



PIANC *“Navigation, Ports, Waterways”
Inland Waterways Commission*

DIGITALISATION OF INLAND WATERWAY TRANSPORT

River Information Services and the role of the Waterway Authorities

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content

- River Information services, the RIS lifecycle and RIS Guidelines
- EC and the Digital Single Market and DINA
- Digitalisation challenges for the Waterway Authorities in the coming decade
- Steps towards Digitalisation of IWT
- The future: Intermodal Transport Information Services ?

RIS Lifecycle and the PIANC RIS Guidelines

**GUIDELINES AND RECOMMENDATIONS
FOR
RIVER INFORMATION SERVICES**

**Edition 2.0
05.02.2004**

RIS GUIDELINES 2004

- 1996-2005: focus on research and development
 - PIANC RIS guidelines edition 1 and 2 based on research results in European context

UNECE Resolution 57



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River Information Services – the definition

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 information (TM)**
 - a) Local traffic management (vessel traffic services - VTS)
 - b) Lock and bridge management (LBM)
 - c) Traffic Planning (TP)
- 4 **Information to support calamity abatement (CAS)**

Mainly transport related

- 5 **Transport logistics Information (ITL)**
 - a) Voyage planning (VP)
 - b) Transport management (TPM)
 - c) Port and terminal management (PTM)
 - d) Cargo and fleet management (CFM)
- 6 **Information on Law Compliancy (ILC)**
- 7 **Statistics information (ST)**
- 8 **Information for waterway charges and harbour dues (CHD)**

*RIS are harmonized information services to support **traffic and transport** management in inland navigation, including interfaces to **other transport modes** (EU directive 2005/44/EC)*

PIANC installed a working group with the task to develop Guidelines to support the Implementation of RIS (WG125)



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RIS Lifecycle and the PIANC RIS Guidelines

