

E-Navigation from the end users perspective

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E-Navigation underway 2017

***LEADING THE WAY,
MAKING A DIFFERENCE***



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Members

- Lead the continuous improvement of the tanker industry's performance
- Strive to achieve the goals of:
 - ZERO fatalities
 - ZERO pollution
 - ZERO detentions
- Deliver the highest quality services to meet their stakeholders' expectations
- Promote the availability and use of personnel with the best marine skills and competencies



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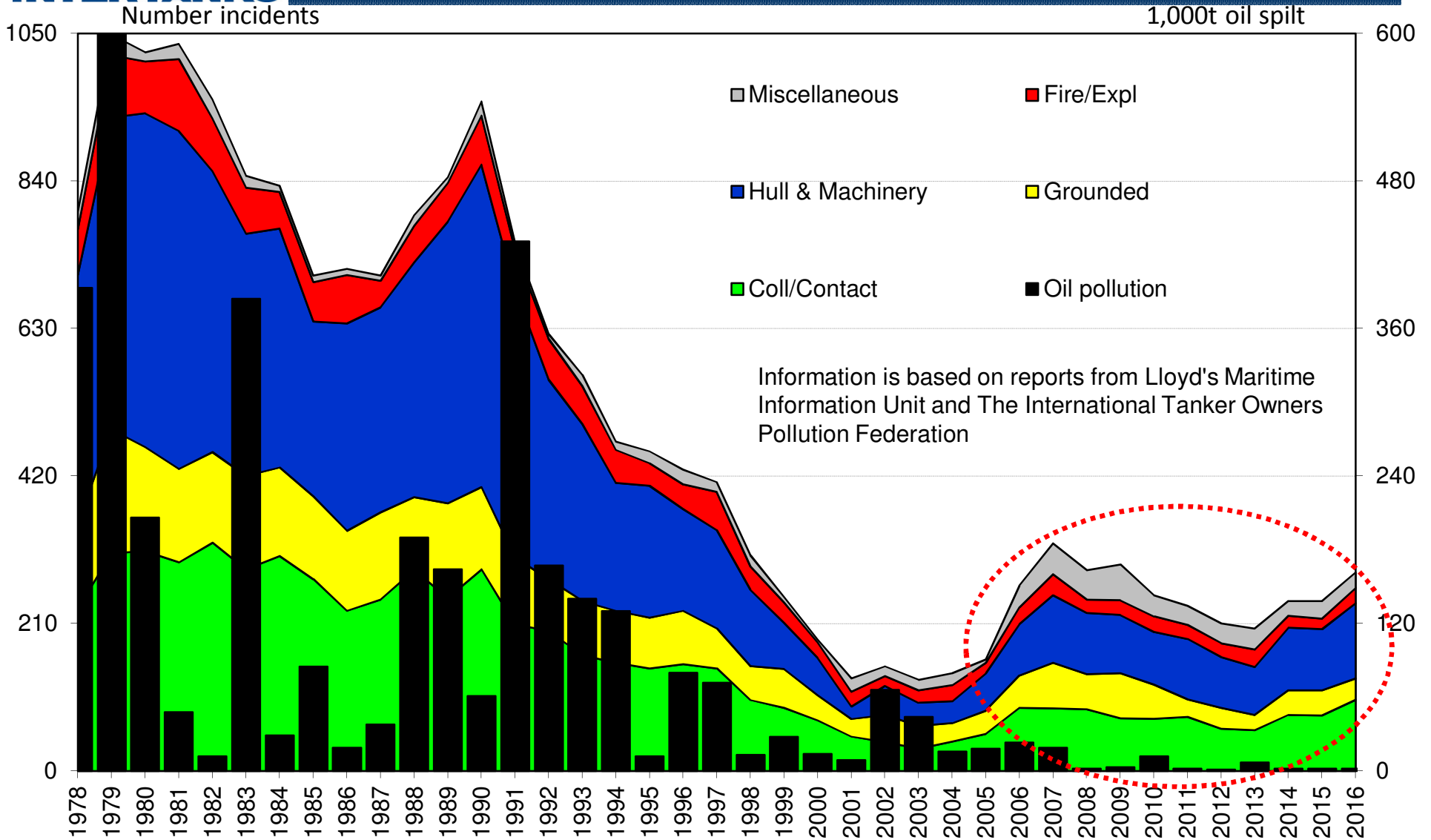
Our committees





