

e-Navigation for inland waterways

international



e-Navigation
underway 2018

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Brian Tetreault

US Army Corps of Engineers
Coastal and Hydraulics Laboratory
US Army Engineer R&D Center









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e-Navigation Maritime Service Portfolios

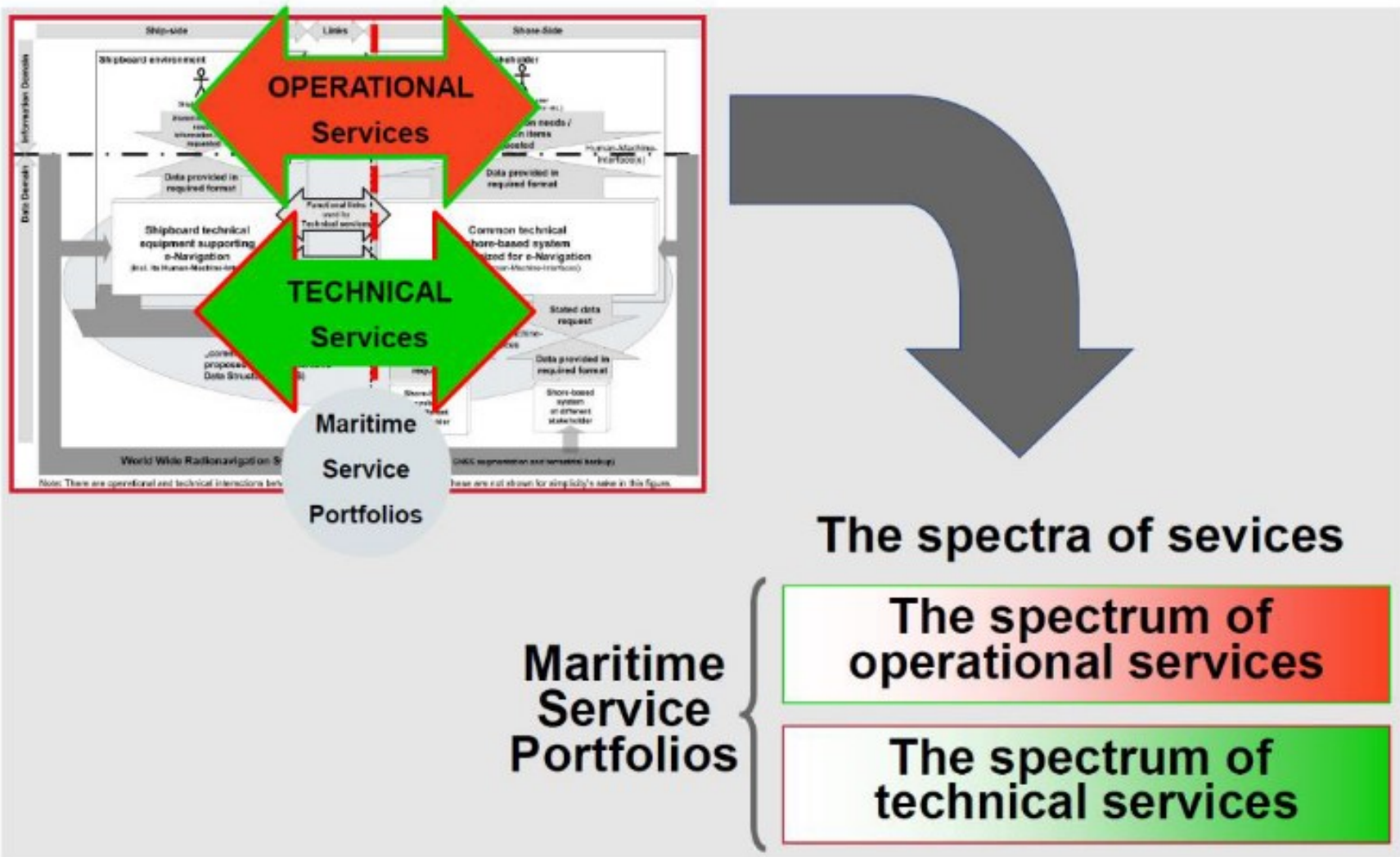


Figure 17: Spectrum of e-Navigation Services

(Source: Oltmann, J.-H. (2013): "The Structure of Maritime Service Portfolio(s)".)

