

Executive Summary - Report „Digitisation within the Elbe corridor – Elbe 4.0“

Client: Land Saxony-Anhalt, Free and Hanseatic City of Hamburg, Land Brandenburg

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The transportation sector is ahead of fundamental changes. The ongoing digitisation generates new competitors from outside the transport sector and forces the incumbent players to cope with intelligent and disruptive business concepts. The competitive landscape is getting more heterogeneous and market-entry barriers vanish. Thus, the digitisation increases the pressure on the established players in the transport and logistics sector to improve their innovative power and to screen their processes for digital potentials. The segment of inland waterway transport is affected by digital challenges in particular, as inland shippers are not regarded as being very innovation friendly. The latest developments show, that several ideas and initiatives exist to make the inland waterway transport sector ready for the digital future. To benefit from these opportunities a strong commitment of the market participants together with specific plans and digital actions is necessary. The availability of an appropriate environment to test innovative solutions under real conditions can be seen as an important requirement. For this purpose, the Elbkorridor offers ideal conditions.

Within the study “Elbe 4.0” the experts have defined concrete fields of action. For these fields of action different measures were identified and evaluated. The following table provides an overview of the fields of action.

Field of action 1 Platform solutions	<ul style="list-style-type: none">▶ Further development of existing RIS- or telematics applications▶ Implementation of „real-time fairway management“▶ Realisation of a digital lock (order) management▶ Increased transparency of information flow▶ Additional service offers and digital marketing▶ Process optimisation in close cooperation with HVCC<ul style="list-style-type: none">– Expansion of the HVCC-integration for optimisation of round-trips– Link of approach control to digital lock (order) management▶ Launch of a market place for Elbe/ESK▶ Simplification of billing and registration procedures<ul style="list-style-type: none">– Digitisation of payment processes– Launch of a platform based registration
Field of action 2 Smart Connected Products	<ul style="list-style-type: none">▶ IoT-use for individual fleet optimisation▶ IoT-use for optimisation of the waterway system▶ IoT-use for predictive maintenance of waterway infrastructure
Field of action 3 Autonomous vehicles	<ul style="list-style-type: none">▶ Development of a test area for autonomous vehicles/vessels▶ Check capabilities for (autonomous) Watertruck integration▶ Research on reactivation potential of semi-autonomous tow-boat convoys

Based on these findings the experts have defined seven courses of action:

#1 Position the Elbe as fieldlab for testing of new technologies

In the context of the “Gesamtkonzept” Elbe the digitisation of the Inland Waterway Transport could contribute to make the waterway transport more efficient and strengthen its intermodal position despite the existent infrastructure restrictions. The Elbe shows a high suitability as a fieldlab to test and implement new technologies or digital solutions. That is why a further digital strategy for the Elbe is recommended.

#2 Develop a capable digital infrastructure including AIS

Real-time monitoring of vessels and vessel positions is a basic element of most of the recommend measures. Therefore, the implementation of an AIS-infrastructure for the Elbe and ESK until end of 2018 is an important prerequisite for the digitisation within the Elbkorridor. The AIS implementation should be accompanied by the upgrade of a capable mobile broadband access.

#3 Maintain existent Elbe fleet and improve technical equipment

The average age of the German inland vessel fleet is currently 44.7 years and within the Elbkorridor it is expected to be even higher. Due to a lack of new buildings, the situation will not change significantly. Therefore, the preservation/maintenance of today’s fleet size is the fundament to secure the future of waterway transport within the Elbkorridor and enable the digitisation of inland waterway transportation on Elbe River.

#4 Stress the importance of digital transformation for the future competitiveness of the inland waterway transport

A stronger orientation of the inland waterway transport to digital trends is essential to protect the (intermodal) competitiveness of inland waterway transport mid- to long-term. Therefore, it is necessary that the players are open-minded for (digital) innovations.

#5 Harmonise existing projects in time and content, ensure compatibility, involve stakeholders

For most of the measures to strengthen the inland waterway transport by digital innovations as mentioned in part 3, first projects and pilots do partly exist already. Therefore, it is important to link projects and partners and strengthen the stakeholder integration.

#6 Support innovations/Start-ups in the field of Inland Waterway Transport and IT

Digital transformation is a big challenge for the transport- and logistics sector in general and for the stakeholders in inland waterway transport in particular. Maintaining and strengthening of the (intermodal) competitiveness of inland waterway transport requires further investments in digital innovations and research for new solutions with integration of modern IT-technology.

#7 Boost research and initiate pilot project about (semi-) autonomous driving

While currently concepts for autonomous ships are already in development, the research in the field of autonomous applications for the inland waterway infrastructure is still in an early stage. Nevertheless, initiatives to increase the level of automation by research, development of technical components and transformation to practical use do already exist. Now appropriate framework conditions need to be created in order to realise pilot project. Therefore, the extension of the network to further partners and related projects, the fostering of research activities with specific relevance to practical applications

in the Elbkorridor as well as the use of existing research capacities to generate and test new applications play an important role.

Consequently, the ongoing digitisation offers far-reaching perspectives to increase inland waterway transport volumes on the Elbe River. In this context, the Elbkorridor provides optimal framework conditions as research area/fieldlab for digital solutions. The several Stakeholders (companies, government, and administration) are now forced to create appropriate external conditions for the future development.