Tanker incidents (all types and sizes)

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MARPOL 78

OPA 90

Single Hull phase out

Place of Refuge

ing the way; making a difference

E-Navigation from the end users perspective

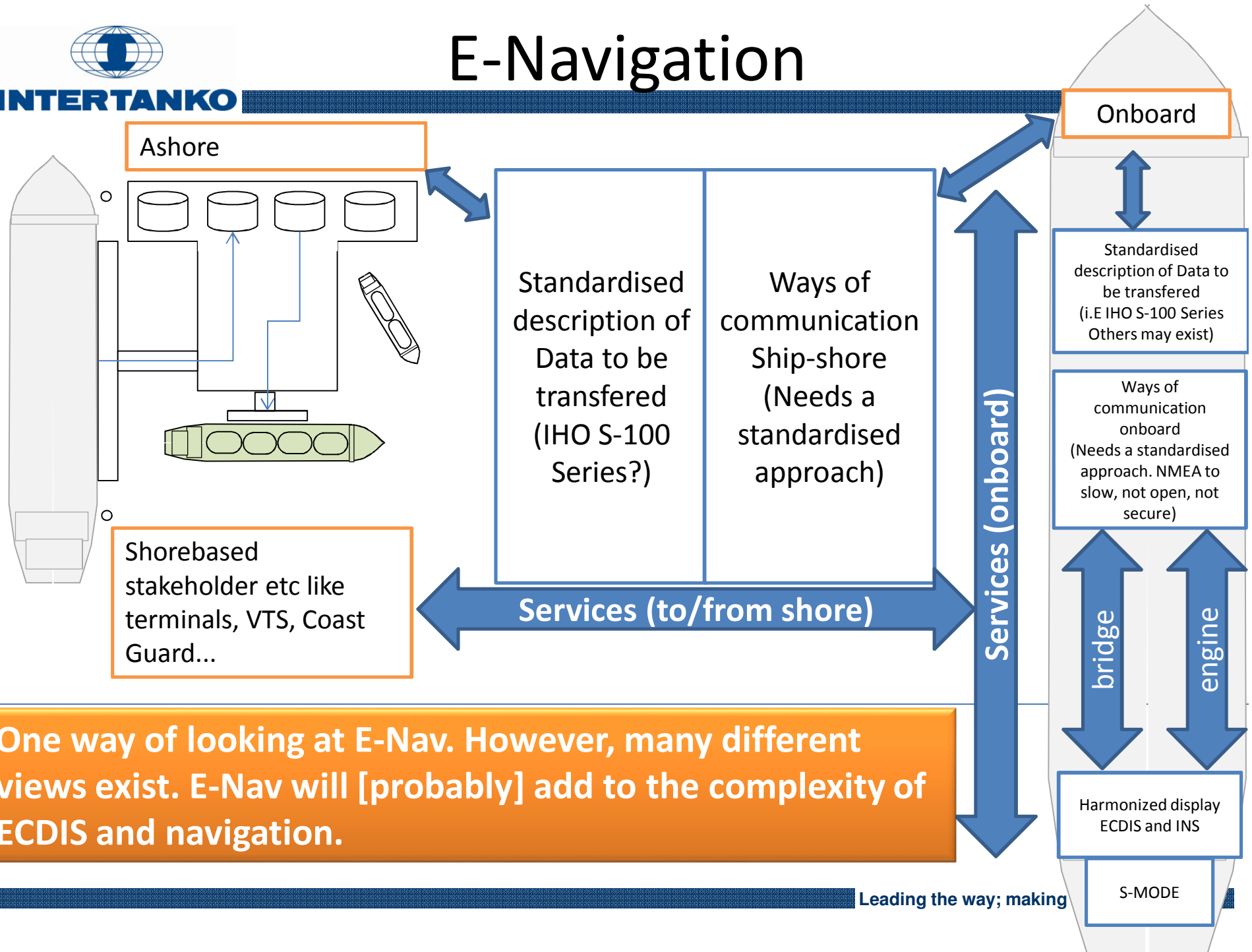
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E-Navigation



One way of looking at E-Nav. However, many different views exist. E-Nav will [probably] add to the complexity of ECDIS and navigation.