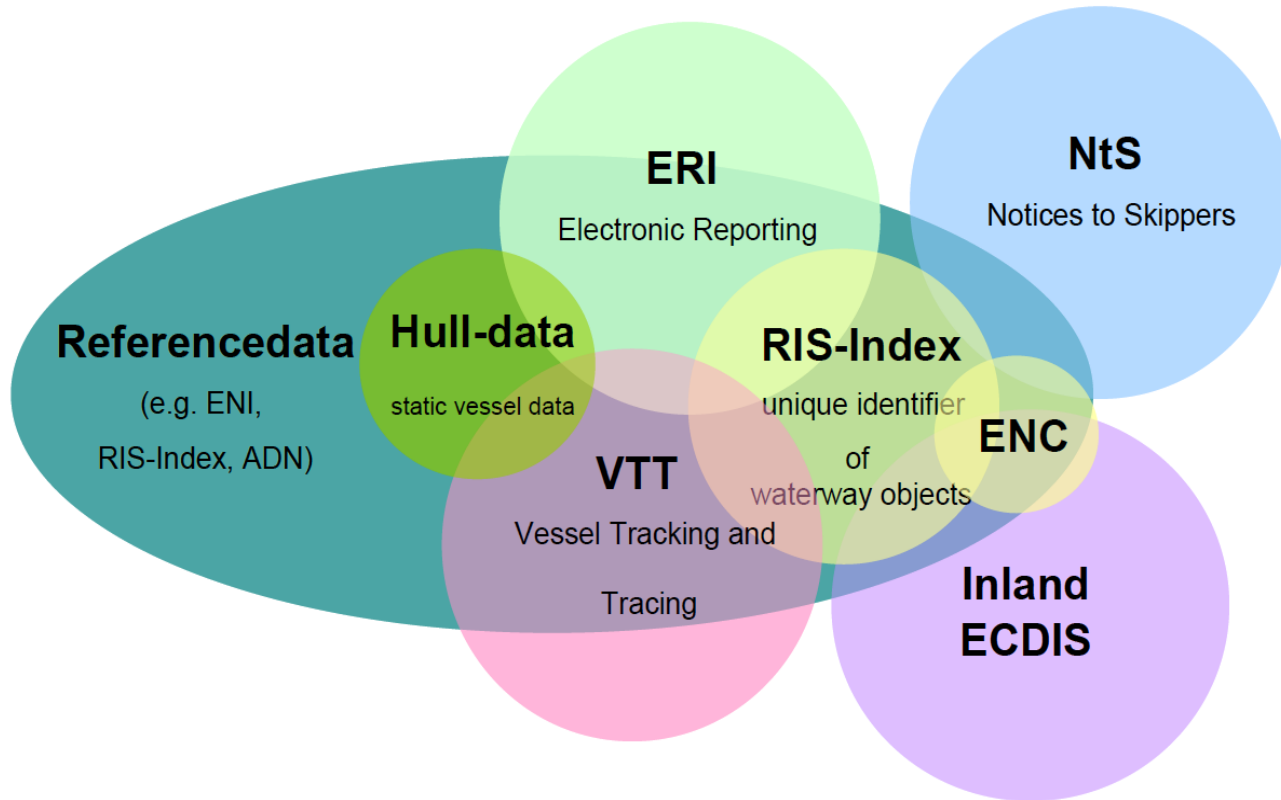


The image shows the cover of a PIANC report. At the top left is the PIANC logo with the text 'PIANC - A.D. 1805 - A.P.C.N.' and 'NAVIGARE NECESSO'. Below it is the PIANC name and tagline 'Setting the Course'. To the right, a dark blue box contains the text 'Report n° 125 - 2011'. The central image is a photograph of a river construction site with a large bridge structure under construction, viewed from a boat's perspective. Below the photo, the text '(part III)' is written in white. At the bottom, the title 'GUIDELINES AND RECOMMENDATIONS FOR RIVER INFORMATION SERVICES' is displayed in white, followed by 'The World Association for Waterborne Transport Infrastructure' in a smaller font.

- 2005-2010: focus on implementation of RIS technologies
- 2010-2015: focus on traffic management related services
 - PIANC Guidelines 2011 edition 3 based on experiences on implementation of RIS key technologies and initial basic services

UNECE Resolution 57 (73)

RIS key technologies and initial basic services



An essential change in edition 4 in relation to edition 3 of the RIS Guidelines is a basic alignment between RIS and e-Navigation.

For this reason the term “RIS key technologies” is replaced by “Technical Services”, and “Services” are changed into “Operational Services” to be in line with the terms used in the domain of e-Navigation.

PIANC WG 156 – E-navigation for Inland Waterways



PIANC Working Group 156 (WG 156) on ‘e-Navigation for Inland Waterways’ originated from PIANC Working Group 125 (WG 125)

When PIANC Working Group 125 finished its report in 2011, it concluded that River Information Services might benefit from concepts in the maritime world such as e-Navigation, e-Maritime, and Vessel Traffic Management (VTM).

RIS Lifecycle and the PIANC RIS Guidelines

International Navigation Association

Inland Navigation Committee (InCom)

Permanent Working Group 125

**GUIDELINES AND RECOMMENDATIONS
FOR
RIVER INFORMATION SERVICES**

Draft edition 4
..... 2018

- 2010-2020: focus on traffic & transport management services
 - PIANC Guidelines 2018 edition 4 based on
 - World wide experiences on implementation of services
 - Development of Corridor Management
 - Synergy and benefits of e-Navigation for RIS
- 2020-2030: Information services in a synchro-modal transport domain and new challenges like smart shipping and new technologies for IWT.

The Juncker Initiative – European Commission

Juncker of the EC addressed the European transport community in his “Digital Single Market”:

Smooth information flows to simplify access to traffic and transport data for transport by sea (e-navigation), inland waterways (RIS), rail (ERTMS) and road (ITS) leading to:

- Single reporting/reduction of administrative burden
- Improved transport services in a multimodal context
- Improved safety and enhanced damage prevention (dangerous goods)
- new business opportunities
- Improved security

DINA

In 2016 the European Commission – DG MOVE - investigated the potential for digitalisation in the Inland Waterborne Transport sector and defined a concept for the ***Digital Inland Waterway Area - DINA***.

DINA is a concept to interconnect information on infrastructure, people, operations, fleet and cargo in the inland waterway transport sector and to connect this information with other transport modes.

DINA builds on existing investments and developments such as existing components of River Information Services.