Maritime Service Portfolios

- (MSP 1) VTS Information Service (INS)
- (MSP 2) VTS Navigation Assistance Service (NAS)
- (MSP 3) VTS Traffic Organisation 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



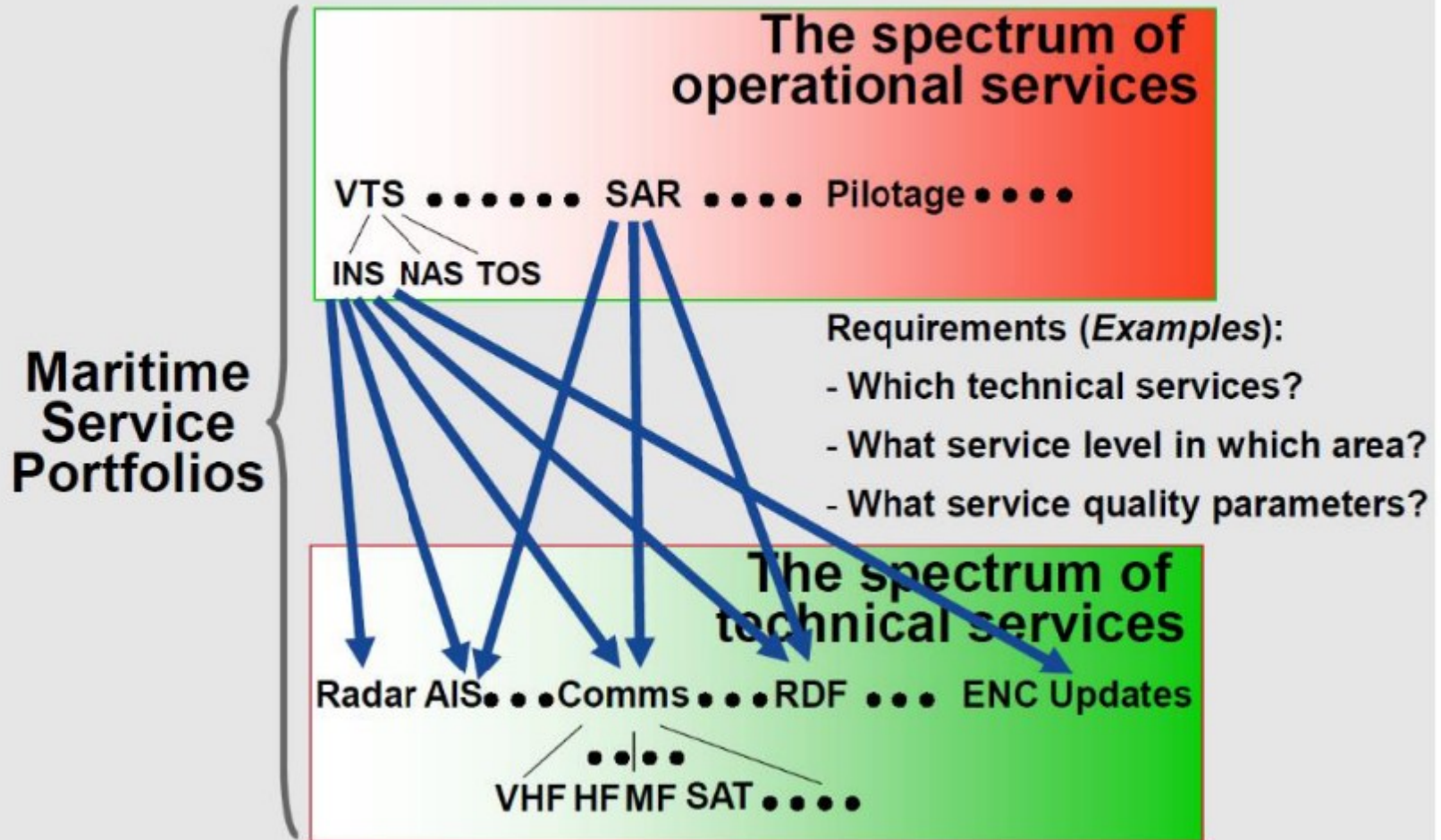
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MSPs and e-Navigation Services