The six E-Nav issues on the agenda of IMO are the following

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1. Guidelines on standardized modes of operation (S-mode) for all navigation equipment
2. An update to the revised performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information;
3. Revision of the Guidelines and criteria for ship reporting systems (resolution MSC.43(64), relating to standardized and harmonized electronic ship reporting and automated collection of on board data for reporting
4. Revision of the general requirements for shipboard radio equipment forming part of the GMDSS and for electronic navigation aids
5. Guidelines for the harmonized display of navigation information received via communications equipment
6. Guidance on the definition and harmonization of the format and structure of Maritime Service Portfolios (MSP) and guidance on appropriate communication channels for the electronic exchange of information between shore and ship



S-mode

- Work outside IMO will need to be undertaken to be ready to provide meaningful submissions to the NCSR Sub-Committee in 2018
- **Draft description words of S-Mode** *"Guidance on the standardization of design for navigation and communication systems, encompassing displays, interfaces, and functionalities able to provide the bridge team and the pilot with timely access to essential information for the conduct of navigation throughout the voyage, from berth to berth"*
- There are strong links and dependencies between S-Mode guidance and modules to the Revised Performance Standards for Integrated Navigations Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information", and Guidelines for the harmonized display of navigation information received via communications equipment)



- Revised performance standards for Integrated Navigation Systems (INS)
- The proposed modules relate to:
 1. harmonization of bridge design; and
 2. Display of information.
 3. And partly on using S-100 and other communication standards
- As can be seen in other E-Nav work, they are closely interlinked.



Revision of the Guidelines and criteria for ship reporting systems

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- A reporting system will support just-in-time operations for the port as well as enabling once-only pre-arrival information to the national competent authority, the so-called "single window" solution.
- A testbed is underway and will be reported at NCSR4
- The intention is to develop solutions to send specific reports. At this time, the number and types of reports have yet to be agreed, but the plan is to perform this automated reporting through a single window solution.
- It is assumed that AIS will be used and possibly LRIT to transfer the information.



Revision of the of GMDSS

- Has elements on E-Navigation communication.
- In the decision from MSC 96 its also mentioned that GMDSS should include ways to communicate the MSPs.
- At the Joint IMO/ITU Experts Group views were expressed that some caution should be taken.
- The modernisation plan states “The GMDSS modernization project needs to continue to support the needs of the e-navigation strategy
- From the latest draft of the GMDSS revision: The GMDSS and other communication technologies are at the core of the e-navigation strategy, providing ship-to-shore and shore-to-ship exchange of data.
- ***However, this revised GMDSS is believed to be for new built ships only, and from around 2025 at the earliest...***



Guidelines for the harmonized display of navigation information

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- Is in the core of E-Navigation.
- This work will not be completed at NCSR4 as planned.
- INTERTANKO has raised concerns of what information is to be displayed on an ECDIS, even suggesting that we must define what an ECDIS is and is not.
- This work may define an additional display, or display in INS.



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Guidance on the definition and harmonization of the format and structure of Maritime Service Portfolios (MSP)

- New work item for NCSR that has not yet started
- Will have a strong relationship with GMDSS and IHO S-100. But equally for INS and Harmonized display...

