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Wasserstraßen- und Schifffahrtsverwaltung des Bundes

IWETT project operational implementation (EGNOS through AIS)

iWETT
Inland Waterway use of EGNOS for Tracking and Tracing

EUSPA
European Union Agency for the Space Programme

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Project Information

Duration: 1 October 2022 - 31 December 2024 (24+3 Months)

Objective: Promote the use of EGNOS-based services in inland waterway transport

Pilot areas:

- Danube in Hungary
- Spree-Oder Waterway in Germany
- Guadalquivir River in Spain

Actions:

- Conduct pilot tests
- Validate the results
- Integrate EGNOS-based services as a key component of the RIS system

Consortium

Project Coordinator:
RSOE

Project Partners:
Alberding GmbH
WSV
Port of Seville

Project Observers:
Cerema
Puertos del Estado

Project Activities Structure

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WP1 Management and Dissemination

- 1.1 Project and financial management
- 1.2 Project dissemination, synergies with projects

WP2 Analysis and Design

- 2.1 Analysis of previous EGNOS IWW project results and present systems
- 2.2 Analyses of IWW user requirements
- 2.3 Design of Inland based EGNSS service infrastructure upgrade
- 2.4 Elaboration of EGNOS based user terminal concept

WP3 Implementation and Tests

- 3.1 Software development
- 3.2 Upgrade of the land bases EGNSS service infrastructure
- 3.3 Execution of pilot tests
- 3.4 Evaluation of test results, pilot conclusions

WP4 Exploitation and Validation

- 4.1 Validation of pilot results, user forums
- 4.2 Standardization and GNSS requirements
- 4.3 Exploitation and Final Report

Key work of the project

WP 2.2 Analyses of IWW user requirements

Current situation regarding PNT equipment onboard inland vessels

Main applications are Inland-ECDIS and Inland-AIS

No carriage requirements exists for positioning equipment onboard inland vessels

AIS mobile transponder includes a DGPS-board which is conform to maritime type approval procedures

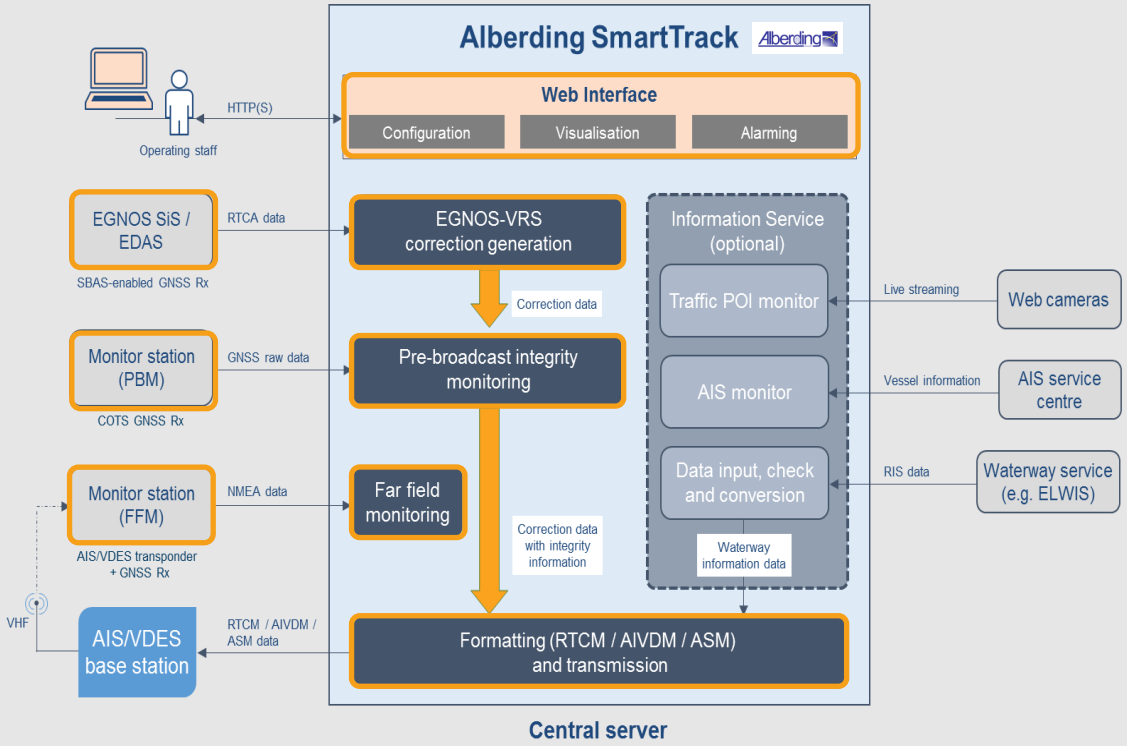
Rate of turn indicator is mandatory together with Radar.

