



Research School for Operations
Management and Logistics

Synchromodal Transportation Simulation and Modelling

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Synchromodal transport is an emerging concept that aims to transport freight efficiently, by using dynamically several modes of transport. To this end, many decisions should be made in real-time, such as mode choice or vehicle routing, imposing several changes on how the players of the system operate. Our research aims to model the interactions between different players in the transport network. Moreover, our work implies how collaboration between shippers and logistics service providers enhances the supply chain's sustainability and cost-efficiency. Using an agent-based modeling approach, the system is modelled as a collection of autonomous and heterogeneous agents (trains, trucks, barges, terminals, DCs, retailers, etc.). The simulation model also includes different types of disruptions, such as service delays and cancellations, in order to provide robust solutions to the decision-makers. Moreover, several algorithms are executed inside the simulation model to optimize the operations of the logistic network. Our work contributes to the field by providing a testbed for different actors in the supply chain to assess different scenarios and ideas inexpensively and in a risk-free environment.