



PIANC *"Navigation, Ports, Waterways"*
Inland Waterways Commission

PIANC-SMART Rivers 2017

e-Navigation for Inland Waterways

WG156

Pittsburgh – 20/09/2017

20/09/2017 - 1

WG156



Overview

- Origin and Need for WG156
- Objectives of WG156
- Work programme and Approach WG156
- Final Product WG156
- Findings/Results
- Conclusions and recommendations

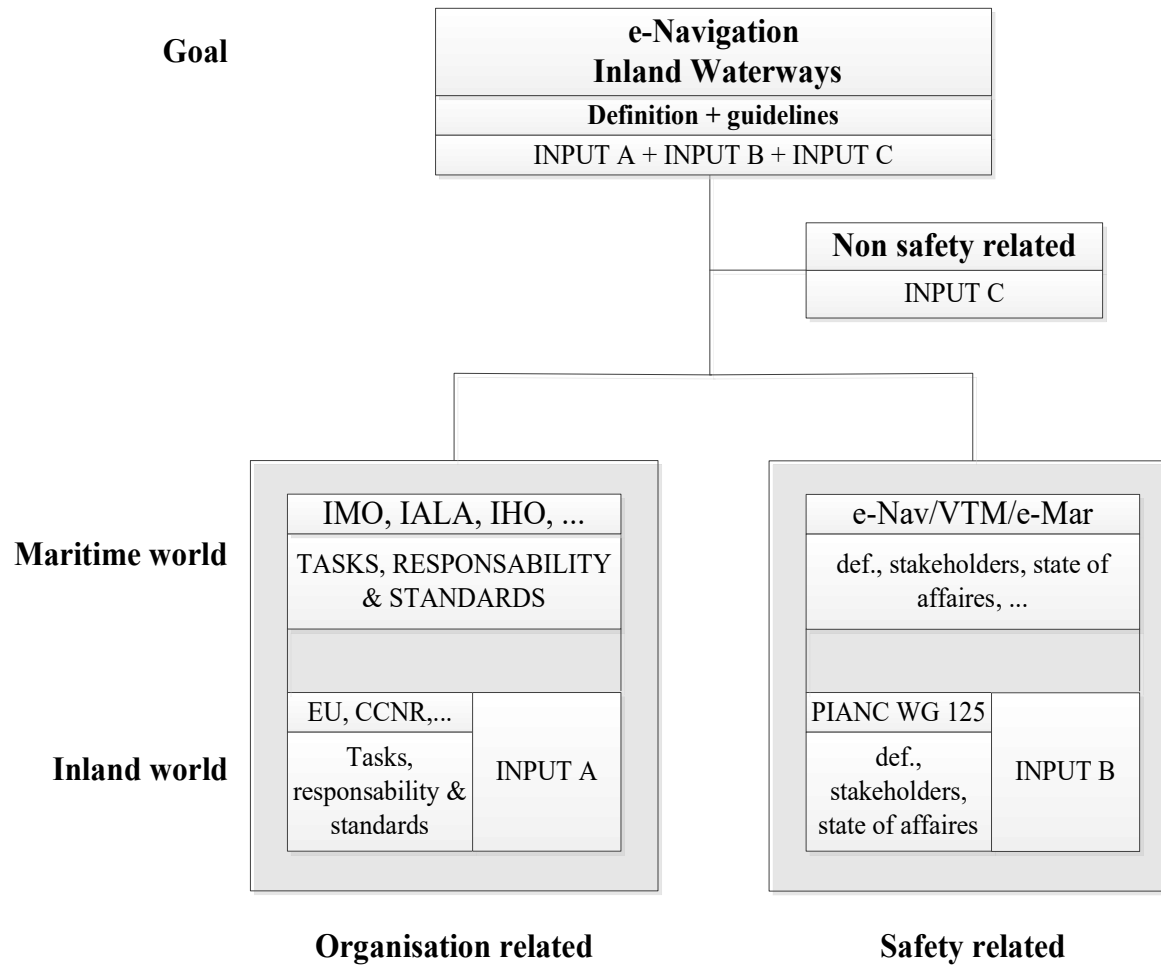
Origin and Need of WG156

- WG156 is originated from WG125 – Guidelines and recommendations for River Information Services (RIS) - 2011.
- WG125 (2011 and before) was really focused on inland waterways. But during the working process it became clear that it could be very useful to look also at the realisations and implementations in the maritime world.
- ToR for WG156 presented to and accepted by PIANC

Objectives of WG156

- Provide a definition of e-Navigation for Inland Waterways
- Whether inland navigation could benefit from the developments in the maritime environment.
- In what way the required interaction between maritime transport and inland navigation in this context can be guaranteed to safeguard the required interoperability of future maritime and inland navigation systems.
- What the implications for River Information Services and the PIANC guidelines on RIS are → WG125
- Identify where possible the scale of benefits, costs of the elements and the risks.
- Identify opportunities for improving the efficiency of transport, logistics and administrative processes.

Work Programme and Approach WG156



Final Product

Report WG156:

- Introduction
- Status and Framework for River Information Services
- Status and Framework for e-Maritime and e-Navigation
- Findings/Results of e-Navigation for Inland Waterways
- Conclusions
 - General Conclusions
 - Lessons learned
- Recommendations

20/09/2017 - 6

WG156



Findings/Results

20/09/2017 - 7

WG156



Definition e-Navigation for Inland Waterways

- e-Navigation for inland waterways is the framework of information service components based on existing River Information Services (RIS) and RIS Key Technologies
- in order to enable harmonized collection, integration, exchange, presentation and analysis of navigation and logistics related information on board and ashore
- by electronic means
- to enhance safe, efficient, reliable, and environmentally responsible navigation
- on inland waterways and intermodal connections, especially maritime navigation.