Classification of requirements for IWW

Key work of the project

WP 3.1 Software development “SmartTrack – Functionality”

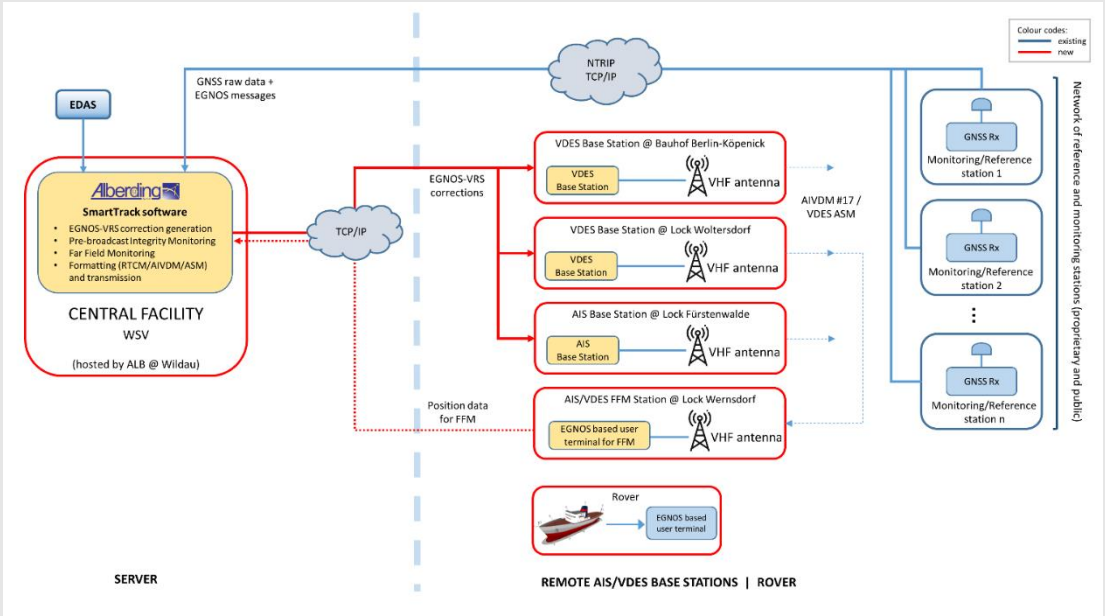
- Retrieve EGNOS SiS messages and GNSS raw observation data in real time, connect to EDAS SISNeT service as a redundant data source
- EGNOS-VRS correction generation for the locations of the AIS/VDES base stations
- Check the integrity of the generated corrections before transmission in both pseudorange and position domains (Pre-Broadcast Monitoring) in line with the IALA Guideline 1112 (RD-01),
- Format and output the correction data in RTCM 10402.3 format (RD-05) or AIVDM #17
- Check quality of the corrections after transmission using position and signal quality (FFM)
- Generate performance results (accuracy, integrity, availability and continuity) and statistics in both graphical and textual forms to be used for detailed data analysis and service performance evaluation



