



***World port***  
*in good hands*

**State-of-the-Art Examples**

**+** in Germany

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Consultant & Project Manager

# State-of-the-Art Examples

In Germany– From Sea to River to Port

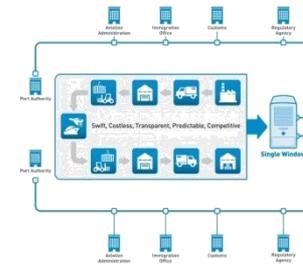
## Talking Points

- (1) Conceptual Starting Point: Smartness needs Information
- (2) Logistic Chain Information Basis: NSW, RIS, PCS
- (3) Smart Port Examples
- (4) Remaining Challenges and Approaches / R&D

# Conceptual Starting Point

## Smartness needs Information

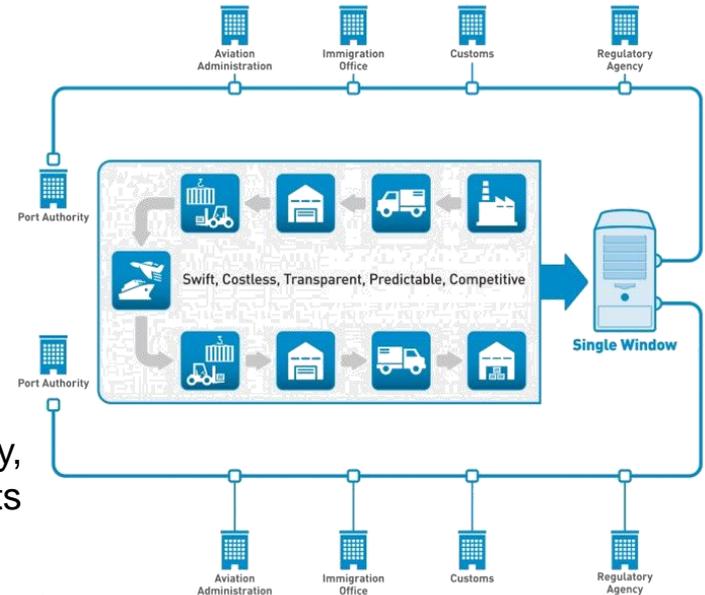
- + (Electronic) optimisation / smartness of ports and ability to automatise depends on the availability and sharing of information
- + Priority should be on smartness of ship logistics
  - + To optimise port processes
  - + To allow traffic management
  - + To allow for synchomodality
  - + To enable saving of CO2
- + Of further concern is infrastructure management
- + BUT: Smartness is more than computerisation, digital processes and automatisa**tion!**



# Logistic Chain Information Basis

## National Single Window (NSW)

- + The single-window system / concept
  - + Trade facilitation concept to ease import/export
  - + Single point of contact instead of multiple to obtain papers, permits, clearances for moving cargoes
- Saves time / costs
- + National Single Window (Germany)
  - + IT-system / Web-Application for incoming and transiting sea ships
  - + Paperless, increased data quality, reduce redundancy, quicker information transfer, harmonised requirements
  - + Standard that allows for EU-wide exchange
  - + Information (“Who, what, why, where, how?”):



# Logistic Chain Information Basis

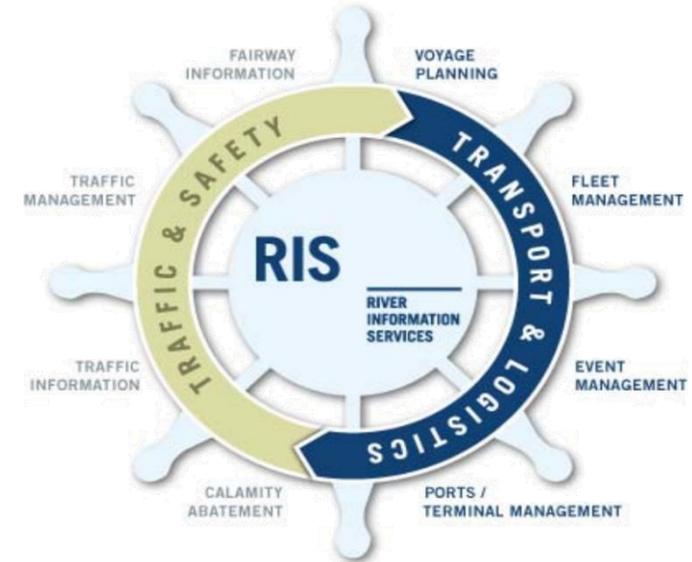
## River Information Systems / Services (RIS)

### + RIS:

- Traffic telematics systems for traffic management on inland waterways, esp. rivers and canals.
- Similar to an air traffic management system + geoinformatics of the course of the river
- Optimal utilization of transport capacities + information on transport processes in real time
- Security related information
- Various platforms throughout Europe
- E.g.: ELWIS, Danube / Rhine RIS ...