Challenges for the Waterway Authorities for the coming decade

In the coming decade there will be a the digital transition of inland waterways transport. This development will put requirements on the Waterway Authorities in the period 2020-2030 based on:

- (inter)national business developments related to the inland waterways traffic and transport domain
- the technological developments
- requirements on cybersecurity, standardisation, legislation, etc

Business developments in IWT like:

- Smart and Autonomous Shipping
 - Smart Shipping requires a (digitized) waterway infrastructure that facilitates autonomous vessels for a safe and efficient navigation.
- Sychromodality and multimodality
 - Multi- and Sychromodal transport and logistics will put new requirements on IWT and also on RIS related services, systems, technologies and standards. This brings new opportunities for improving the quality and efficiency of IWT.
- ITS, e-Navigation and ERTMS
 - IWT and RIS will benefit from services, information, technologies, architecture in other domains such as e-Navigation, Intelligent Transport Systems (ITS) in the road sector and the European Rail Transport Management System (ERTMS)

Technological developments to be implemented in IWT

Technological developments stimulate IWT and puts requirements on the digitalisation of IWT, challenges are:

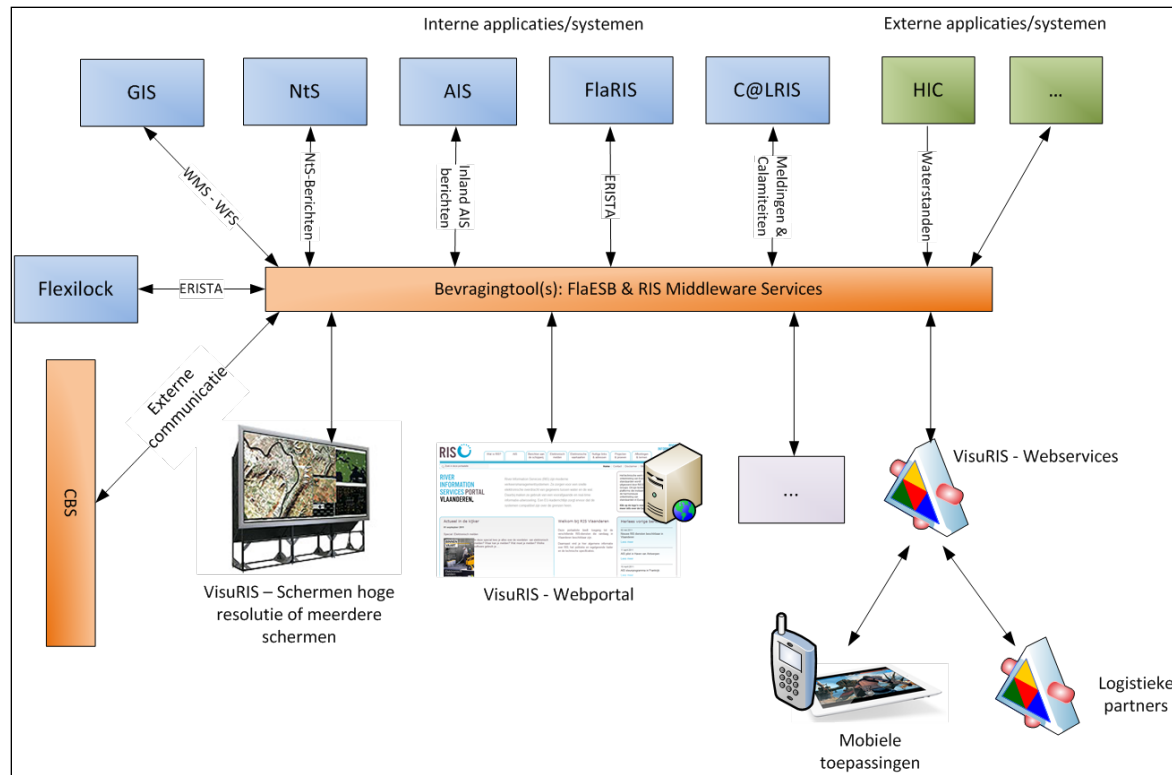
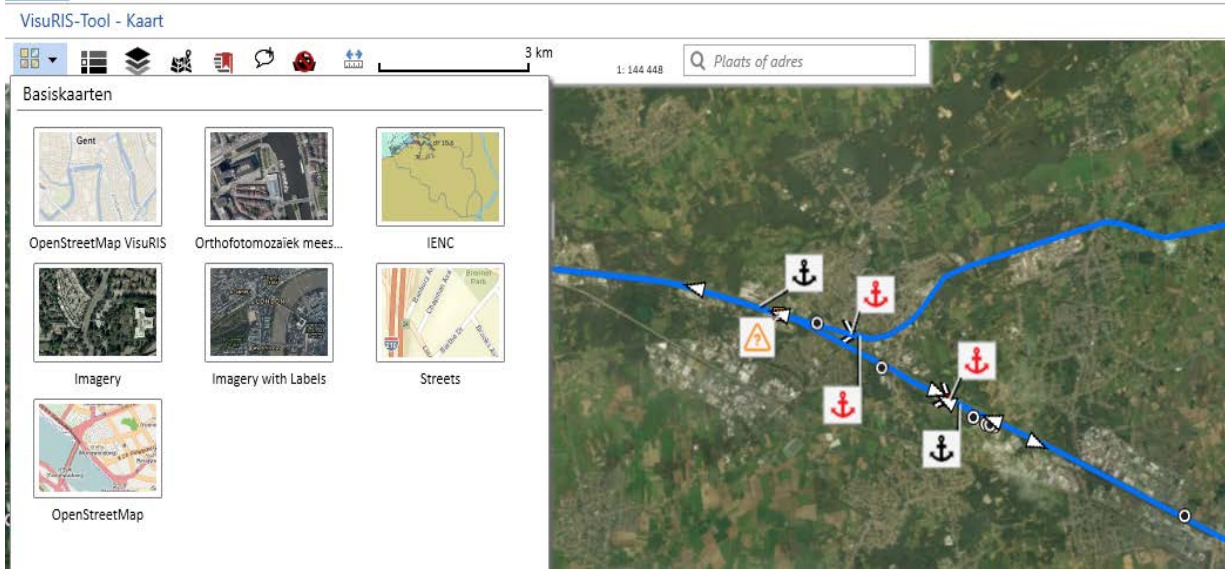
- New technological developments to be used in IWT such as IoT, AI, Big Data
- Smart Sensor technologies.
- Secure and reliable positioning in Inland Waterways (as required by smart Shipping)
- IWT connectivity platform for efficient, secure, reliable and seamless electronic information exchange (as under development in the maritime domain)
- Information models and data registry (as under development in the maritime domain)

