

4: Port of Twente

Functional Requirements

ID	Requirements	Comment
1	<u>Environmental Information</u>	
1.1.0	Water level	
1.1.1	System displays real-time water level	
1.1.2	System alerts users when water level is lower than certain level	
1.1.3	System calculates and displays predicted water level for next several weeks	
1.1.4	System alerts users when predicted water level is lower than certain level	
1.1.5	Systems allow users to set alarm actions to be activated under specific conditions	Such as alerts when water level lower than X meter
1.1.6	System alerts users when the IJssel River water level is lower than possible water pumping water level	
1.2.0	Weather information	
1.2.1	System alerts users when adverse weather are predicted/observed	
2	<u>Operational management</u>	
2.1.0	Operational plan	
2.1.1	System allows users to create and save operational plan, route	Ship, route scheduling and cargo handling operations, etc.
2.1.2	System allows users to modify/adjust the operational plan	
2.1.3	System allows users to view the operational plan	
2.1.4	System calculates and suggests optimal transportation plan to transport destination	
2.1.5	Systems provide information on potential disruptions through predictive analysis based on historical data and current conditions	

2.1.6	System displays emissions information for transportation methods available on the route	
2.1.7	System suggests optimize transport route based on emission of each transportation method	Combining truck, rail, vessel
2.1.8	System provides port operation simulation tool	
2.1.9	System alerts users when a vessel is no longer able to pass through a particular area	
2.2.0	Facilities management	
2.2.1	System displays the condition status of port infrastructure on the Twente Canal (depth and structural strength of the facilities, etc.)	data recorded in a system called GBI
2.2.2	System displays status operations of port infrastructure on the Twente Canal	Working, In maintenance, etc.
2.2.3	Systems suggest regular maintenance and upgrade schedules based on predictive maintenance algorithms	
2.3.0	Ship information	
2.3.1	System displays real-time navigation status information such as ship number, location, speed, cargo information, load, crew size	
3	<u>Data sharing & Collaboration</u>	
3.1.0	Communication channel	
3.1.1	System provides communication channel for inter-organizational communication	
3.1.2	System provides communication channel to communicate with Dutch rail transport management department	
3.1.3	System provides communication channels for each of the various locations, such as locks, bridges, etc.	
3.2.0	Information hub	
3.2.1	System provides information hub to share information from government	