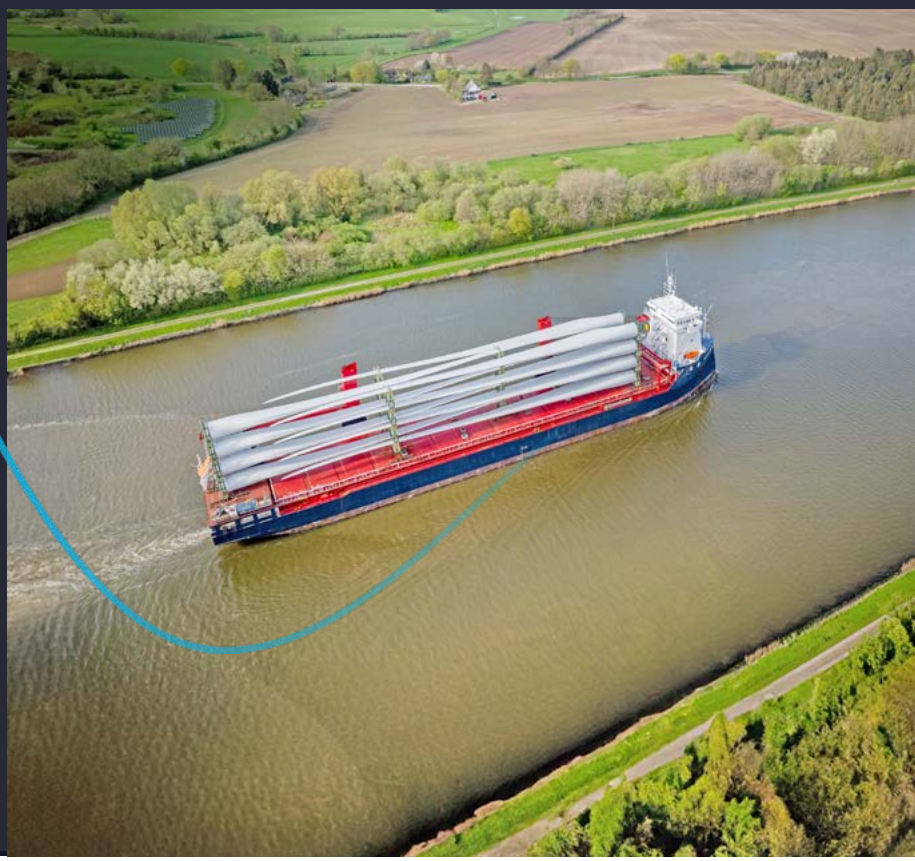
Open data expands German waterways support for large volume and heavy-duty transport



The Federal Waterways Engineering and Research Institute collaborated with Capgemini Invent to advance waterway logistics for heavy-duty transport through open data solutions that boost efficiency and sustainability

As demand for wind turbines continues to rise amid the global energy transition, Germany's road infrastructure is increasingly strained by the transport of heavy-duty equipment. To address this challenge, an alternative logistics solution was needed. The Federal Waterways Engineering and Research Institute, in collaboration with Capgemini Invent, is laying the groundwork for increased use of waterways for large-scale and heavy-duty transport. By providing high-quality logistics information as open data, they aim to facilitate more efficient and sustainable transportation.

Enhancing waterway visibility: unlocking potential in the energy transition

The international community of states aims to combat climate change and curb global warming, as outlined in the Paris Agreement of 2015. To comply with these goals, the German government plans to add 10,000 megawatts of new

Client: Bundesanstalt für Wasserbau, BAW (Federal Waterways Engineering and Research Institute)

Region: Germany

Industry: Public Sector

Client challenge: Effectively shifting heavy-duty transport to waterways required comprehensive information which was difficult to obtain, fragmented and often inconsistent or outdated when available.

Solution: Together with Capgemini Invent, BAW is establishing a publicly accessible, specialized database for heavy-duty transport handling centers.

Benefits:

- Fast, permanent access to up-to-date information on transshipment points and heavy-duty transport via waterways
- Standardized and quality-assured data formats to improve data quality and transparency in multimodal transportation across Germany
- Open data availability, allowing third parties to reuse and integrate the information into other systems

wind energy capacity annually by 2030. Achieving this ambitious target within the framework of the German energy transition will require increased use of heavy-duty transport on waterways.