Whether RIS could benefit from the developments in e-Navigation in the Maritime World - I:

➤ Inland Waterways:

- RIS Services and RIS Key Technologies

➤ Maritime world:

- We have the Strategic Implementation Plan (SIP) for e-Navigation for the Maritime World:
- The 7 pillars for e- Navigation
- Maritime Service Portfolios (MSP - 16 services) is the framework of information in order to enable harmonized collection, integration, exchange, presentation and analysis of navigation and logistics related information on board and ashore

Whether RIS could benefit from the developments in e-Navigation in the Maritime World - I:

➤ Inland Waterways:

- RIS Services and RIS Key Technologies

➤ Maritime world:

- We have the Strategic Implementation Plan (SIP) for e-Navigation for the Maritime World:
- The 7 pillars for e- Navigation
- Maritime Service Portfolios (MSP - 16 services) is the framework of information in order to enable harmonized collection, integration, exchange, presentation and analysis of navigation and logistics related information on board and ashore

River Information Services (RIS)

RIVER INFORMATION SERVICES

Mainly traffic related

1 Fairway information Services (FIS)

2 Traffic information (TI)

- a) Tactical traffic information (TTI)
- b) Strategic traffic information (STI)

3 Traffic management (TM)

- a) Local traffic management (vessel traffic services - VTS)
- b) Lock and bridge management (LBM)
- c) Traffic Planning (TP)

4 Calamity abatement support (CAS)

Mainly transport related

5 Information for transport logistics (ITL)

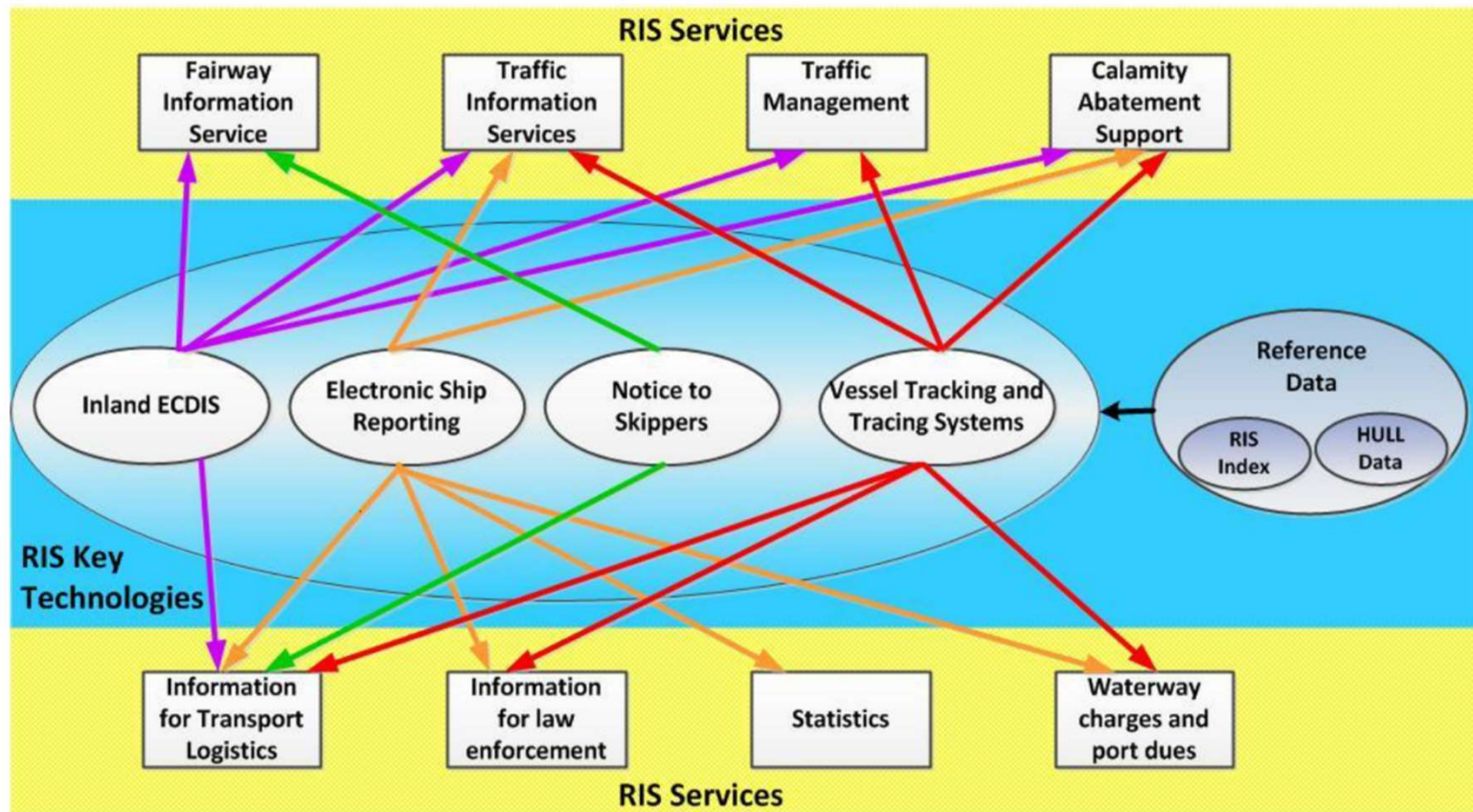
- a) Voyage planning (VP)
- b) Transport management (TPM)
- c) Inter-modal port and terminal management (PTM)
- d) Cargo and fleet management (CFM)

