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Towards Synchromodal Transport System
Unification: Accomplishments and Challenges

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Abstract

With projected growth of international trade and cargo demand, the current infrastructural capacities are put under pressure resulting in congestion problems, safety issues, environmental concerns and decreasing reliability of services. Instruments used in the ‘business as usual’ approach are not sufficient in order to cope sustainably with the expanding market. Therefore, it is necessary to introduce innovative solutions that would support optimal integration of different transportation modes and their cost-effective use (EC, 2011). To achieve socio-economic and environmental sustainability, utilization of existing capacities and assets has become a key challenge for the transportation sector. This challenge has been recognized by many scholars, policy makers and practitioners leading to a substantial body of new concepts, models and initiatives. One of these concepts is synchromodal transport, which enables a better use of the infrastructure based on real time information.

In this paper we build an overview of what has already been achieved in the roadmap towards synchromodal transport and identify its important challenges. Building on the growing number of publications related to the evolution of intermodal transport (Caris et al., 2008, 2013; Macharis & Bontekoning, 2004; Mathisen & Hanssen, 2014; Reis, 2015; SteadieSeifi et al., 2014) we go a step further to bring the most recent developments into the contemporary academic sphere. Decisions within the synchromodal chain are more complex because, besides the inclusion of multiple actors and transport modes as it is in the intermodal chain, it adds extra real-time infrastructural and adaptive mode choice elements. The understanding of these interdependencies is thus crucial in order to provide a sufficient basis for decision-support-system models. The objective of this work is to review synchromodal papers containing the state-of-the-art models together with their methodologies, findings and interpretations which
have accumulated since the last reviews. Particular attention is given to case studies applied in the North-West Europe.

The review concludes with future research directions and introduces a structure of the SYnchronization Model for Belgian Inland Terminals (SYMBIT) that is being developed by the authors. The model is to support decisions of private and public decision makers with regard to the network usage, cargo allocation, route/mode selection and transport service design within the hinterland distribution.

References