### + RIS COMEX (pilot)

- Unifies RIS platforms and logistics users (e.g. shippers, boat masters, vessel and fleet operators, terminal operators)



# Logistic Chain Information Basis

## River Information Systems (RIS): ELWIS (nationwide)

Ort in Deutschland

Gültigkeitszeitraum auswählen: 22.11.2021 - 22.12.2021

1 : 68247

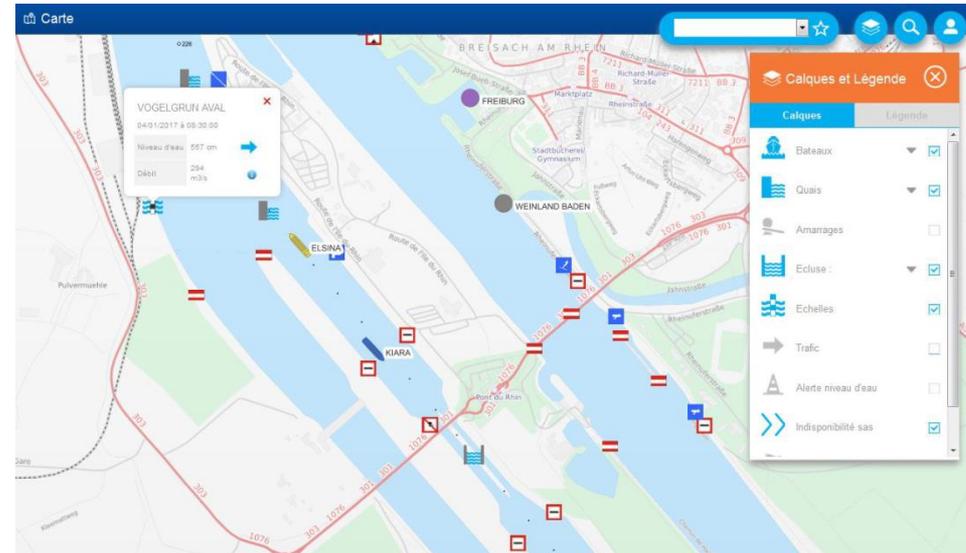
2 km

Hintergrund: © Bundesamt für Kartographie und Geodäsie 2021 Datenquellen www.wsv.de / 2021 Inhalte: www.elwis.de / 2021

**WSV.de**  
Wasserstraßen- und  
Schifffahrtsverwaltung  
des Bundes

## River Information Systems (RIS): Upper Rhine RIS (West Germany)

- + Map display / overview
- + Overview of fleets
- + Trip management
- + Berths and services
- + Information on ports / quays
- + Traffic management
- + Water levels, air clearance / high water alert
- + App Android/iOS available
- + Hybrid: goes down to port level



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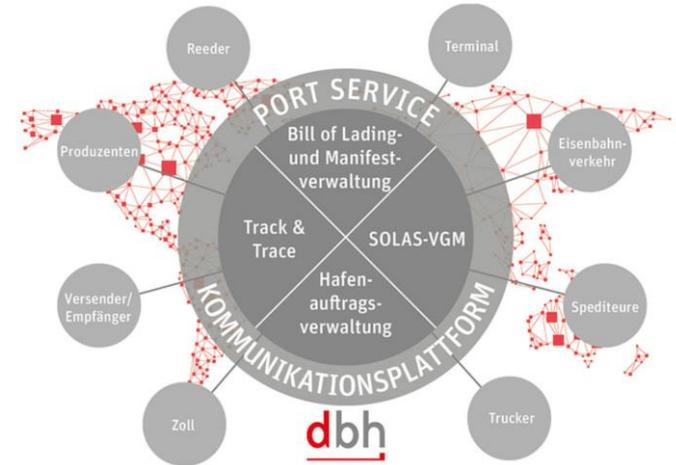
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→ Highly Fragmented

## Port Community Systems (PCS): “Port Service” (Bremen)

- + PCS:
  - + neutral and open electronic platform
  - + enabling intelligent and secure information exchange
  - + between public and private stakeholders to improve the competitive position
  - + connecting transport and logistics chains
  - + optimizes, manages and automates
- + “Port Service”: Central communication portal for easy networking with all partners in the port area
  - + One communication node for all connected partners
  - + Interface-independent communication
  - + Uniting different sources, systems and processes
  - + Including Traffic control (sub-)system



# Smart Port Examples

## Smart Port Wilhelmshaven / bremenports



- + Automatic gate processing for trucks communicating with TOS
- + Automatic container handling with straddle carriers (pilot)
- + Fully automatic maneuvering process for the shunting locomotives

# Smart Port Examples

## Smart Port Bremerhaven



### The challenge:

- + 2.1 Mil. Cars p.a.
  - + 95,000 parking spaces
  - + 18 berths
  - + 16 rail connections
  - + on 240 ha
- Tedious, inefficient movement and loading processe

### The Solution:

- + “Digital twins“ of real time terminal traffic
- + App-based registration and allocation
- + Fully digitalised processes
- + AI for better decision making and management
- + Vastefficiency gains (and less errors)
- + Simulation for further improvements
- + VR technologies for trainign of employees



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# Smart Port Examples

Smart Ports Bremen & Bremerhaven / bremenports

bremenports

+ **bremenports is a world-wide leader in implementing holistic sustainability in all its operations**

- first to implement a **sustainability strategy**
- reports according to **GRI and PERS standards**
- **manages its energy** according to ISO 50001 standards
- **multiple winner** of sustainability and environmental awards and globally recognised
- Includes **digitalisation** in its approach

greenports



**ECONOMIC PERFORMANCE**



**ENVIRONMENTAL  
COMPATIBILITY**



**LABOUR PRACTICES**



**SOCIAL**



**GOVERNANCE**

# Remaining Challenges and Approaches

## Current Research and Development Examples

- + NSW, RIS, PCS, TOS are often separated / fragmented and non-standardised Systems  
→ little exchange of information
- + Autonomous vessels
- + Green vessels
- + Digitalisation in IWT
- + Intelligent locks
- + Tracking of containers
- + Optimising energy consumption of ports





[www.bremenports.de](http://www.bremenports.de)



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