The spectra of services



River Information Services

River Information Services:

“the harmonised information services to support traffic and transport management in inland navigation, including interfaces to other transport modes. RIS aims at contributing to a safe and efficient transport process and utilising the inland waterways to its fullest extent.”

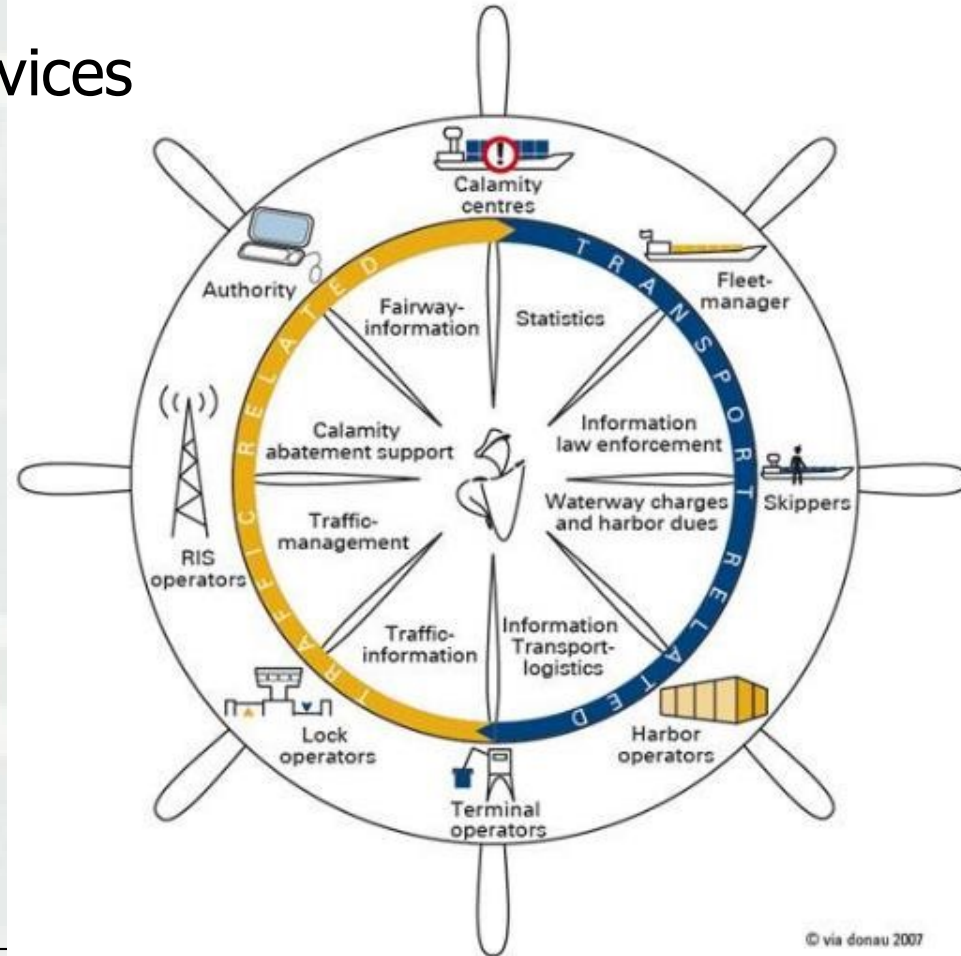


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Primary RIS services

- Fairway information services
 - ▶ IENCs
 - ▶ Notices to Skippers
- Vessel traffic information services
 - ▶ Traffic monitoring
- Traffic management
 - ▶ Lock management
- Calamity abatement support
 - ▶ Support for responders
- Transport logistics support
 - ▶ Voyage information
 - ▶ Electronic cargo reporting
 - ▶ Voyage planning

