

3: CTT (Combi Terminal 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	Ijssle River, Twente Canal
1.1.2	System alerts users when water level is lower/higher 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/higher 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
2	<u>Operational management</u>	
2.1.0	Operational plan	
2.1.1	System alerts users about possible need to adjust the number of loading layers	Based on information such as bridge height restrictions, water levels, and vessel types on the route
2.1.2	System alerts users about possible need to adjust the operational route	Based on information such as bridge height restrictions, water levels, and vessel types on the route
2.1.3	System calculates optimal scheduling and provides information such as optimal sailing speed	Taking into account vessels, canals, lock passage times, and a variety of other operational factors
2.2.0	Ship information	
2.2.1	System displays real-time navigation status information such as ship number, location, speed, cargo information, load, crew size	
2.3.0	Bridge and lock information	

2.3.1	System displays information about bridges/locks along the route that affect navigation	such as bridge height restrictions, difficulties in opening bridges, etc
2.3.2	System displays real-time waiting time at the locks and bridges	
2.3.3	System displays information about lock/bridge malfunctions and maintenance schedules	
2.3.4	System displays rules for passing through each lock (passing speed, maximum loading capacity)	
2.3.5	System alerts users when there is a malfunction with bridge and lock	
3	<u>Date sharing and security</u>	
3.1.0	Communication channel	
3.1.1	System provides communication channels with lock and bridge operator	

Non-Functional Requirements

1	<u>Security</u>	
1.1	Vessel location, cargo information, and other information is protected by a sophisticated security system	