6 Information for law enforcement (ILE)

7 Statistics (ST)

8 Waterway charges and harbour dues (CHD)

River Key Technologies & Ref. Data



Whether RIS could benefit from the developments in e-Navigation in the Maritime World - I:

➤ Inland Waterways:

➤ RIS Services and RIS Key Technologies

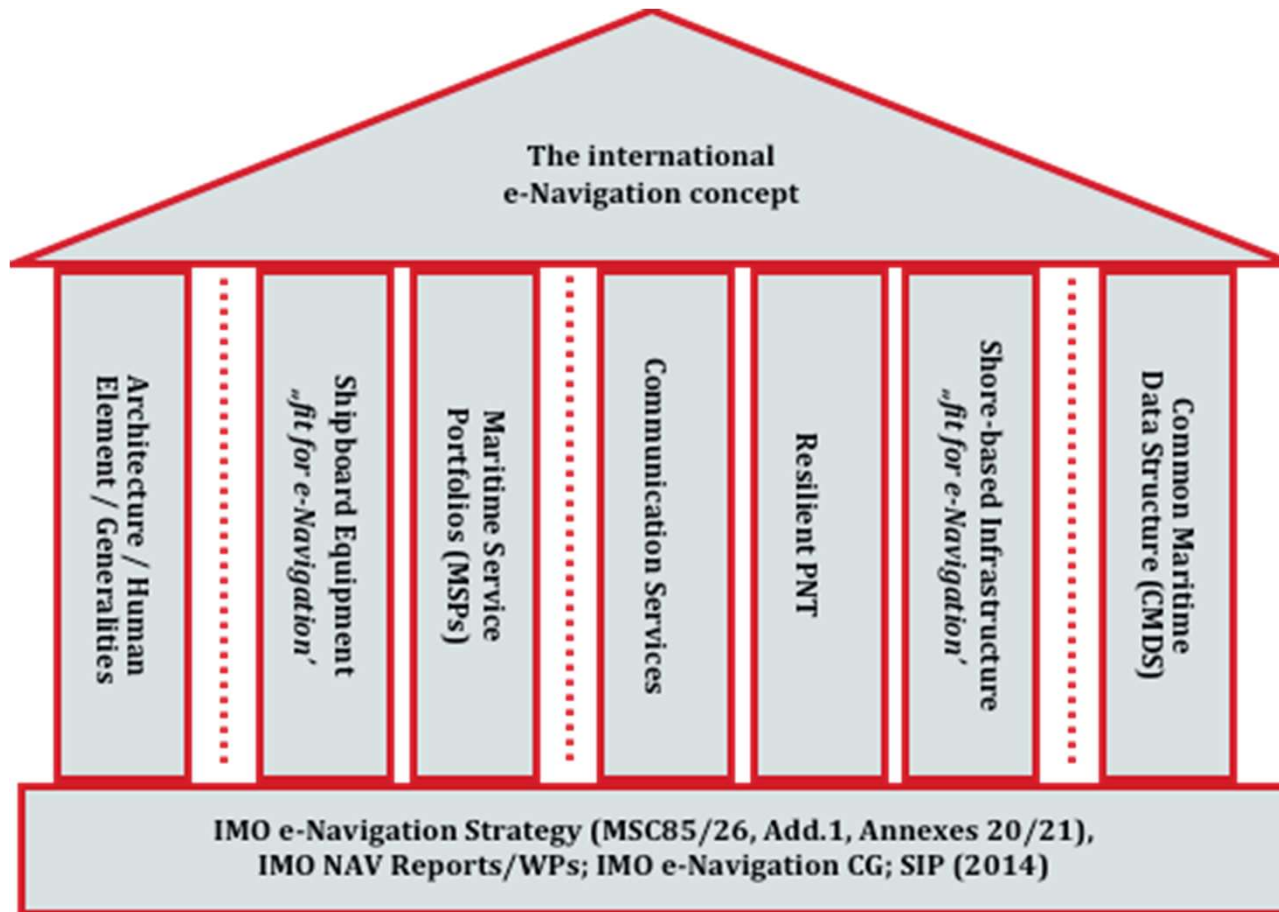
➤ Maritime world:

➤ We have the Strategic Implementation Plan (SIP) for e-Navigation for the Maritime World:

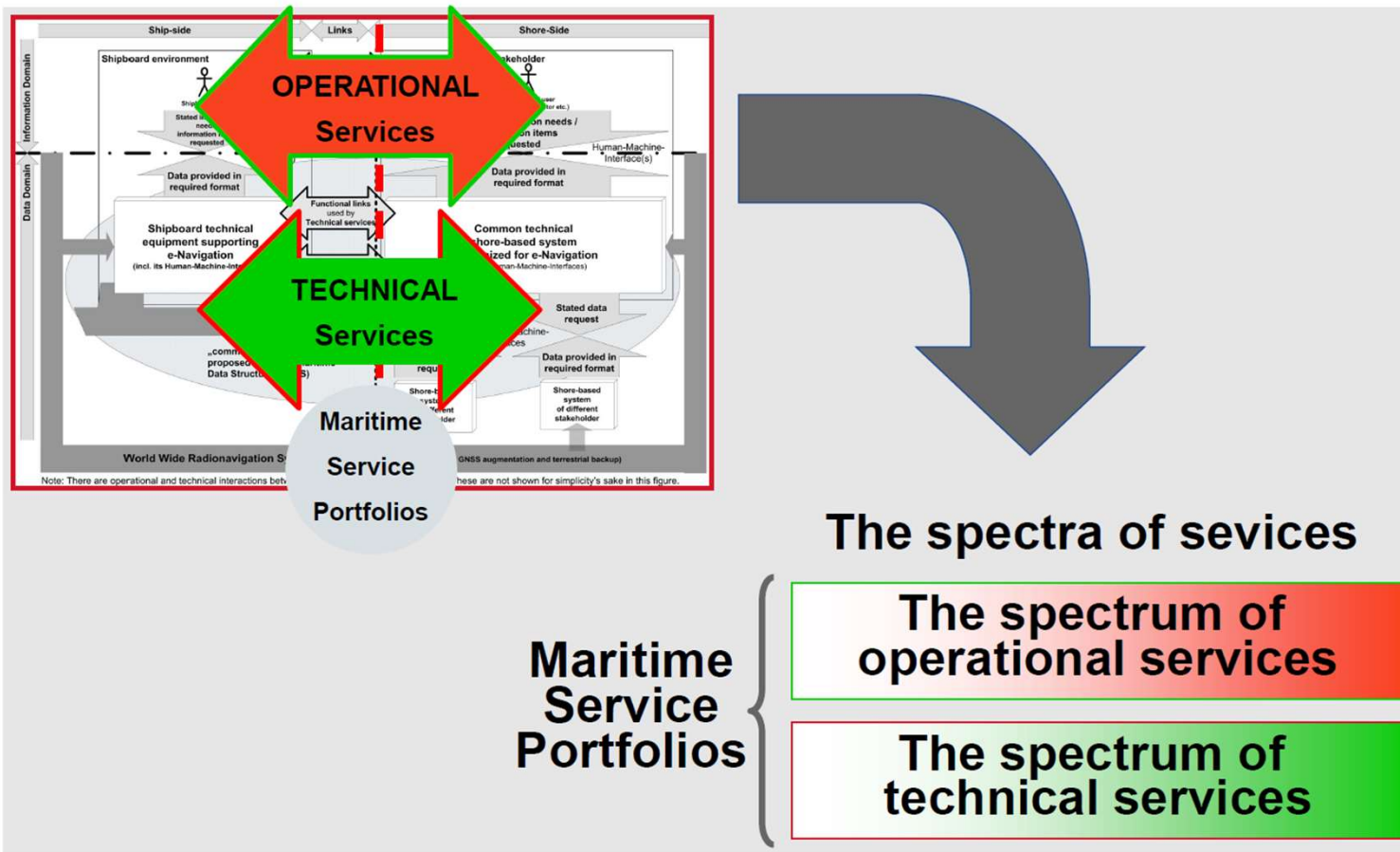
➤ The 7 pillars for e- Navigation

➤ Maritime Service Portfolios (MSP - 16 services) is the framework of information in order to enable harmonized collection, integration, exchange, presentation and analysis of navigation and logistics related information on board and ashore