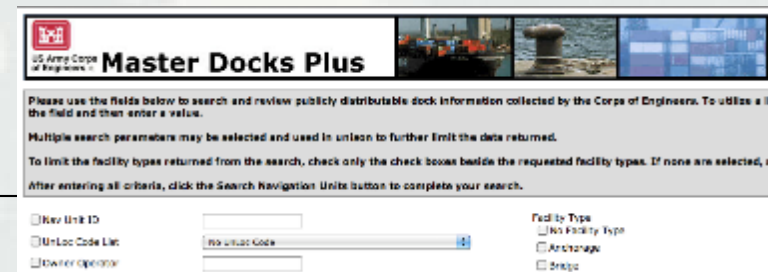
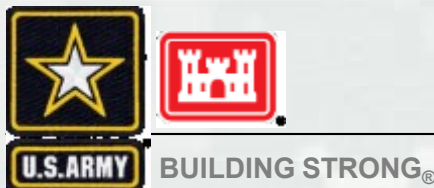
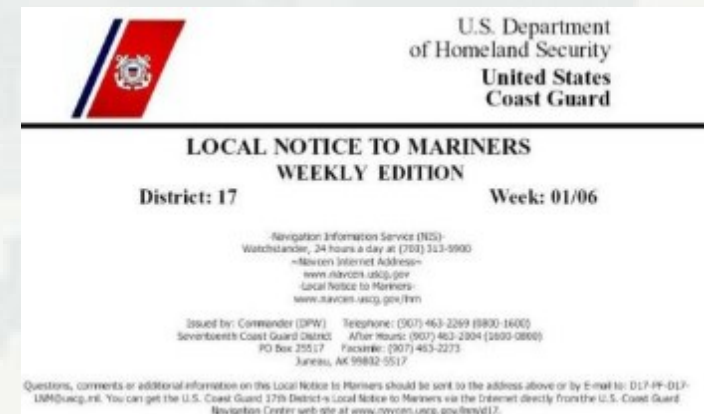