Key work of the project

WP 3.2 Upgrade of the land bases EGNSS service infrastructure - Germany

System architecture



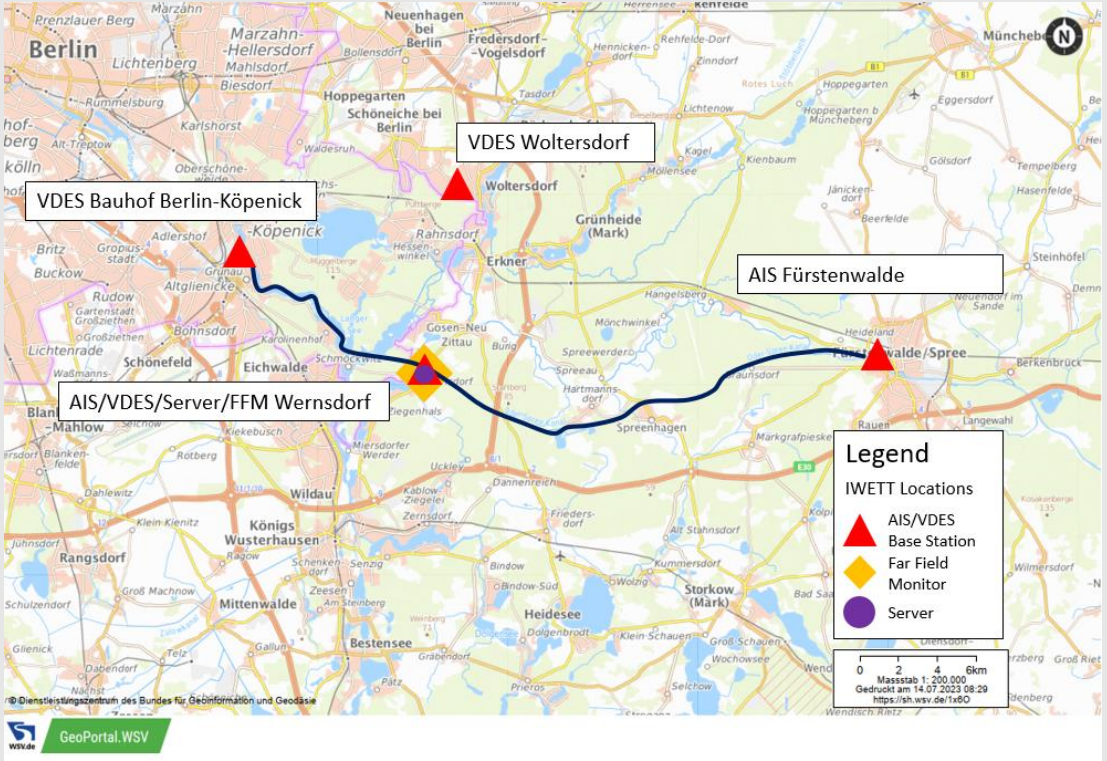
Key work of the project

WP 3.2 Upgrade of the land bases EGNSS service infrastructure - Germany

Infrastructure changes implemented:
Installation of:
3 VDES BS, 1 AIS BS, 1 Server, 1 FFM

Development of a centralized correction data transmission system based on AIS/VDES- complete with EGNOS/EDAS correction data

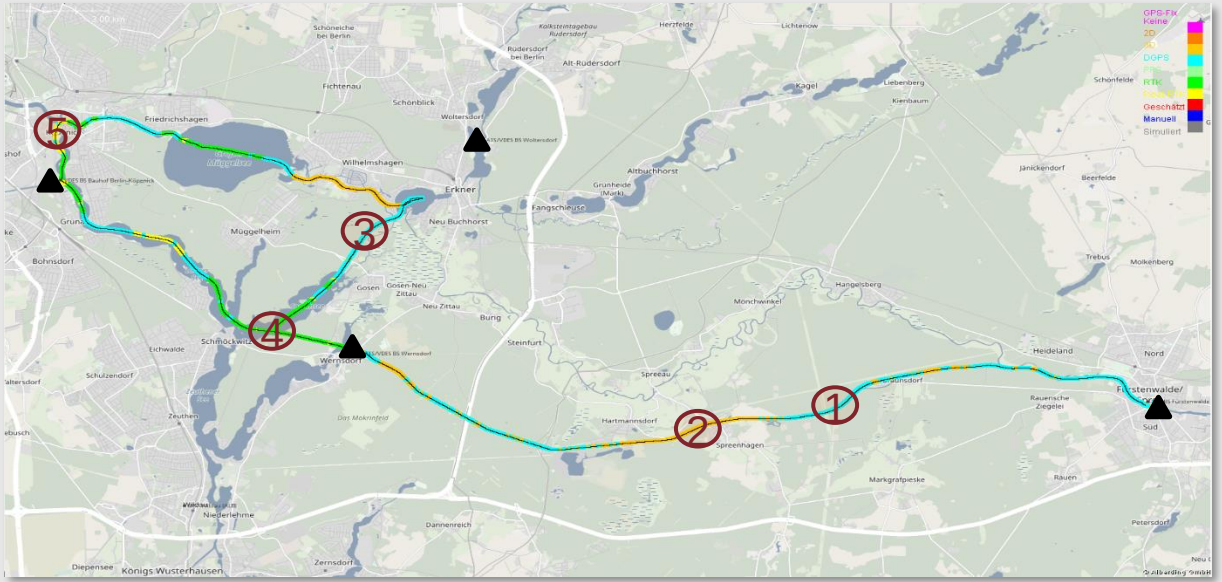
Use of AIS/VDES infrastructure Extension of the architecture with EGNOS/EDAS-based corrections