Facilitators

Possible stimulators and hindrances for the business development and for the use of technological developments related digitalisation of IWT are:

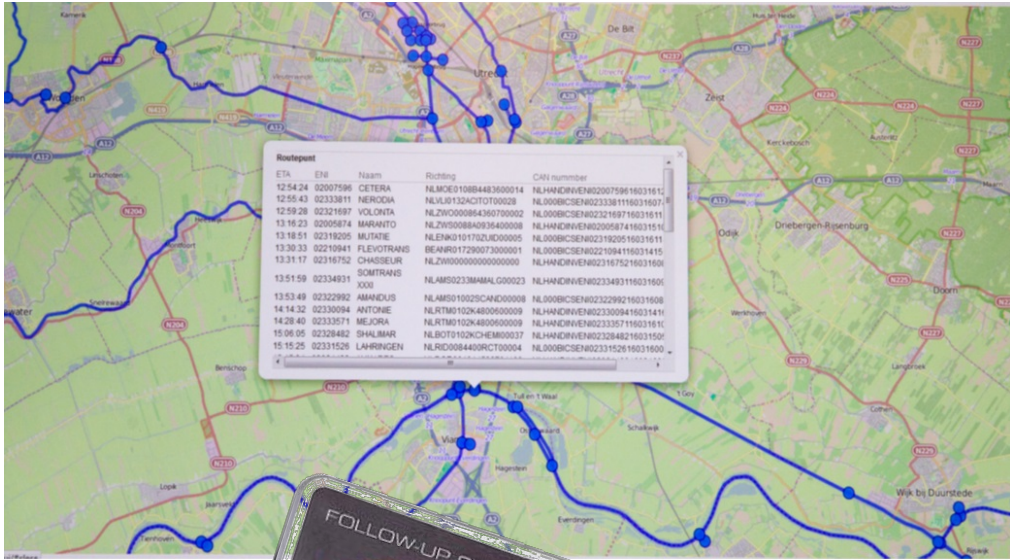
- Cybersecurity
- Privacy
- Legal and regulatory framework
- Standardisation, interoperability, interconnectivity and proprietary solutions
- Quality and reliability of traffic and transport data

STEPS TOWARDS DIGITALISATION OF IWT



A suite of Traffic and Transport applications in Flanders to support implementation of Corridor Management in Europe