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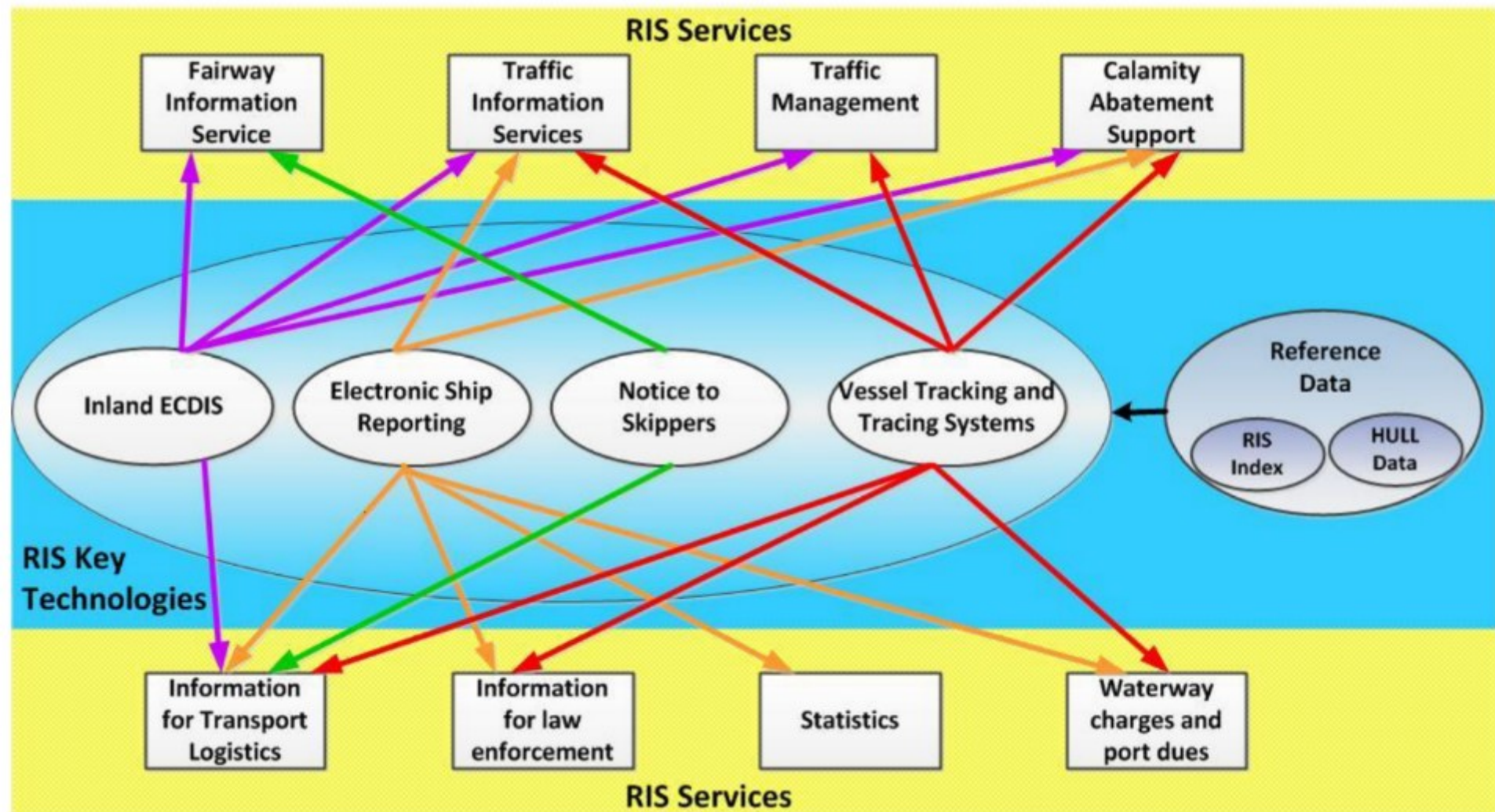
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RIS Key Technologies

- Inland ECDIS
 - ▶ Inland Electronic Navigation Charts (IENC)
- Notices to Skippers
- Electronic Reporting
 - ▶ Industry, interagency
- Reference data
 - ▶ Geographic locations, hull data
- Inland AIS
 - ▶ Vessel tracking and communications



Relationship between RIS Key Technologies and Services



PIANC Working Group 156 e-Navigation for Inland Waterways



PIANC

WG Report n° 156 - 2017



E-NAVIGATION
FOR INLAND WATERWAYS 2017

The World Association for Waterborne Transport Infrastructure

6.1.2 The Definition of e-Navigation for Inland Waterways

e-Navigation for inland waterways is the harmonised 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 inland navigation and its connection with other modes of transport, especially maritime navigation. Inland e-Navigation information services are provided through a framework of components based on existing River Information Services (RIS) and RIS Key Technologies.



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e-Nav elements compared to RIS

- Overarching architecture
 - ▶ No, but a governance framework exists in EU directives
- Shipboard equipment
 - ▶ Inland ECDIS, AIS
- Communications services
 - ▶ Relatively robust communications available
- Resilient PNT
 - ▶ Same requirements as e-Nav
- Shore based infrastructure
 - ▶ Existing technologies, but not in an overarching architecture
- CMDS
 - ▶ No, but some standards exist (NtS, RIS Index, etc.)
- MSPs



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MSP and RIS Service comparison

6.2.2.4.2 VTS, MSP1-3

There is no difference between the VTS services for e-Navigation in the maritime world and RIS as both definitions are based on IMO Resolution A. 857(20): RIS VTS is defined by the IALA Recommendation V-120 – Vessel Traffic Services in Inland Water Edition, which are based on IMO Resolution A. 857(20) and adapted for inland, see Figure 20.

