SEAMLESS

Funded by the European Union



Press Release

SEAMLESS Inland Waterway Transport Demo successfully completed

6 November 2026

SEAMLESS

Funded by the European Union

Press release

SEAMLESS shows how automated inland vessels fit into the logistics of tomorrow

Three-week demonstration between Duisburg, Rotterdam, Antwerp, and Ghent proves a holistic vision for future inland waterway transport operations

Duisburg (Germany), 6 November 2026 – A consortium of 26 partners from all over Europe has successfully completed a three-week demonstration of the solutions developed in the European research project SEAMLESS. Held in October 2026 and led by DST – Development Centre for Ship Technology and Transport Systems in Duisburg, the demonstration entitled "automated waterborne seaport hinterland transport" showed how automated inland vessels can be integrated into future logistics services. The container inland vessel Letitia, operated by the Dutch HTS Group on the Rhine and in the hinterland of Europe's two largest seaports, Rotterdam, the Netherlands, and Antwerp, Belgium, has been used in a fictional container liner service in seaport hinterland transport between Duisburg, Europe's largest inland port, and Ghent, Belgium. It was the first time that the successful holistic integration of automated inland vessels into future logistics services was demonstrated, proving that automated vessel operation and the adaptation of surrounding systems and processes are compatible. The demonstration took place between Duisburg, Rotterdam, Antwerp as well as Ghent and Lille, France. Numerous developers of software and robotics solutions from across Europe contributed to the smooth end-to-end process. It spans the planning of multimodal transports that include automated inland vessels, the operational planning and control of vessel and container movements, automatic port calls, and automated mooring of the inland vessel.

Key elements of the demonstration

The demonstration covered the entire chain of a future logistics service, starting with the vessel itself. Smart sailing combined remote-controlled navigation on the inland waterway with automated berthing and unberthing in port and automatically executed manoeuvres such as automatic terminal entry. Green sailing complemented this with emission-free, battery-powered navigation on the inland waterway, made possible by swappable battery containers.

On the planning and port side, integrated multimodal transport planning considered transport from door to door and divided the overall route into sections, each of which may be served by a different mode of transport. A matchmaking platform supported the selection of operators for each of these sections.

Once cargo was booked, voyage and stowage planning for the inland vessel took the containers and the resulting stops of the liner service as its basis, including interaction with the terminals regarding the loading and unloading processes required at each stop.

Upon arrival, automatic port registration ensured that the port authority allocated and reserved the berth(s) without manual intervention, and a rope-picker robot then carried out automated mooring by placing a preformed loop around a bollard and tightening the rope.

Engaging the inland shipping community

The demonstration was accompanied by activities that brought together the inland shipping communities of the regions involved, comprising shipping companies, port operators, technology developers, administration and waterway authorities, and research. A workshop in Duisburg engaged the North Rhine-Westphalian stakeholders, and a workshop in Rotterdam involved the Dutch

ecosystem actively. Eventually, large closing event in Antwerp brought together numerous representatives of the European Commission and the Flemish smart shipping community.

From technology demonstration to market opportunities

Technological readiness alone will not guarantee market adoption. Developing viable business models, closing technological gaps, adapting regulatory frameworks, and pursuing collaboration across the transport ecosystem remain essential to integrate these innovations into commercially sustainable services.

Quotes



Prof. Nikolaos P. Ventikos, project coordinator of the SEAMLESS project and Dean of the School of Naval Architecture and Marine Engineering at National Technical University of Athens, comments: "*SEAMLESS was built around a simple but ambitious vision: autonomous shipping is not just about the vessel, but about transforming the entire waterborne transport and logistics ecosystem. Our events and demonstrations in Duisburg, Rotterdam and Antwerp – coordinated by DST – were not merely about showcasing technological progress, but also about bringing together the inland waterway transport community, allowing open dialogue and strengthening collaboration across the sector. After all, technological innovation alone cannot transform an industry. It takes a shared vision and collective effort. Through SEAMLESS, we aim to contribute to both.*"



