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Lowest Cost Intermodal Rail Freight Transport Bundling Networks: Conceptual Structuring and Identification

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Abstract

Bundling, the process of transporting goods belonging to different flows in a common vehicle (like train, barge or truck) or other uni their journey, is a core business of the transport sector. Operators periodically evaluate their service networks and adjust their bundl The adjustments respond to changing cost structures, changing competition and changing situations in terms of demand and requirements. One can distinguish direct bundling from different types of complex bundling, such as hub-and-spoke or line bund bundling networks have intermediate exchange nodes and longer routes, but less vehicle routes. The latter means that required ne could be lower, service frequencies higher or vehicle loads larger. In this sense, complex bundling allows smaller flows to par advantages of large-scale operations and therefore is an important option to successfully develop intermodal transport.

The additional impedance of complex bundling networks has been and still is an incentive for intermodal rail freight operators to switc to direct bundling. However, the flow sizes of many rail relations are too small for direct bundling. If nevertheless direct bundling is app or service frequencies decline and/or small flows will shift to the road sector.

In this paper, which focuses on intermodal rail freight networks, we analyse the trends of bundling innovation, and discuss t mechanisms in bundling networks and their quantitative impact for the number of train routes, service frequency, the size of trainload network transport volume. Furthermore we identify which bundling types lead to large trainloads and lowest costs, given certain net volumes and certain service frequency requirements. On the basis of a large-scale comparison of bundling networks with large train with lowest costs we conclude, that a large trainload is a good first indicator for lowest cost network: if an intermodal basic bundling n largest technically allowed trainload and this is larger than of competing bundling types, the envisaged network is likely to also h network costs.