



## Use case #5: Smarter Inland Shipping and Container Transport

### In short

We will develop AI-driven tools to improve the efficiency, speed, and flexibility of inland shipping and container transport planning.

### Who

Hogeschool Rotterdam, TU Delft, Argaleo, Cofano, WeLabs, and NDW

### When

2026-2027

### Background

Container transport to the hinterland is under increasing pressure, as road, rail, and inland waterway networks are operating close to their capacity limits. At the same time, upcoming large-scale infrastructure maintenance and growing transport demand will further strain the system. This makes it increasingly difficult to plan efficient and reliable transport flows.

Current planning approaches are often fragmented and focus on optimising individual shipments or objectives, which can lead to inefficiencies at the system level. Although planning tools already exist, they are not always used in practice,

partly due to limited trust, lack of transparency, and a mismatch with how planners make decisions.

At the same time, the availability of data and advances in AI create new opportunities to better coordinate transport across modalities—road, rail, and inland waterways—and to explore more integrated and flexible planning approaches.

## **Objective**

The objective of this use case is to explore how AI-based approaches can contribute to more efficient and flexible planning of container transport across different modalities.

The focus is on understanding how transport flows can be better coordinated at the system level, particularly by improving the use of available capacity in inland shipping. This includes exploring how multiple objectives—such as efficiency, speed, and societal impact—can be balanced in planning decisions.

In addition, the use case aims to identify the conditions under which AI-based approaches are useful in practice. This includes addressing barriers to adoption, increasing user trust, and ensuring that insights can be translated into actionable decision support for planners.

## **Approach**

This use case is set up as a learning-oriented exploration in which AI-based optimisation approaches are developed, tested, and evaluated in relation to real-world planning challenges. Techniques such as reinforcement learning are explored to better understand how complex, multi-variable planning problems can be addressed.

Development takes place in close collaboration with end users, including transport planners, to ensure that the explored approaches align with practical decision-making processes. Particular attention is given to explainability and usability, so that planners can understand and assess AI-generated insights.

Rather than delivering a single operational tool, the use case focuses on comparing approaches, identifying promising directions, and translating insights into guidelines, prototypes, and learning materials. In this way, it contributes to

both practical understanding and knowledge development within the broader Learning Community.