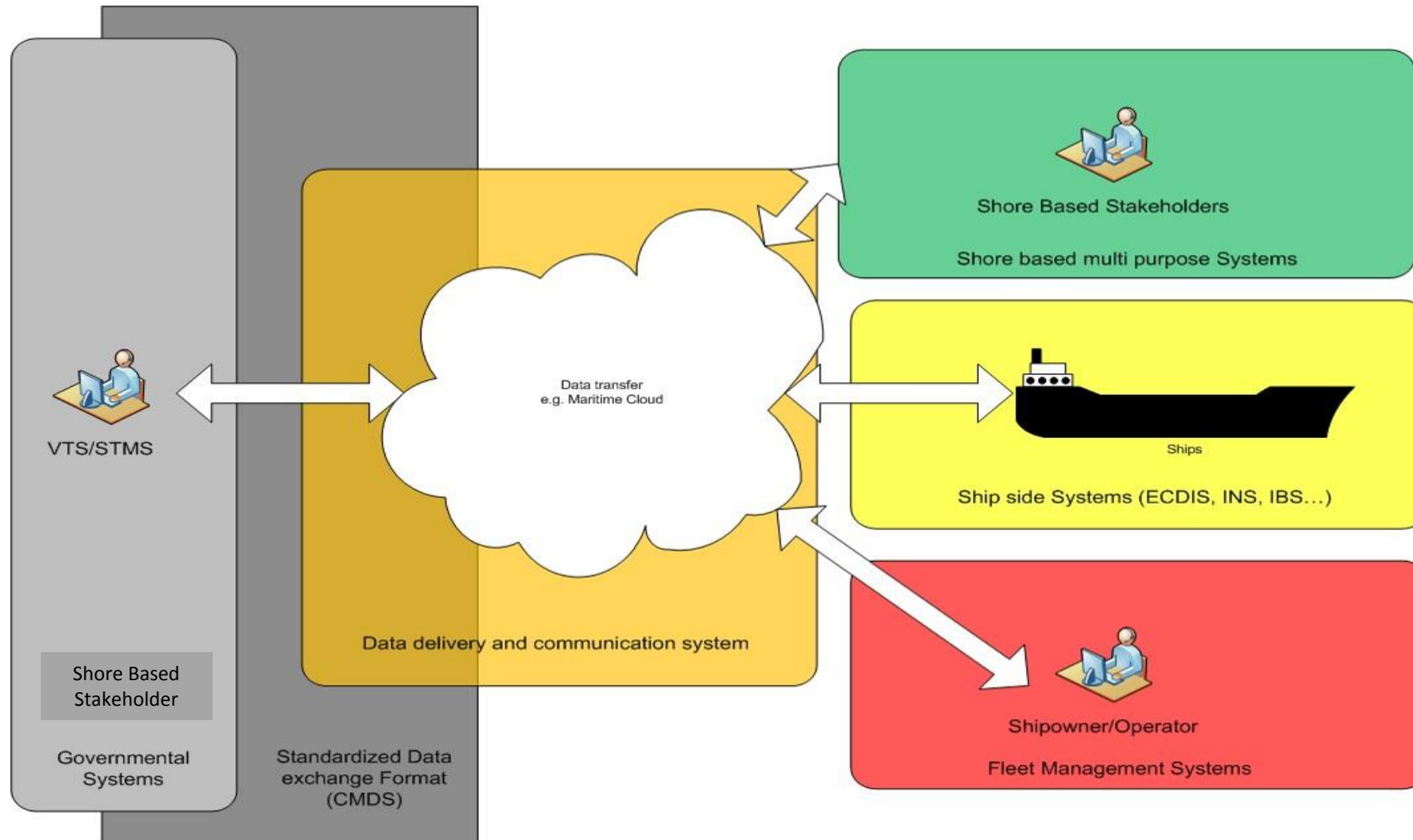
# Digitization is broader

- Various players work on digitization, data sharing and data integration
- Systems need to handle all requirements
- Navigational data may compete with other needs for information display
- Standards need to define display priorities and interactions between data from different sources
- Isolated standardization work will fail
- IHO S-100 GI Registry may be able to support and facilitate this development