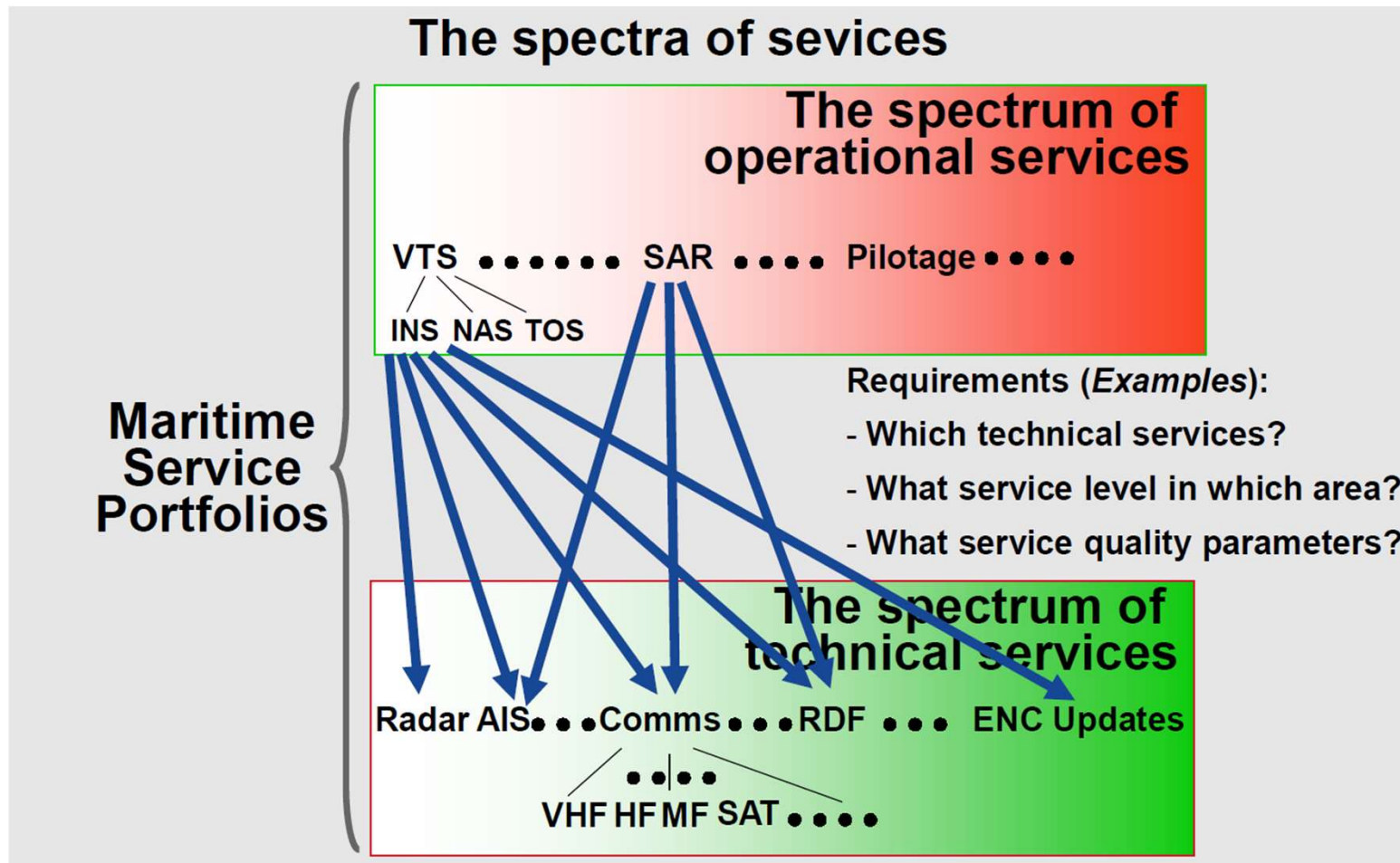
The 7 pillars of e-Navigation



Maritime Service Portfolios - I



Maritime Service Portfolios - II



Maritime Service Portfolios (MSPs) are one of the seven pillars of e-Navigation and consist of the following services:

- (MSP 1) VTS Information Service (INS);
- (MSP 2) VTS Navigation Assistance Service (NAS);
- (MSP 3) VTS Traffic Organization Service (TOS);
-
-
-
-
-
- (MSP 16) Real-time hydrographic and environmental information services
- (MSP 17) Search and Rescue (SAR) Service.

Whether RIS could benefit from the developments in e-Navigation in the Maritime World - I:

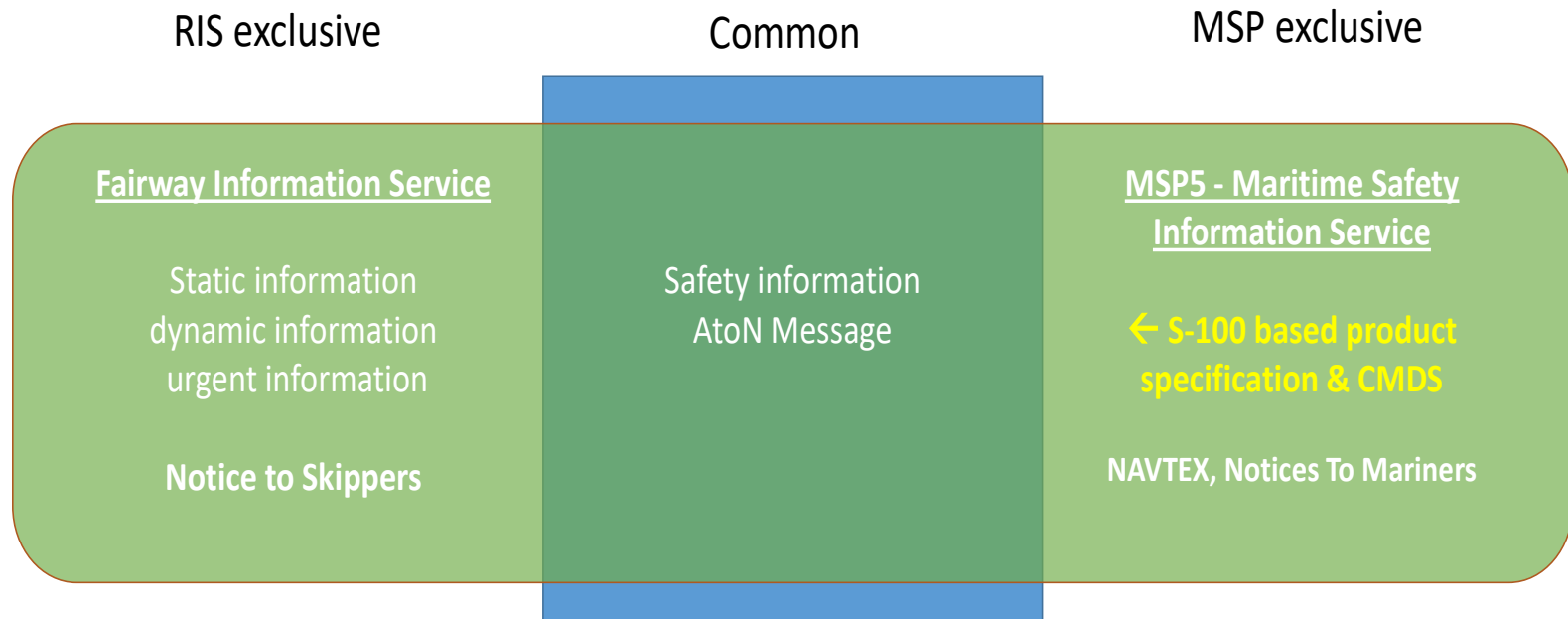
- **Comparison between:**
 - **RIS Services and the 7 Pillars concept**
 - **MSP vs. RIS services and vice versa**

