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Nautical traffic modelling for SAFE and EFFICIENT ports

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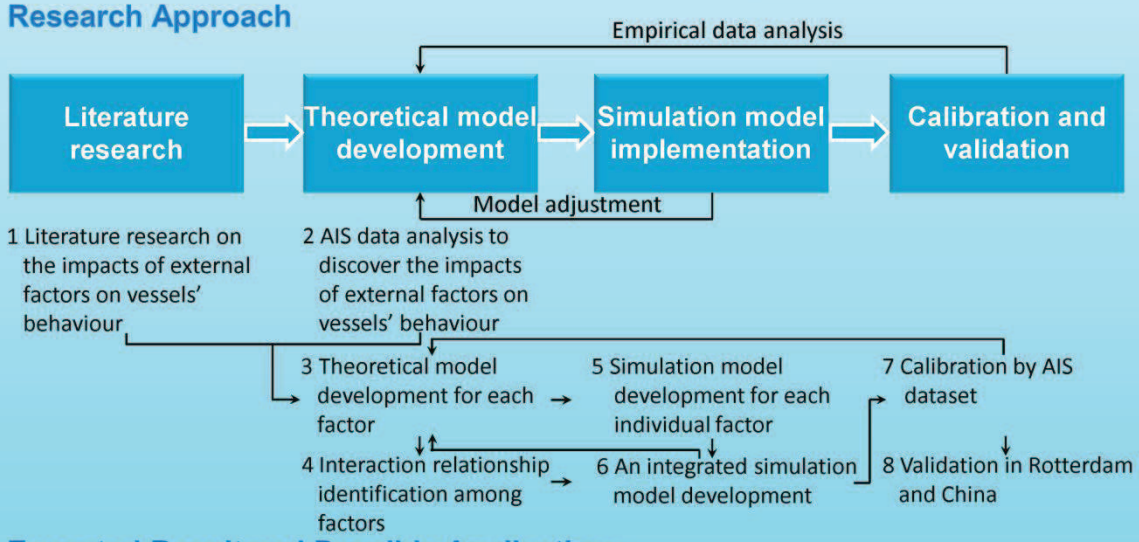
Research Motivation

To reach the highest port efficiency without vessels' safety as a sacrifice is the objective of the design and operation of any port, e.g. Maasvlakte in Rotterdam. Simulation modelling is a proper tool to do this. However, the existing models focus on individual vessel's behaviour or the whole port operation for safety or efficiency only.
This research focus on the interaction between vessels. The expected model will contain vessels sailing individually and simultaneously in a water area to assess both safety and efficiency of a port.

Research Approach



Expected Result and Possible Applications

AIS data analysis — For the port authority, the result helps to recognize the impacts of some external factors theoretically. The pilots can also be aware of the impacts when sailing in Maasvlakte area.

Calibrated model — The simulation result of the calibrated model should be close to the real-life data in Maasvlakte area. It can simulate and predict the vessels behaviour in accordance with the local navigational characteristics.

Validated model — The simulation model , after validated in two different cases, can be applied in both newly designed ports and the existing ports for traffic status prediction.

Further application — The developed model can be applied as a tool in the further assessment of safety and efficiency of a port. The system of assessment methodology is being developed, but not included in this research.

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