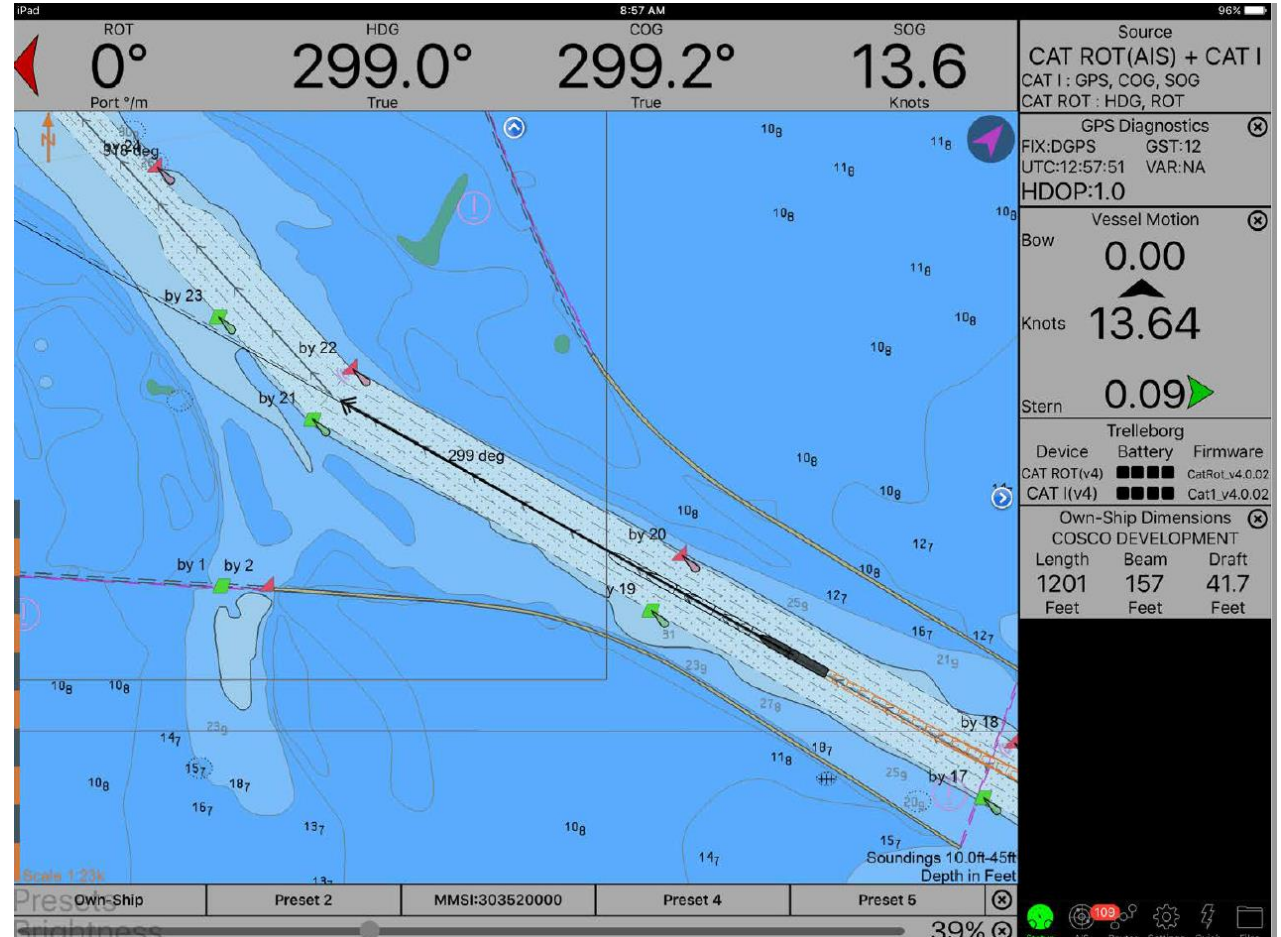
*John Erik Hagen, Norwegian Coastal Administration, Copenhagen 24th January 2018*