Key work of the project

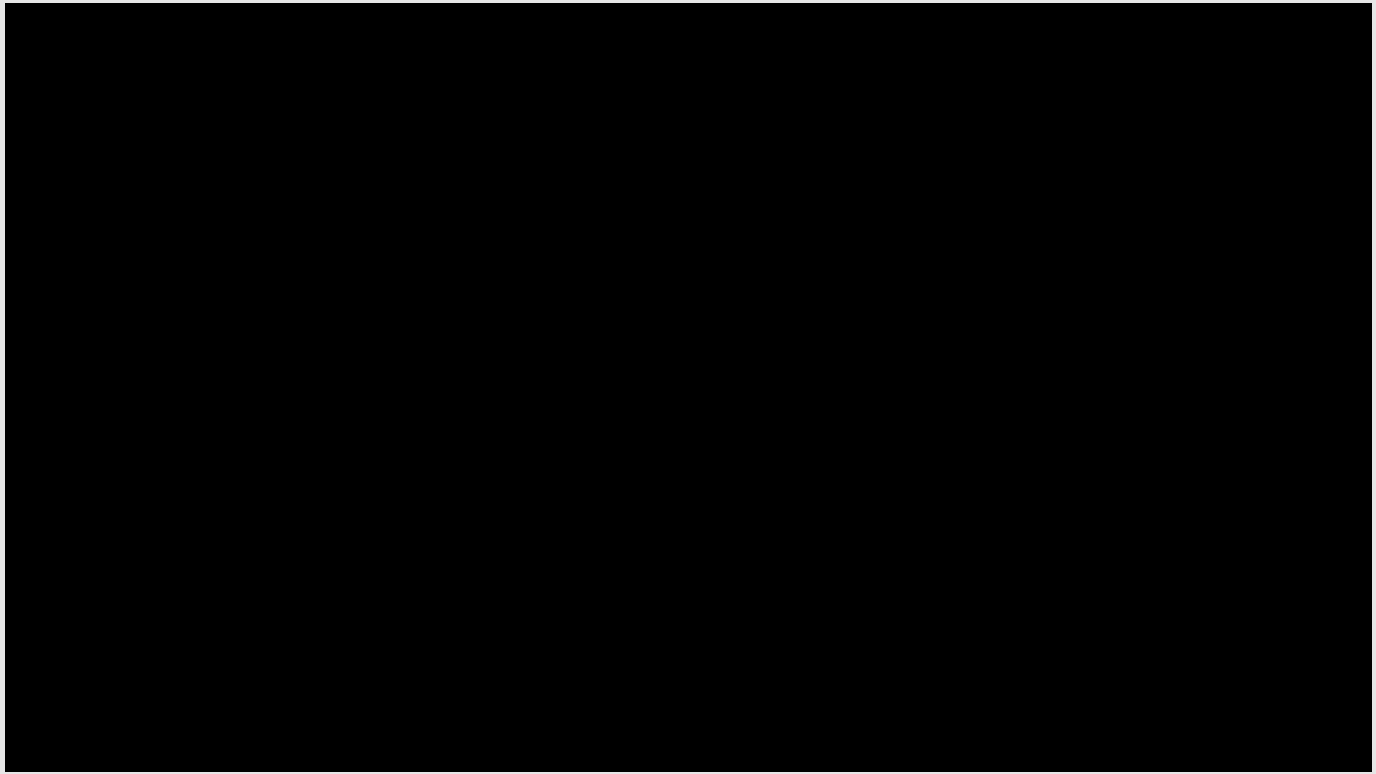
WP 3.3 Execution of pilot tests

- Analysis of 5 scenarios
- Different conditions (urban vs. rural)
- Compared to RTK reference trajectory
- 20-30 min data each
- **Horizontal accuracy:**