Alongside various modernization and expansion projects, as well as the growing size of ships, this poses a major challenge for waterway infrastructure in Germany. The Federal Waterways Engineering and Research Institute (BAW) is well-equipped to provide expert advice and support to the Federal Ministry for Transport (BMV) and the Waterways and Shipping Administration of the Federal Government (WSV) on new tasks such as accelerating investments, digitization, and the environmentally sound design of waterways.

One of these tasks is the maintenance and expansion of German inland waterways, as well as visualizing their potential as a transportation option. This aspect is becoming increasingly relevant, particularly in light of the energy transition and the shortage of skilled workers in road transport. For example, to avoid approval backlogs in road transport when moving wind turbines, and to reduce climate-damaging emissions, the use of waterways for heavy-duty transport should be increased.

Before the project began, BAW and logistics experts faced three main challenges in shifting heavy-duty transport to inland waterways:

1. Information on heavy-duty transport transshipment points was only available from the respective ports and had to be gathered through tedious efforts by the administration and the transport and logistics industry.

2. Once obtained, this information often lacked uniform data formats and consistent levels of detail, complicating its comparability and usability.

3. Frequently, only outdated information was available, making it difficult for logisticians to fully rely on the data.

By deciding to establish a publicly accessible, centralized, and quality-assured database for all relevant heavy-duty transport transshipment points on German inland waterways, BAW is proactively addressing these challenges and launching a simple, modern data access solution.

After searching for a reliable partner, BAW chose Capgemini Invent, with whom the institute had previously completed a series of successful joint projects. Under this agreement, the Capgemini Invent team was tasked with leveraging its many years of industry experience and deep technical expertise in infrastructure management to advise on the project's concept and implementation.

Evolving from field data collection to a specialized database for heavy-duty transshipment centers

The BAW initially worked in close collaboration with the BMDV, Capgemini Invent, and various other stakeholders from the road, rail, and water transportation sectors, as well as public administration, to compile the necessary data attributes and develop a data model for their collection.

Subsequently, BAW collaborated with the project team to design a web application that would serve as the foundation for data maintenance and later provision to the professional public. This marked the official launch of the "Fachdatenbank GST-Umschlagstellen." During the development of the application, a comprehensive requirements and testing management system was established, and the database rollout was communicated through workshops and social media.

For the actual data collection, BAW and Capgemini Invent chose a collaborative approach: after an initial prequalification, port operators were asked to independently input their data. This not only ensured the highest possible accuracy and expertise in data maintenance but also distributed the burden of data

collection across multiple parties and increased the involvement of third-party stakeholders in the project.

The first datasets were published in the summer of 2023, at the conclusion of the initial data collection phase. During this phase, the consulting team and various participants from public administration and associations provided support, particularly during quality assurance. Since then, the specialized database has continued to grow, incorporating additional heavy-duty transshipment points across Germany, while undergoing ongoing development, improvement, and deeper integration with other platforms.

Step-by-step transition to multimodal transport with Open Data

With the publication of the first datasets, the process of obtaining information on heavy-duty transport via waterways has fundamentally changed. Since then, BAW has provided specialists in logistics, administration, and the port industry with high-quality, standardized data that is quickly and permanently accessible. This makes time-consuming individual inquiries to the BMDV a thing of the past.

Through regular data updates, the addition of new transshipment points, and the establishment of a working group supported by Capgemini Invent, BAW ensures the long-term viability of the specialized database for heavy-duty transshipment points and supports multimodal transport. It receives support from the WSV, which is responsible for professional guidance, particularly in the area of waterway expertise.

By designing the database as a modern open data platform, BAW creates synergies that extend beyond the project's immediate goals. The integration of data into the WSV's Electronic Waterway Information Service (ELWIS) and the connection to VEMAGS – the approval system for heavy-duty road transport – demonstrate its versatility. Currently, the data is also being tested and has been included in a pilot project for a wind farm.

Given the urgent need to relieve road transport and the significant potential for greenhouse gas savings through less approval-intensive water transport, there has never been more focus on shifting heavy-duty transport to waterways. BAW and Capgemini Invent aim to continue building on this momentum and advancing the success story of the Specialized Database for Heavy-Duty Transport Transshipment Points as a key enabler of multimodal transport.

Because one thing is clear: a successful energy transition can only be achieved by considering all modes of transportation together.

"The team at Capgemini Invent particularly impressed us with its understanding of complex business processes and the management of demanding digital projects. Together, we are demonstrating how we can shape Germany's waterways as a sustainable alternative for the logistics industry."

Peter Weinmann
Head of Central Services Department, BAW

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Capgemini Invent is an integral part of Capgemini, a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 350,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, generative AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2024 global revenues of €22.1 billion.

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