# The CMDS Concept



Source: Robert Ward, E-Nav Underway Asia Pacific 2018

# Examples of integrated displays

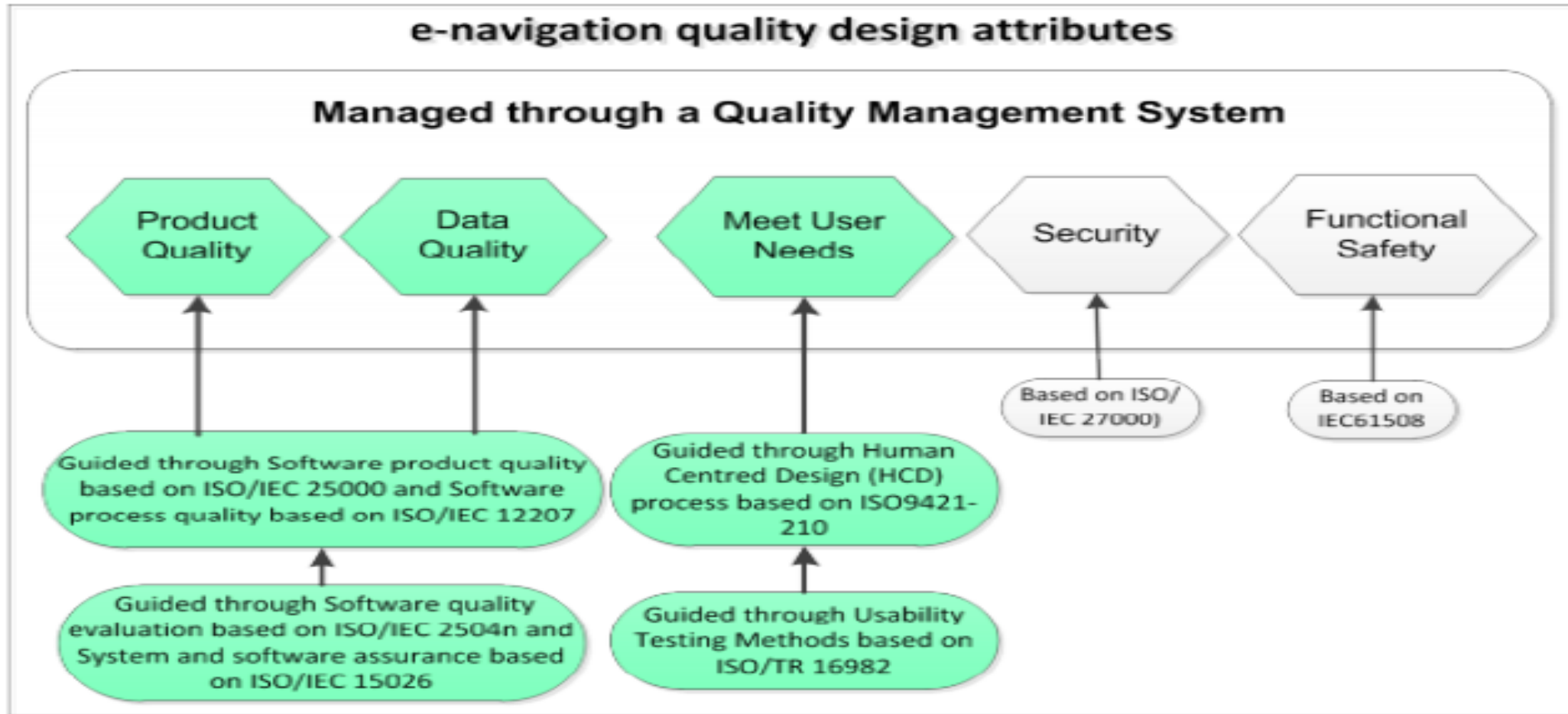


Source: Captain Jorge Viso, IMPA Conference 2018

# Components needed for trusted data management

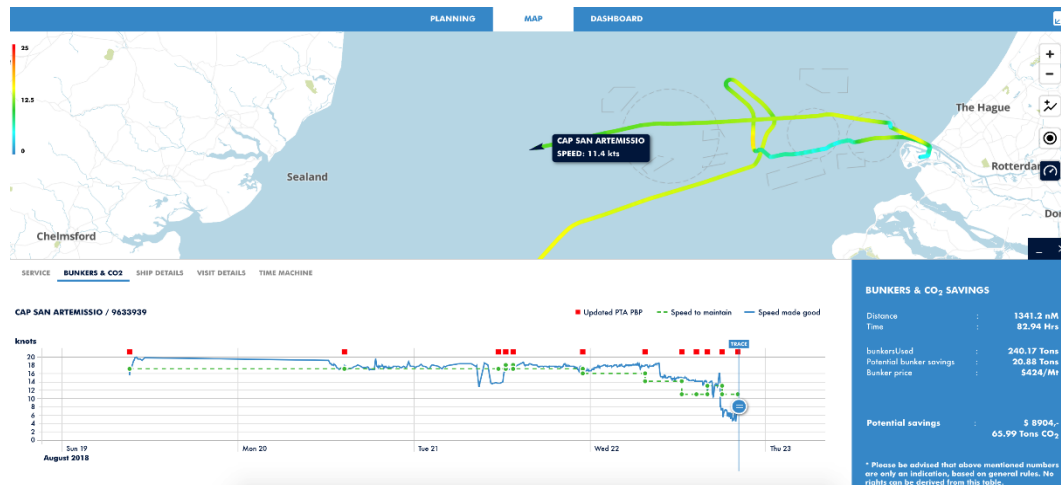
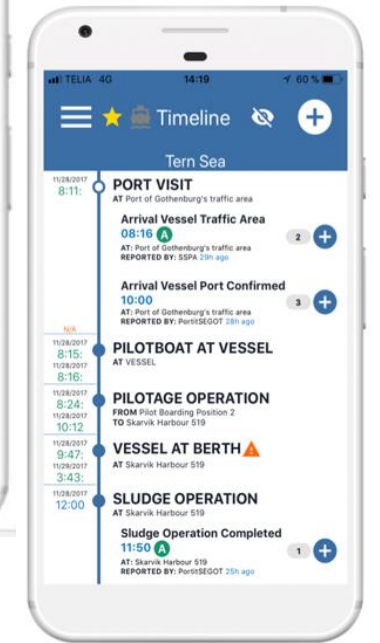
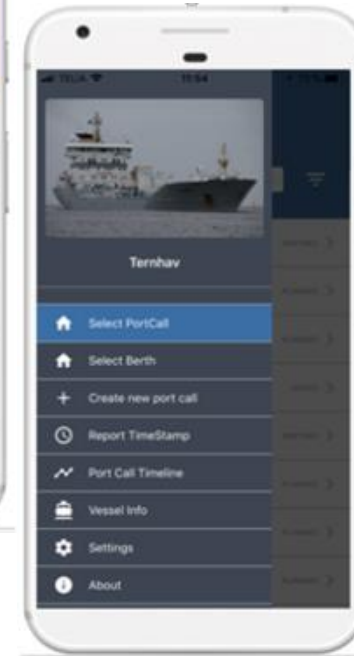
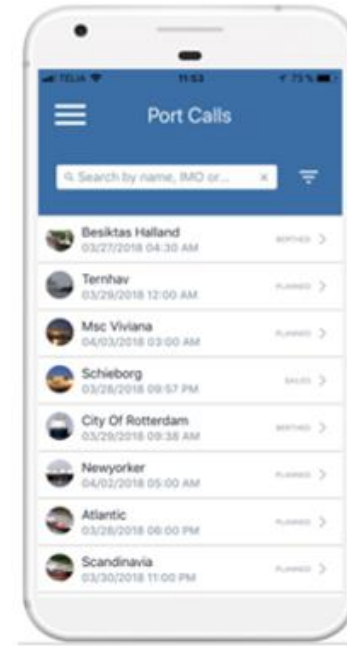
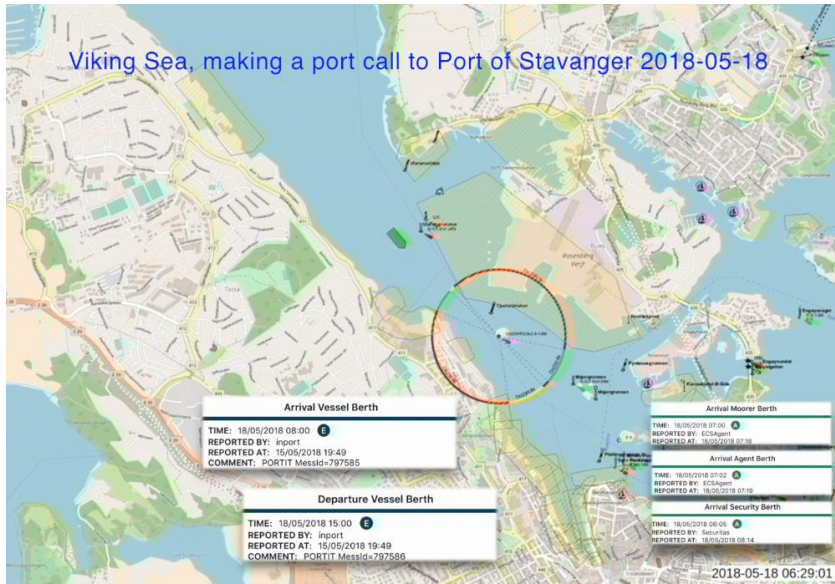
1. Accuracy
2. Resolution
3. Assurance Level
4. Traceability
5. Timeliness
6. Completeness
7. Format

# IMO HCD and SQA Guidelines



Source: Nick Lemon at e-Navigation Underway 2015

# Validating the use of data integration and visibility



Co-financed by the Connecting Europe Facility of the European Union



## Closing thoughts

Changes are coming to how information is displayed on the ship's bridge

e-Nav developments and data integration will impact in the short-term

Looking at individual data streams in isolation will be a thought of the past

The S-100 concept enables integration of primary navigation information with supporting information to support decision making on the bridge

NIPWG needs to work on standards supporting this paradigm shift

The situation is ripe for innovation... IHO support is needed!





**CPRM**

Thank you

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