

ModalNET: Enabling end-to-end visibility and resilient multimodal logistics for Autonomous Vessel

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16TH OCTOBER 2026



Funded by
the European Union

Funded by the European Union under Grant Agreement No 101096923.





From track & trace requirements to digital logistics coordination



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The SEAMLESS Vision

“Develop and demonstrate a fully automated, economically viable and resilient waterborne freight feeder service for Short Sea Shipping and Inland Waterway Transport.”

- Autonomous vessel operations
- Automated port interfaces
- Integrated multimodal logistics



SEAMLESS concept is based on interoperable building blocks covering autonomous vessels, port infrastructure, ship-port interactions and the digital domain

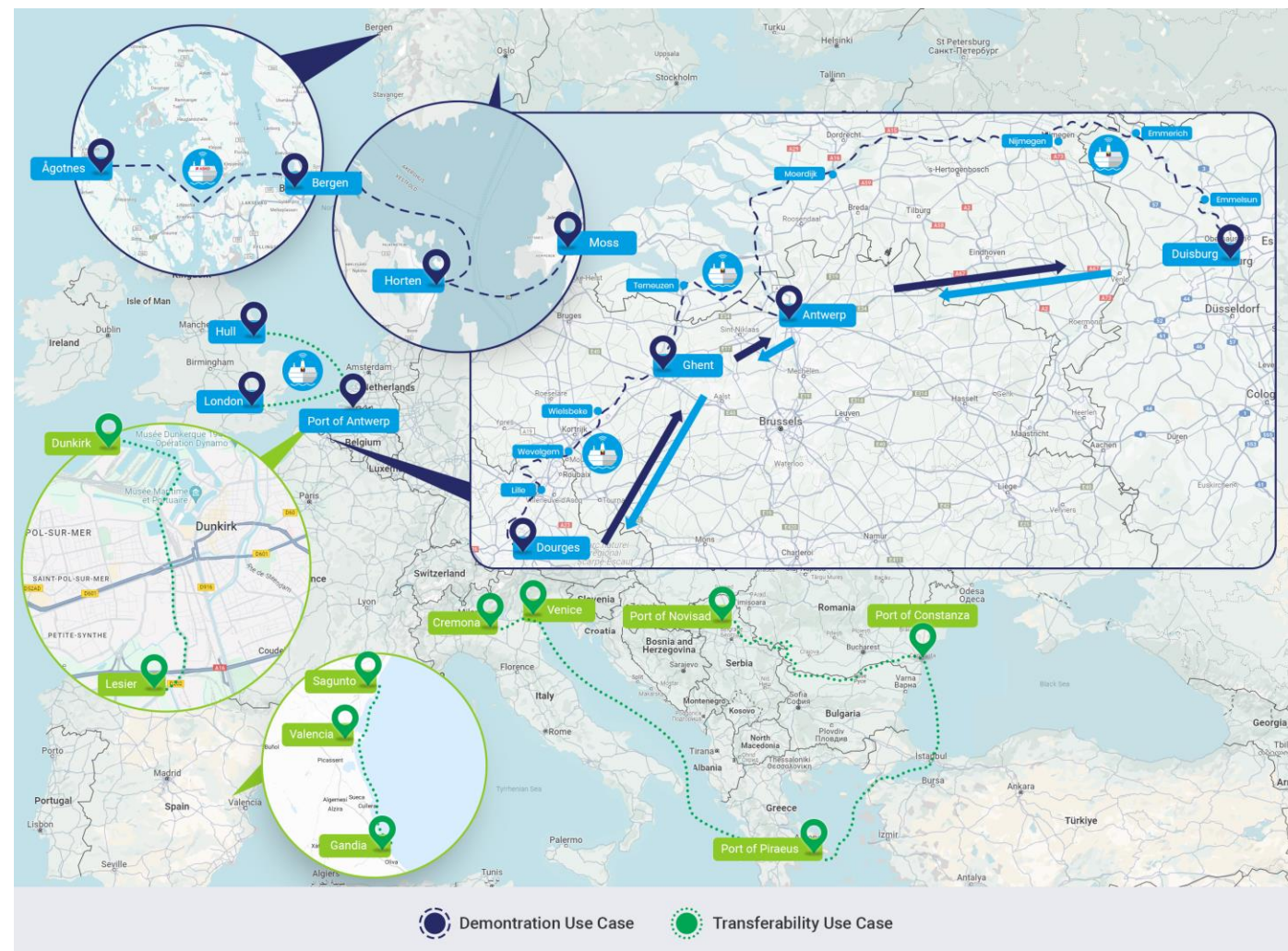
SEAMLESS Use Case Landscape

2 full-scale demonstration use cases

verify target TRL of the SEAMLESS building blocks

5 transferability use cases

test replicability of the business models across European regions



What Requirements Does a SEAMLESS Concept Pose?

- **Multiple legs:** autonomous shipping is only one leg
- **Multiple (and new) actors:** different systems, formats & semantics, protocols
- **Modal shift:** waterway must compete with rail and truck → reliability and cost-effectiveness are key
- **Resilience:** absorbing and reacting to unforeseen operational changes
- **Economics:** high-value assets require high utilization
- **Trust:** the logistics user must be able to rely on the whole chain

Autonomy raises the stakes: more actors, more data, more interdependencies across the whole logistics chain

From Visibility to Coordination

- Track & Trace currently answers: Where is my parcel and what happened?
- Coordination takes the cue and asks: What do we do next?
- The answer requires three steps
 - **Connect**: Integrating information from different systems into one framework
 - **Understand**: Building a shared operational picture
 - **React**: Detecting disruptions and replanning etc.

SEAMLESS approach: from visibility to coordination through ModalNET