e-Navigation pillars and RIS relation

e-Navigation pillar	Relation with RIS
<p>1. Overarching architecture:</p> <p>To provide the overarching structural framework for operational functions and technical systems, to allow parallel but coherent and harmonized development and implementation of the IMO e-Navigation strategy.</p> <p>Human Element:</p> <p>The human element should not be forgotten as over-reliance on technologies can be dangerous in hazardous situations at sea, and training of staff is very important. The administrative burden should be as low as possible for navigating personnel.</p>	<p>An overarching architecture for RIS does not exist. For the moment there is the RIS directive, the RIS guidelines and four technical directives (NIS, AIS, ERI and Inland ECDIS).</p> <p>There is also a need in RIS to take the human element into account because there is an increased introduction of technologies onboard and administrative burdens that are similar to the maritime environment.</p>
<p>2. Shipboard equipment:</p> <p>Creates an effective and user-friendly environment where maritime information and decision support is enhanced through integration and quality assurance of electronic data.</p>	<p>This topic is not yet addressed within the environment of RIS with exception to some applications (e.g., Inland ECDIS).</p>
<p>3. Maritime Service Portfolios:</p> <p>Provide a consistent, common architecture of sets of services provided from ashore to shipping, including service level and quality parameters for all relevant operational and technical services in the maritime domain</p>	<p>RIS is based on the definition of RIS Services and RIS key technologies. A comparison should be made with the MSPs on the level of technical and operational services.</p>

Example Comparison MSP/RIS Services

MSP5 – Maritime Safety Information Service



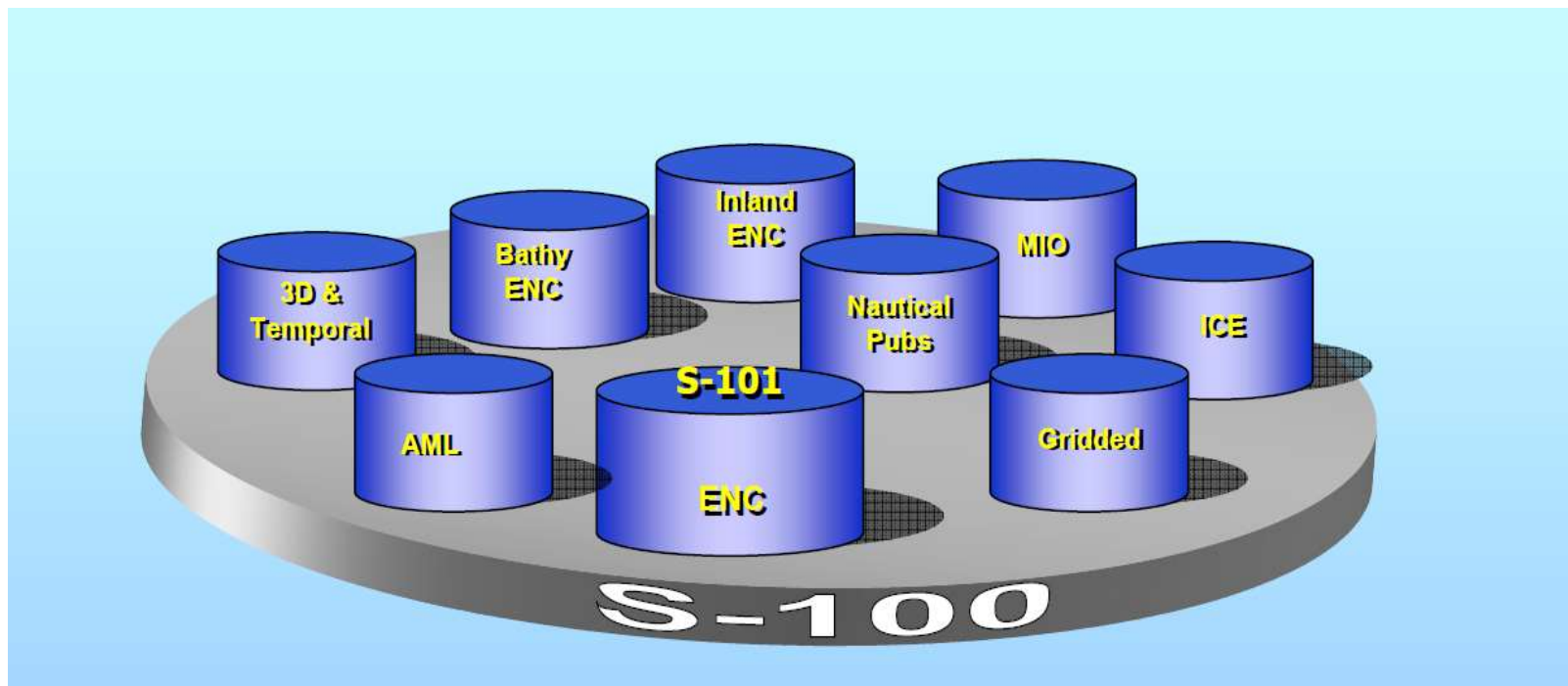
Whether RIS could benefit from the developments in e-Navigation in the Maritime World - II:

Relevant e-Navigation Technologies used in the Maritime World usefull for Inland Navigation:

- S-100
- CMDS
- Maritime Cloud
- SOA

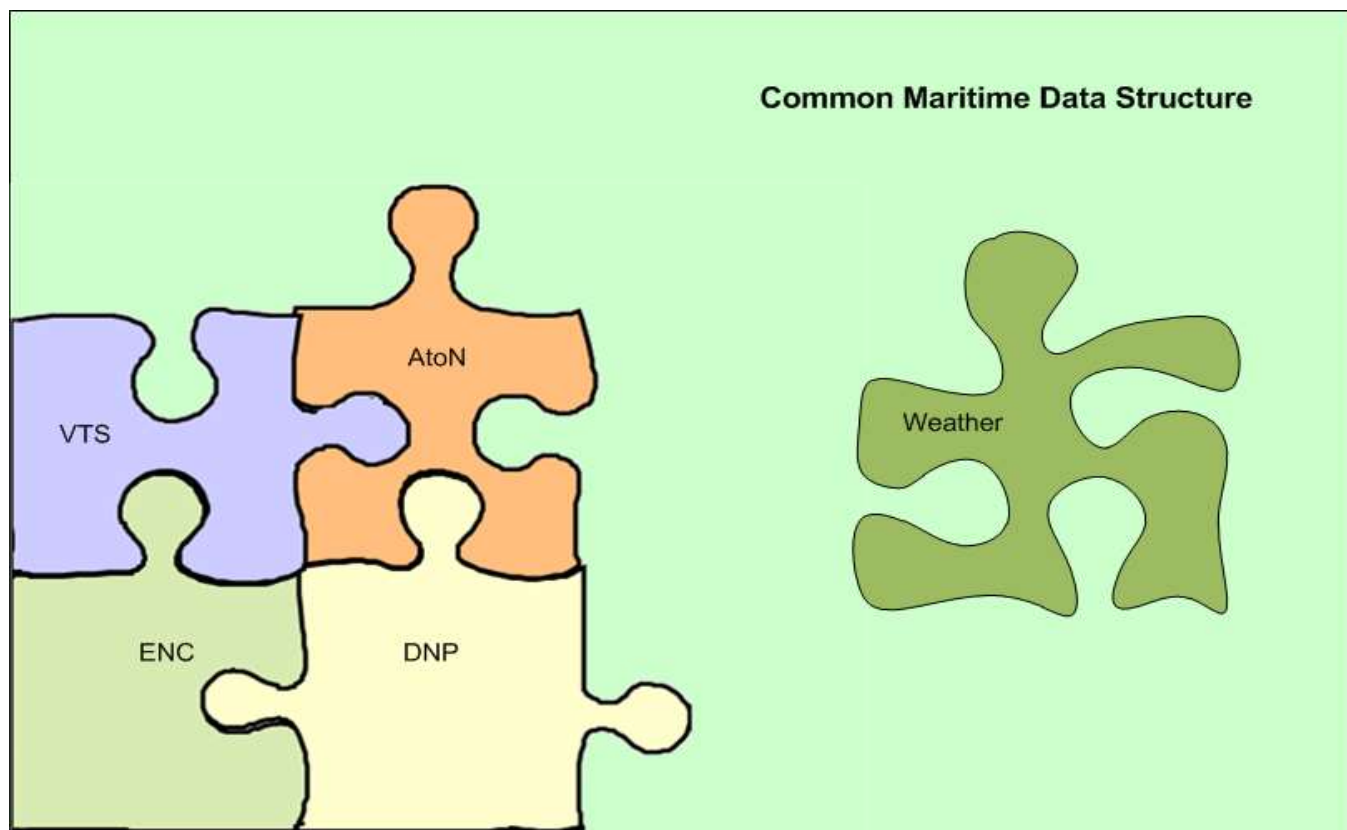
E-navigation developments relevant for inland navigation - I:

S-100 family:



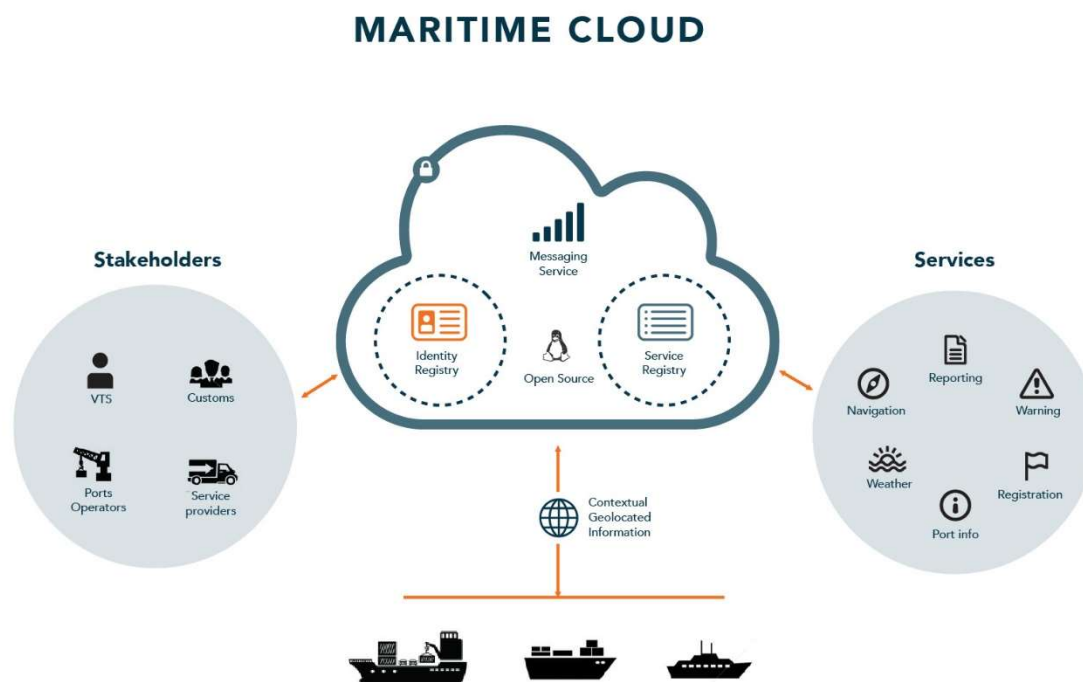
E-navigation developments relevant for inland navigation - II:

