

## **A SIMULATION MODEL OF THE ANTWERP APPROACH PROCEDURE**

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The approach procedure of a port is the process that takes ships from sea to berth. Various influencing factors such as tidal forces, tug services, pilot services, meteorological conditions, lock planning, traffic regulations and in this case the lay-out of the River Scheldt have a strong impact on this procedure. The aim of this project is to imitate the entire Scheldt harbour system by reconstructing its key processes in a numerical simulation model, of which the behaviour is truly representative for the real-life system. The input of the simulation model consists of two main aspects. Most important is the backbone of the model, which is the logical structure of the influencing processes mentioned earlier. This aspect is modelled through the use of flowcharts. Second aspect is the statistical input that is needed to feed the logical structure. Large sets of empirical data are required in order to extract distributions from it, which are used as parameters in the logical structure. For this purpose we used a dataset of more than 70,000 ship movements on the River Scheldt. Through this simulation model it is possible to perform experiments with the model, which would not have been desirable to perform in the real-life system. The output of these experiments can provide important and objective results to optimise the infrastructure and operational organisation of the Scheldt harbour system.