**How will this work,
interlink with the IHO work on
S-100 Product Specifications?**

(MSP 1)	VTS Information Service (INS);
(MSP 2)	VTS Navigation Assistance Service (NAS);
(MSP 3)	VTS Traffic Organization Service (TOS);
(MSP 4)	Local Port Service (LPS);
(MSP 5)	Maritime Safety Information (MSI) service;
(MSP 6)	Pilotage service;
(MSP 7)	Tugs service;
(MSP 8)	Vessel shore reporting;
(MSP 9)	Remote monitoring of ships systems;
(MSP 10)	Telemedical Maritime Assistance Service (TMAS);
(MSP 11)	Maritime Assistance Service (MAS);
(MSP 12)	Nautical chart service;
(MSP 13)	Nautical publications service;
(MSP 14)	Ice navigation service;
(MSP 15)	Meteorological information service;
(MSP 16)	Real-time hydrographic and environmental information services
(MSP 17)	Search and Rescue (SAR) Service.



- There is an urgent need to coordinate the approved outcomes.
- As an example, how much information can you add to an ECDIS with graphical layers of or information pop up before its not useable tool for safe navigation?
- This effects as an example, S-Mode, Harmonized display, INS and the MSP output. And falls back to the Human Cantered Design(HSD).
- And, what about the issues on the IMO agenda that could be described as E-Navigation but are not defined as such. Is there a need to redefine/update the E-Nav scope in IMO?



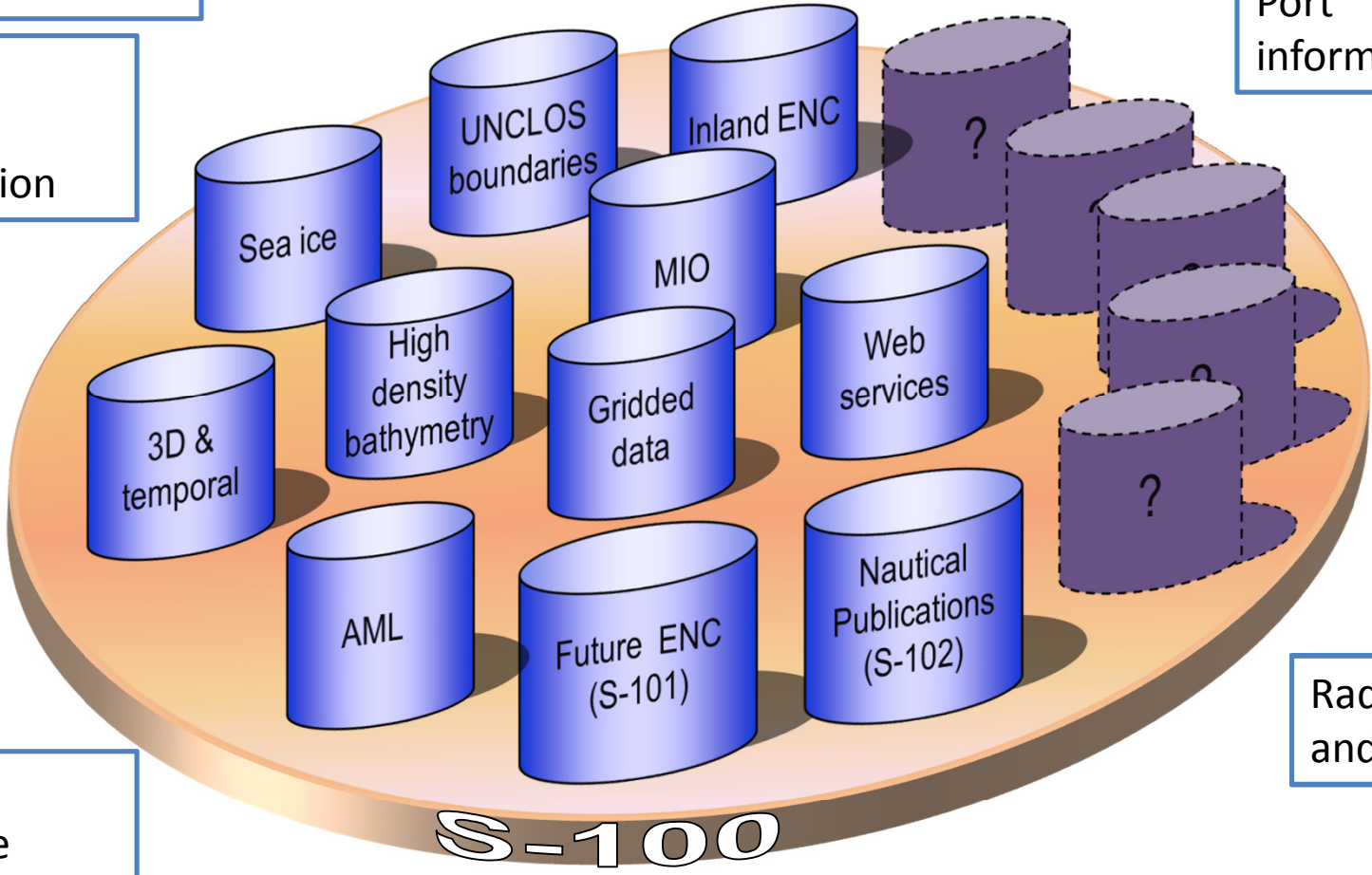
IHO S-100 will support a greater variety of data sources, products and services