The Harmonised Common Maritime Data Structure:



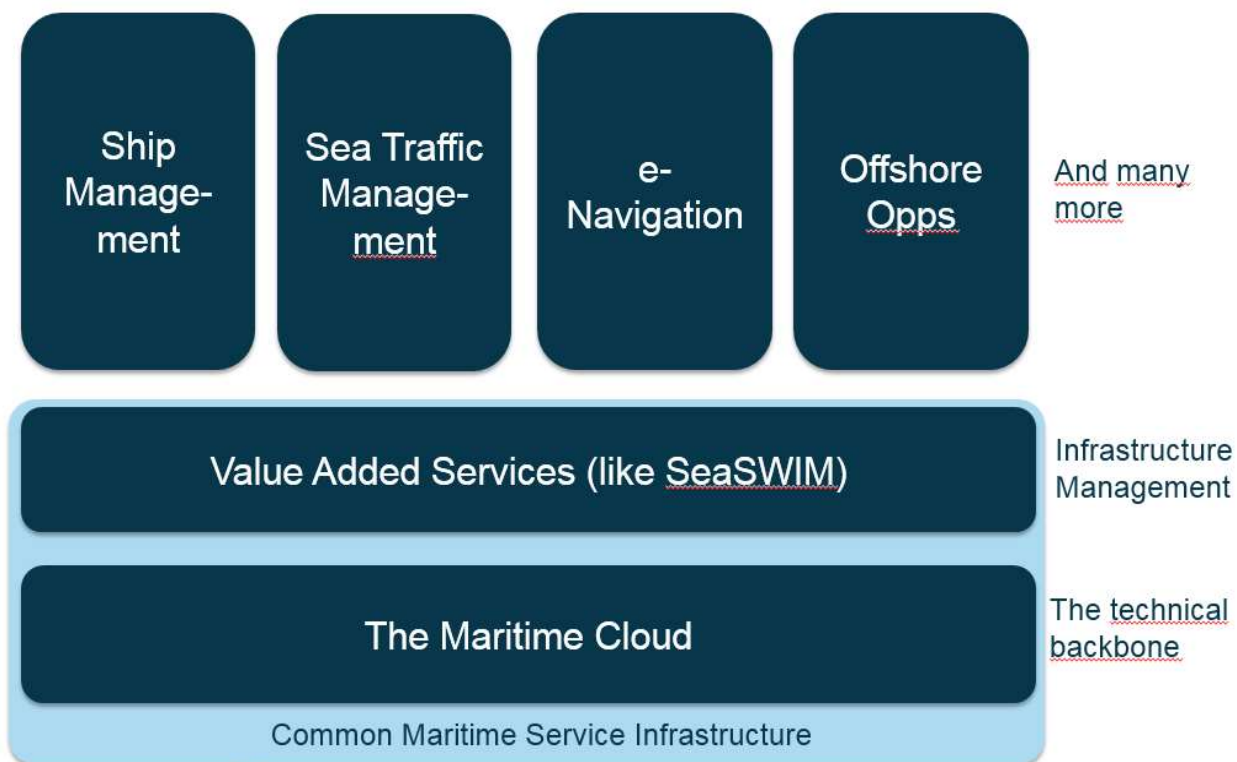
E-navigation developments relevant for inland navigation - III:

The Maritime Cloud:



E-navigation developments relevant for inland navigation - III:

The Architecture of the „The Internet of the Seas“



Some Conclusions and Recommendations - I

- General Conclusions
- Lessons learned e-Maritime
- Lessons learned e-Navigation in the Maritime WorldMaritime
- e-Navigation for Inland Waterways should be seen as one of the important evolutionary steps in the development of RIS and should not be seen as a separate development/implementation of RIS.

Some Conclusions and Recommendations - II

- Although maritime e-Navigation is just at the starting point of implementation, the research done by the WG156, provides the possibility to formulate a number of recommendations that can be used by inland navigation!
- RIS Flagship projects should take into consideration the state of play in maritime e-Navigation in order to pave the way for a coordinated implementation of e-Navigation for Inland Waterways.
- Due to the fact that maritime e-Navigation is still in full development and a lot of RIS related projects are ongoing it is recommended that this report should be reviewed and revised on a medium term determined by the progress of the different evolutions, e.g. in 3 to 5 years.

Thank you for your attention

Ir. Dierik Vermeir
Chairman WG156

ALSIC BVBA
Derbystraat 25
B-9051 Sint Denijs-Westrem

Tel: +32-9-265.91.11
Fax: +32-9-265.91.18

www.alsic.be
dierik.vermeir@alsic.be