Traffic planner based on RIS technical services



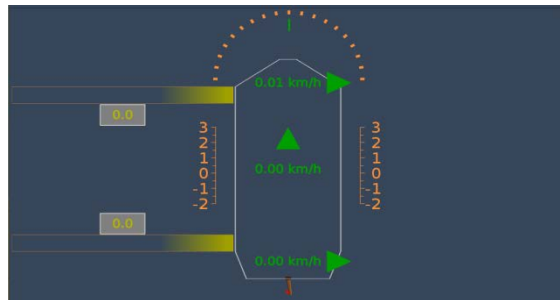
Traffic prediction application to support traffic management on the Dutch fairway network to allow:

- Risk based VTS
- Efficient Lock, Port and Terminal Planning
- Traffic Information Services to support smart shipping

LAESSI is a German project on the development of efficient navigation assistance functions for IWT

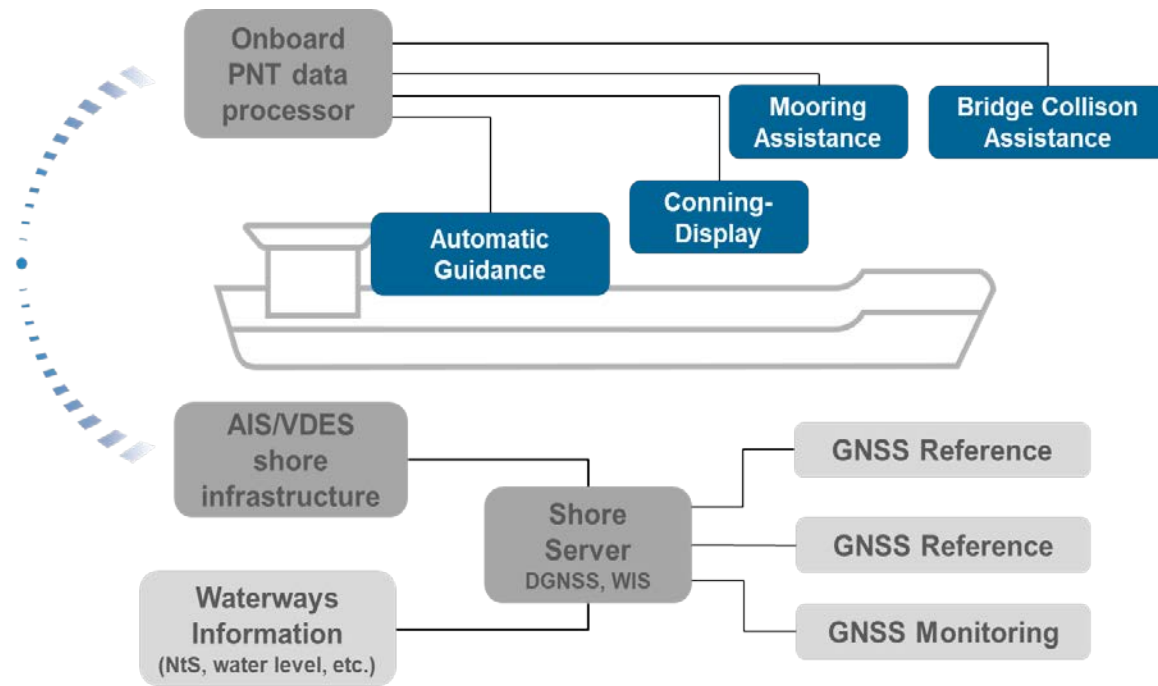


Bridge Collision Warning System