Vessel layout
For compatibility studies

Tanker terminal information

Port bye laws

Port information



Route exchange

Radar image and data



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Product Specifications

List of Product Specifications currently acknowledged. However, more are underway.

Question is:

- How do these interact with IMO MSPs?
- How do they interact with each other. (there are discussions in IHO on interoperability specification , but not driven by mariners)
- Should all layers/services be defined in S-mode to ensure interoperability?

Product Specifications being developed by the IHO	
S-101	Electronic Navigational Chart (ENC)
S-102	Bathymetric Surface
S-103	Sub-surface Navigation
S-104	Tidal Information for Surface Navigation /
S-111	Surface Currents
S-112	Dynamic Water Level Data
S-121	Maritime Limits and Boundaries
S-122	Marine Protected Areas
S-123	Radio Services
S-124	Navigational Warnings
S-125	Navigational Services
S-126	Physical Environment
S-127	Traffic Management
S-128	Catalogues of Nautical Products
S-129	Under Keel Clearance Management (UKCM)
S-1xx	Marine Services
S-1xx	Digital Mariner Routeing Guide
S-1xx	Harbour Infrastructure
S-1xx	(Social/Political)
Product Specifications being developed by the (IALA)	
S-201	Aid to Navigation Information
S-240	DGNSS Station Almanac
S-245	eLoran ASF Data
S-246	eLoran Station Almanac
Product Specifications being developed by other Organizations	
S-411	Ice Information ([JCOMM]) /
S-412	Weather Overlay (JCOMM) /



Take away from above

- We need to harmonize IMO MSPs and IHO S-100 Product Specifications.
- Communication? GMDSS update is still in the future. VDES, very limited bandwidth.
- What is an ECDIS? Should we have all information there?
- Is there a need for an additional display? Make INS mandatory? Carriage requirement? Costs for INTERTANKO members!?!?

And...

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How E-Nav will affect our members

- We will be able to have a variety of information readily available on the bridge transmitted from the shore side.
- This may need additional equipment and systems onboard tankers. And there [will/may] be a cost involved.
- Shore side will benefit with more information on where a vessel is heading and its status.
- Will a ship send more information ashore than what is received onboard?
- **A shared situational awareness between ship and shore must be the aim!**



Moving forward

- The variations on ECDIS displays today are not acceptable.
- Moving forward to E-navigation, we would like to see a change and more commonality between systems.
- The introduction of E-Nav must be mature when it is introduced. Testbeds and major projects are needed before it is launched.



Moving forward...2

- Focus on the two **ONLY** important things when taking E-Navigation to the next step:
 - **Zero Groundings**
 - **Zero Collisions**
- Think benefit for the navigator and ship safety when designing next generation of tools/services.
- All information available, always, **MAY** not the answer.



Finally

- INTERTANKO is a strong supporter of E-Nav
- INTERTANKO would like the development to be focused on empowering the officers onboard with more information for an enhanced situational awareness onboard.
- INTERTANKO **DO NOT** endorse development where the shore authorities aim at commanding the vessel.
- INTERTANKO welcome a shared situational awareness between ship and shore.



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Thank you

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Port of Gotheburg, Sweden: Photo: Johan Gahnström

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