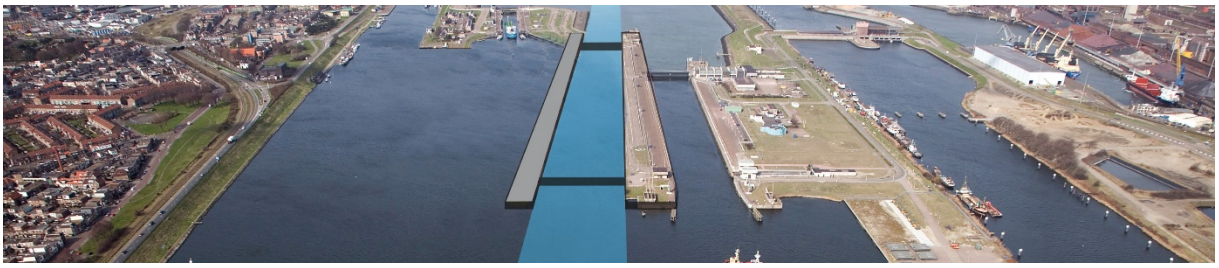
VU Bachelor Business Case - Port of Amsterdam - https://vimeo.com/278481101



Background
A new sea lock in IJmuiden will become operational in January 2022. This will make it possible to allow through the new sea lock:

- larger ships – in length, in width and in draft;
- several ships at the same time.

Context

- For smooth management of the operation of the lock, the Harbor Master Division (DHM) of Port of Amsterdam must know what ships are in the port at berth level at a given moment, and what the berth configuration is in the port basins. With this information, the Vessel Traffic System (VTS) Coordinator of DHM can determine:
    - Can a new ship enter the Port through the lock or must the ship wait at sea?
    - Can a moored ship leave to the sea through the lock or must it wait at the terminal?
- In order to be able to handle ships safely, the DHM must have a clear picture of the supply of arriving and departing ships so that they can manage the lock planning and thus the traffic planning for ships.

Case

- DHM wants a model that supports the decision-making process for berthing by ships and at the same time helps terminals to optimize berth utilization.
    - What is the berth occupancy at a terminal?
    - Can a specific ship entering the Port of Amsterdam safely moor at the requested berth in view of the current occupation at the terminal?
    - Extra: Predict when a seagoing ship would be ready to sail again based on berth location, type of vessel, length, width and draft in historical data.

Explanation

- From the perspective of DHM: an operational space has been established for each berth, within which a ship can moor safely. Several berths are available per terminal. Restrictions may apply per berth if nearby berths are occupied. This concerns restrictions with regard to the dimensions of the ship to be moored in order to allow sufficient space to maneuver.

Assumptions

- If a terminal shares planning of ship handling with the Port of Amsterdam, we can jointly look at how berth utilization can be optimized by including that information in traffic planning and lock planning.
- If it can be demonstrated with one terminal that optimization is possible, Port of Amsterdam can discuss this principle with other terminals and investigate whether agreements can be made as a 'Port community'.

Available data

- AIS data from 2017 to the present of Centrum Wiskunde & Informatica (CWI)
- Mooring data of ships, including lock planning, are included in the port management system of Port of Amsterdam: HaMIS.