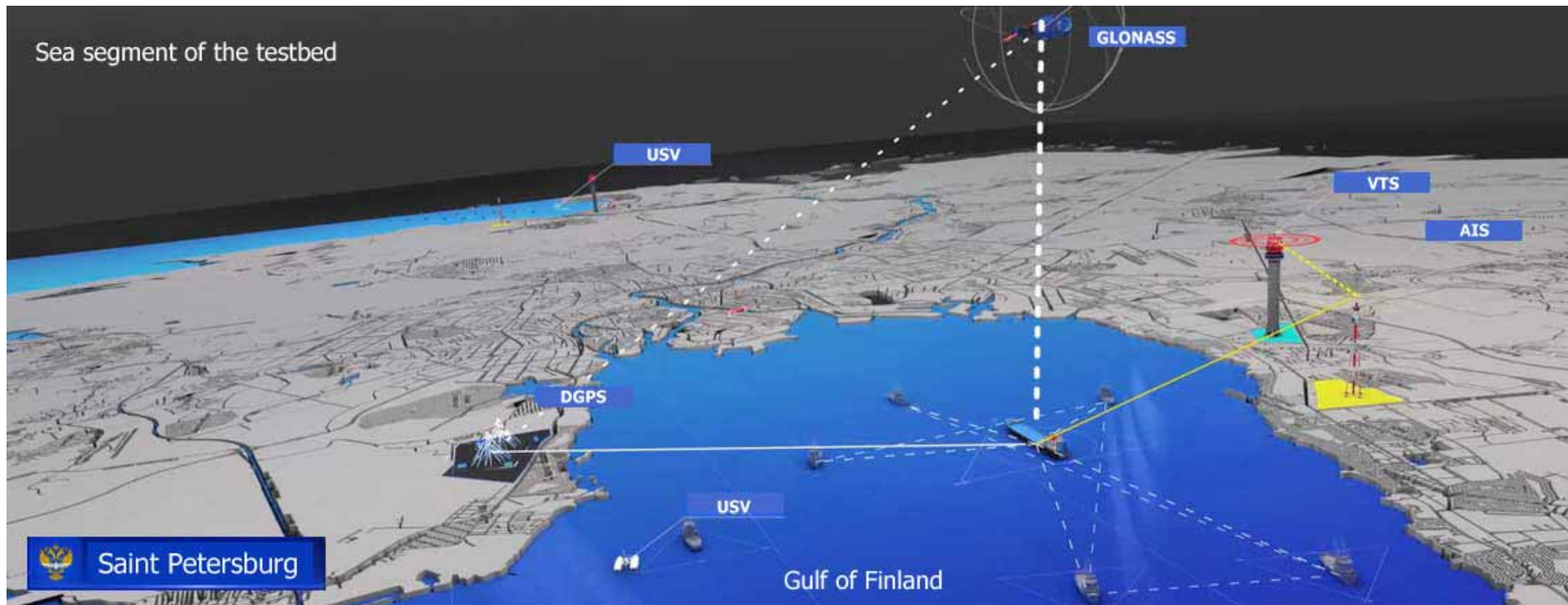


Berthing Assistant

- + Automatic Guidance System
- + Conning Display



e-Navigation testbed in Russia: Infrastructure of Sea segment



VTS - vessel traffic service

AIS - automatic identification system

DGPS - differential global positioning system

ECDIS - electronic chart display and information system

USV - unmanned surface vehicles

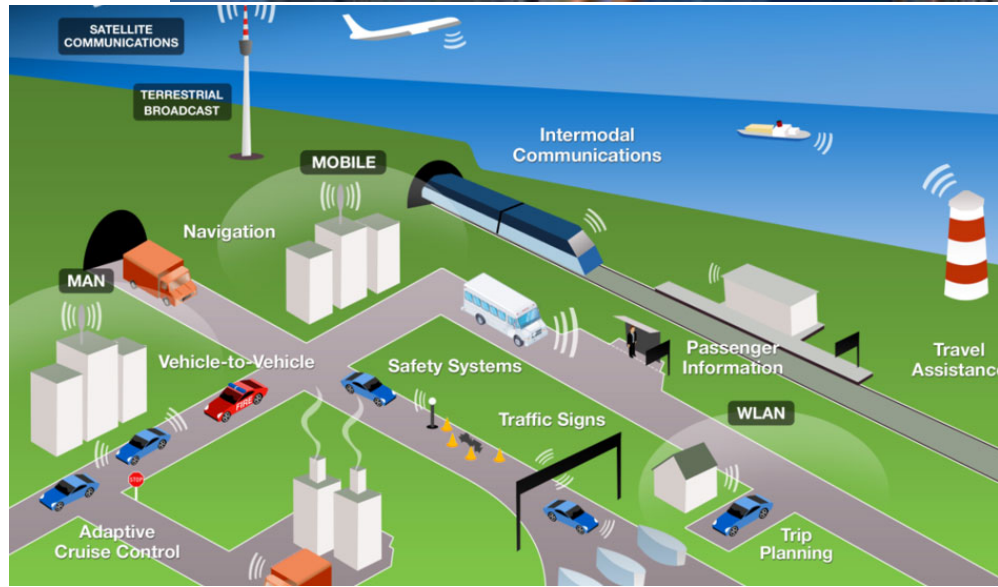
e-Navigation testbed in Russia: Infrastructure of River segment