Cyril Alias, IWT Demo lead of the SEAMLESS project and head of the Logistics & Transportation department at DST, says: "*With this three-week demonstration in the SEAMLESS project, we have set new standards. By deliberately setting the bar very high in terms of the breadth and complexity of the demonstration, we meet the equally high expectations of the European Commission as the funder of this flagship project. At the same time, the demonstration allows us a certain degree of imagination regarding the next necessary steps in the automation of inland shipping and its integration into the logistics of the future. Without the many different development strands that were successfully brought together in this demonstration, this imagination would not be possible on such a well-founded basis.*"

About SEAMLESS

SEAMLESS is a European research project funded by Horizon Europe, the Research Framework Programme of the European Commission, under Grant Agreement No. 101096923 and focuses on integration of autonomous vessels into autonomous waterborne freight feeder loop services to facilitate seamless logistics. More information about the project can be found here: www.seamless-project.eu

Media contact

Cyril Alias
DST – Development Centre for Ship Technology and Transport Systems
E-mail: alias@dst-org.de
Phone: +49 – (0)203 – 99 369 52

Photos



Figure 1 a/b. MCS Letitia of Dutch HTS Group has been used as the demonstration vessel of the SEAMLESS IWT Demo tour

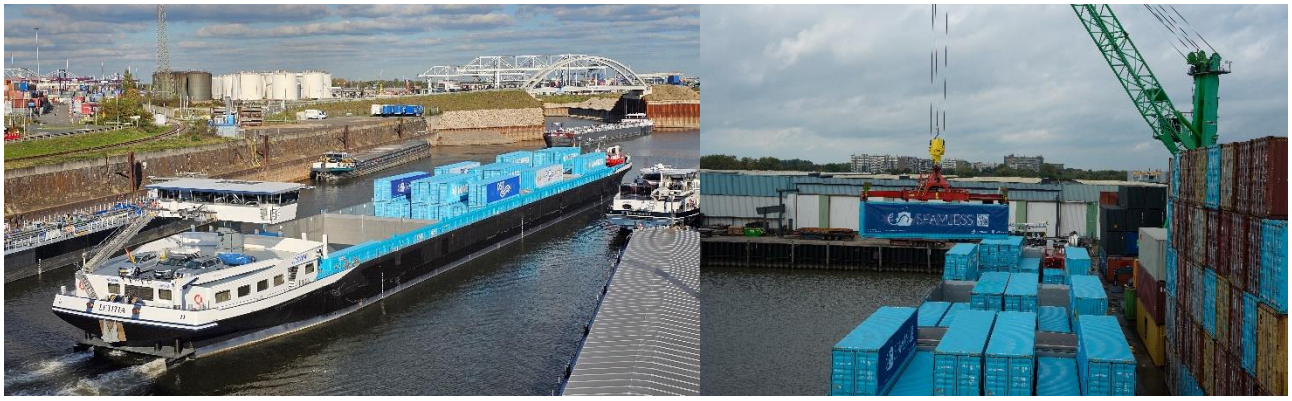


Figure 2 a/b. MCS Letitia of Dutch HTS Group sailing in smart and green mode in Duisburg, Germany (left); container transshipment and digital representation in the terminal in Gorinchem, the Netherlands



Figure 3 a/b: MCS Letitia sailing in smart and green mode in Rotterdam, the Netherlands, (left) and Antwerp, Belgium (right)



Figure 4 a/b. Remote-controlled navigation of MCS Letitia from DST's mobile ROC (left); autonomous mooring robot from MacGregor (right)



Figure 5 a/b. Rope-picker robot from MacGregor demonstrating autonomous mooring solution (left); a swap of the battery containers from Zero Emission Services at the terminal in Alblasserdam, the Netherlands (right)



Figure 6. Numerous guests from the entire inland waterway transport system ecosystem, including the European Commission, attended the SEAMLESS IWT Demo Event entitled “Future is ready – are we, too?” in the famous Port House in Antwerp.



Figure 7. The consortium of the SEAMLESS project has worked over four years to demonstrate the integratability of autonomous vessels into safe and seamless waterborne logistics services