RIS exclusive

Common

MSP exclusive



Figure 20: VTS and MSP1-3

6.2.2.4.3 MSP4 – Local Port Service

Generally speaking, the ITL services of RIS cover more logistical aspects than MSP4. Other RIS features like Estimated Time of Arrival (ETA) calculation or tracking of cargo may also be of interest for e-Navigation. Still, the harmonisation of ITS on corridor or European level is currently under development.

Looking at MSP4, RIS Information for Transport Logistics could be enriched with berthing information, availability on port services, shipping schedules and meteorological and hydrological data, as shown in Figure 21.

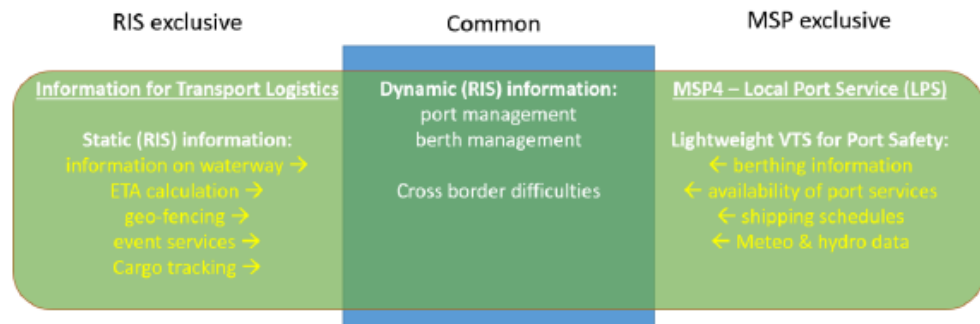
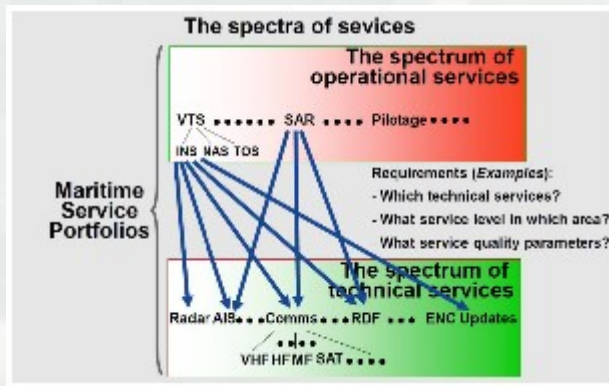


Figure 21: MSP4 – Local Port Service



RIS and e-Navigation relationship

Operational Services:

- ▶ Waterway information
- ▶ Vessel traffic information
- ▶ Vessel traffic management
- ▶ Incident response support
- ▶ Logistics support
- ▶ Law enforcement support
- ▶ Statistics
- ▶ Revenue support

Technical Services:

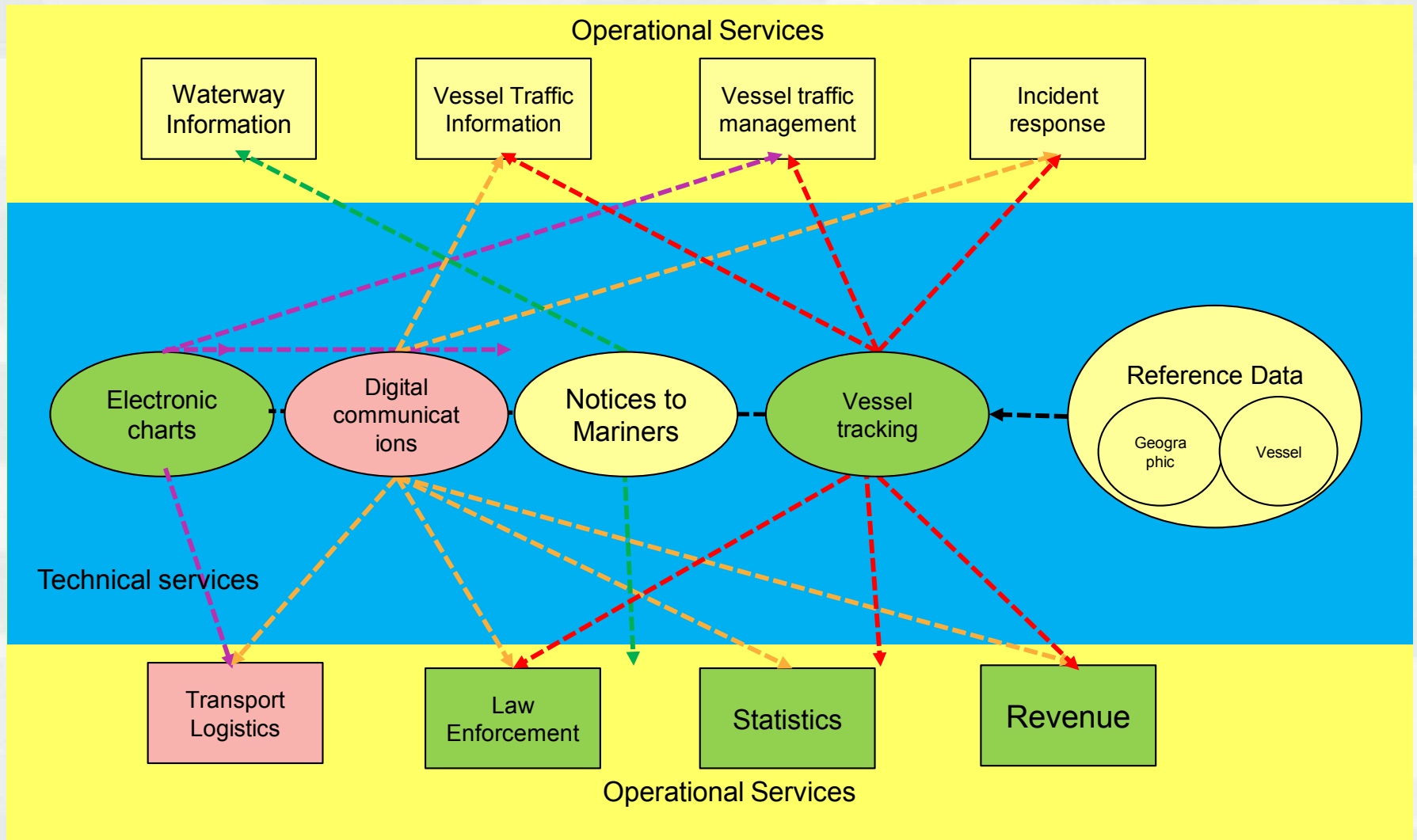
- Electronic charts
- Communication
 - Voice radio
 - Digital radio
 - Internet web services
- Vessel tracking
- Notices to mariners
- Reference data
 - Geographic
 - Vessel
 - Cargo/commodity



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RIS Technical and Operational services



e-Navigation and Inland Waterways

Potential coordination

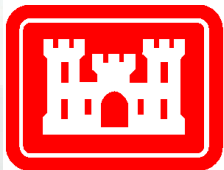
- Facilitate deep sea and inland transport
 - ▶ PortCDM – similarities to corridor management
 - ▶ MCP
- Common terminology
 - ▶ Updated RIS guidelines
- S-100 implementation
 - ▶ Common where possible
 - ▶ Inland-specific domain?
 - ▶ Areas to work on this – IENCs, NtS, RIS Index, etc.
- Formalize cooperation
 - ▶ PIANC-IALA liaison?
 - ▶ Joint working group(s)?



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Thank you for your attention!



Brian Tetreault

brian.j.tetreault@usace.army.mil

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