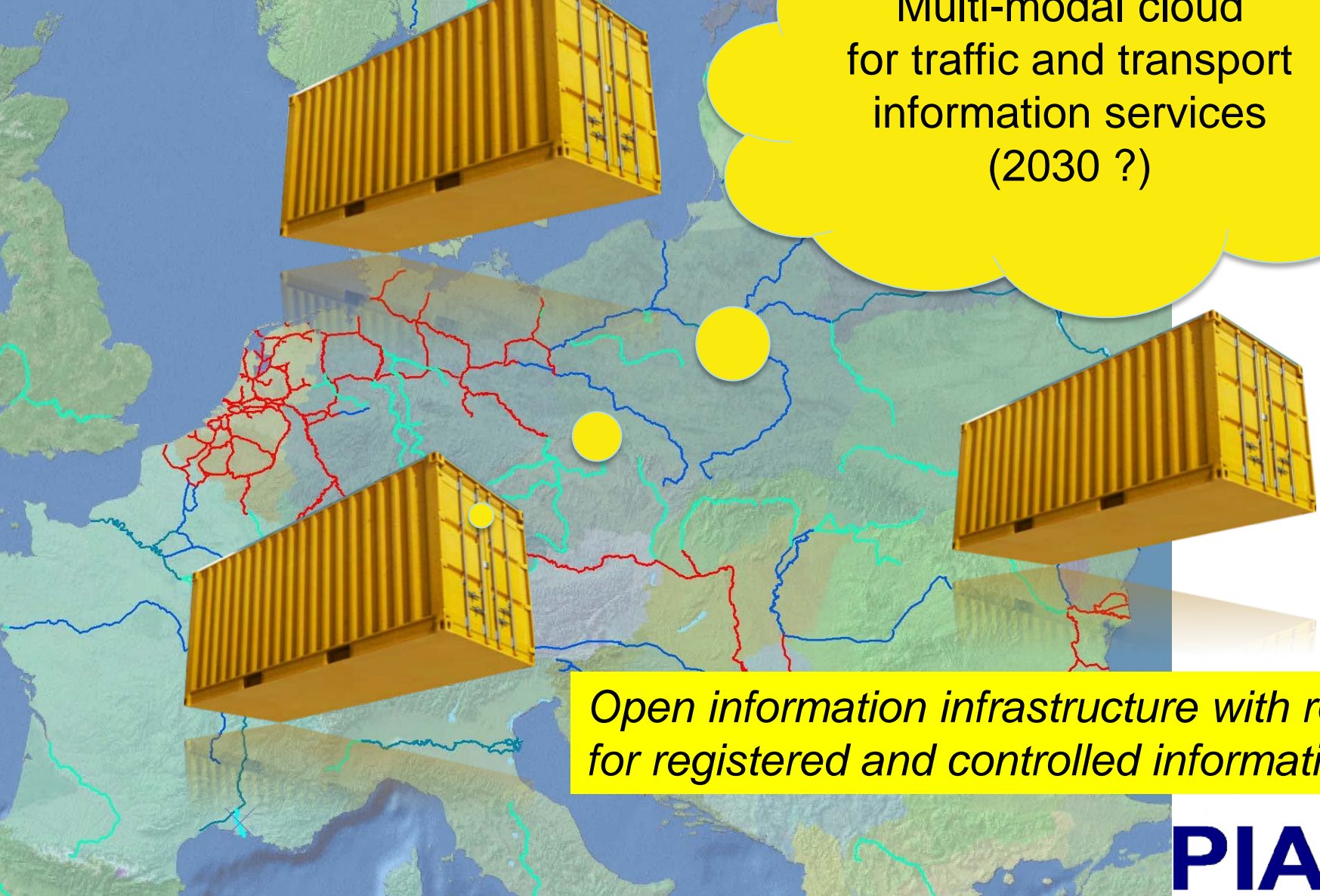


VTS - vessel traffic services on inland waterways
 AIS - automatic identification system
 Synthetic AIS AtoN (Aids to Navigation)

ECDIS - electronic chart display and information system
USV - unmanned surface vehicles
Water level gage

The Future: Intermodal Transport Information Services





Multi-modal cloud
for traffic and transport
information services
(2030 ?)

*Open information infrastructure with role based access
for registered and controlled information sharing*



Questions?

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