SCENARIO:	(1) EGNOS-SiS *(SOW/Braunsdorf)*		(2) Standalone *(SOW/Spreenhagen)*		(3) EGNOS via AIS MT17 *(Dämeritzsee/Gosener)*		(4) PPP-RTK via VDES *(SOW/Seddinsee)*		(5) PPP-RTK via VDES *(Köpenick)*	
STATISTICS	Mean	**Stddev.**	Mean	**Stddev.**	Mean	**Stddev.**	Mean	**Stddev.**	Mean	**Stddev.**
Δ 2D (UTM) [m]	0.993	**1.130**	2.085	**2.261**	0.520	**0.646**	0.034	**0.039**	0.171	**0.295**

Project Demo Video



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Summary & Outlook

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Successful upgrade of the infrastructure for sending EGNOS corrections

- Centralised correction generation (update of SmartTrack SW)
- Deployment of AIS / VDES Stations

Successful measurement campaigns in Germany, Hungary and Spain

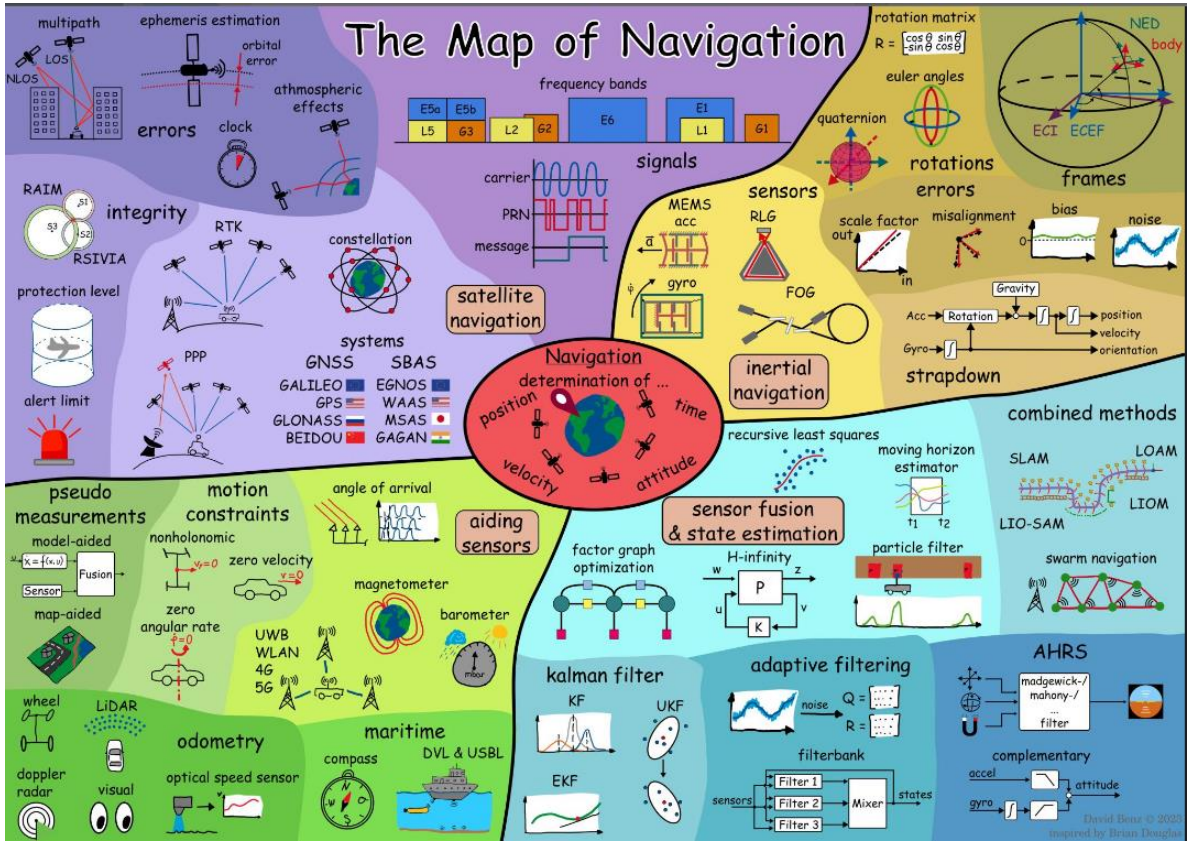
- Development of Data Evaluation Tool
- Development of I-MSR prototype

Dissemination Work

- RIS Directive amendment on GNSS at the European Council
- Participation at: DISC, IALA ENG, Dublin EGNOS Workshop, EMFR

Continuation of standardization activities I-MSR

Thank you for your attention!



Questions?

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