



ILCO – Integrated logistics network for Combined Transport (in Austria)

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Abstract. Combined Transport only partially meets today’s market requirements in Transport sector compared to road transport. A large number of involved players lead to a complicated cascade of information flows. Within Austrian borders the transport volume in unaccompanied Combined Transport (UCT) suffers of stagnation, however on high level compared to other states in Europe. Analyses show, that up to 5.4 m t (long distance, CT-affine groups of goods) of 345 m t inland road transport volume in 2015 can be shifted to UCT. A geographical context based on O/D-matrices show routes of high potential for UCT, i.e. between Vienna and Upper Austria. A service concept, which connects the main terminals in Austria, would fit the needs of future flows of goods in UCT. Finally a business model, supported by a software architecture for a routing service including pre- and post-carriage could help to lower the barriers for shippers to enter the Combined Transport market.

1 Introduction

Unlike the road transport sector, which more and more develops towards a connected, service-oriented logistics industry, rail transport and especially the Combined Transport sector only partially meet today’s market requirements. A large number of involved players and widely isolated IT systems lead to a confusing, time-consuming and error-prone cascade of information flows related to orders, confirmations, multiply issued consignment documents, billing etc. (Figure 1).

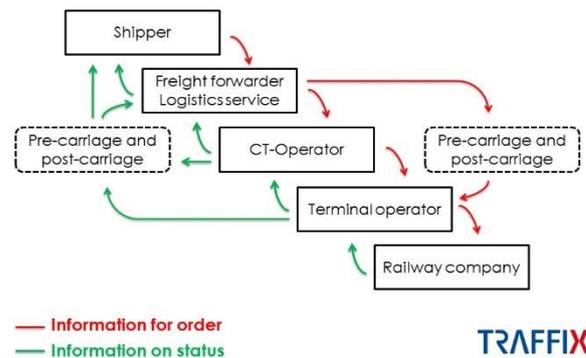


Figure 1. Cascade of information flows in unaccompanied Combined Transport (UCT)

This complexity of Combined Transport, accompanied by respecting imponderabilities for potential customers, causes a substantial competitive disadvantage compared to pure road transport. Moreover, the road transport sector has extensively adapted to current market requirements by offering integrated, connected and customer-oriented logistics services covering the whole supply chain. International associations like UIC and UIRR already started several initiatives to harmonise data

Table 1. Transport volume and transport capacity in Austrian freight transport

Year	Denomination	Mode	Area	Value
2012	Transport volume	Rail	total	91,6 m t
2012	Transport volume	Rail	inland	25,9 m t
2012	Transport volume	Rail – UCT	total	22,9 m t
2012	Transport volume	Rail – UCT	inland	4,4 m t
2012	Transport capacity	Road	total	34,3 bn tkm
2012	Transport capacity	Rail	total	18,1 bn tkm
2012	Transport capacity	Rail – UCT	total	4,1 bn tkm
2012	Transport capacity	Rail – UCT	inland	1,0 bn tkm
2015	Transport volume	Road	inland	345,2 m t
2015	Transport volume	Rail	inland	27,7 m t
2015	Transport volume	Rail – UCT	inland	4,7 m t

structures in order to improve the competitiveness of Combined Transport, but they mostly focussed on the rail transport itself. Interfaces to pre- and post-carriage services as well as specific needs of forwarders and shippers still remain unsettled.

2 Analyses

In addition to the following results of various analyses concerning the share of Combined Transport in freight transport there were workshops held to collect knowledge from partners, who are involved in daily matters of Combined Transport. As basis for the analyses of trends, flow of goods and potential for the unaccompanied Combined Transport in Austria, key figures based on data from statistics from the Austrian Ministry for Transport, Innovation and Technology [1] and from the Traffic Prognosis Austria 2025+ [2] are shown in table 1.

2.1 Trends in Combined Transport in Austria

The description of trends focusses on four future scenarios [2].

- Model scenario 1a describes an extrapolation of the development of transport volume and a stagnation of modal share of UCT due to regulatory measures.
- Model scenario 1b describes an extrapolation of the development of transport volume and an increase of modal share of UCT due to regulatory measures.
- Model scenario 2a describes an increase of transport volume due to infrastructural measures and a stagnation of modal share of UCT due to regulatory measures.

- Model scenario 2b describes an increase of transport volume due to infrastructural measures and an increase of modal share of UCT due to regulatory measures.

Figure 2 shows the overall freight transport of UCT in Austria (inland, distribution/receiving, transit) which indicates an increase of 52 to 77 per cent referring to the year 2014 [1].

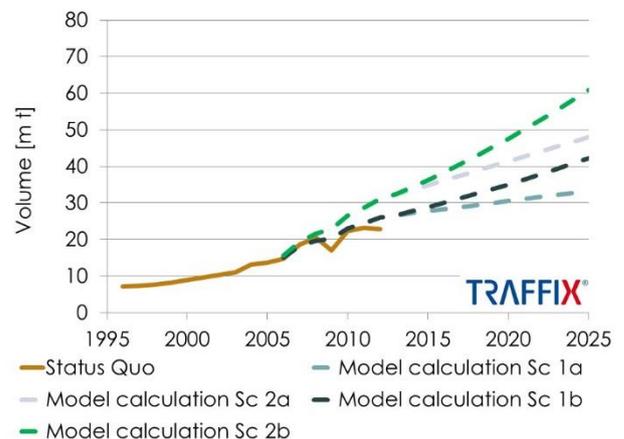


Figure 2. UCT in Austria, overall (inland, distribution/receiving, transit), prognosis 2025

A detailed observation of the prognosis shows different developments. Concerning only inland freight transport in UCT the increase is 37 to 45 per cent, as shown in figure 3.

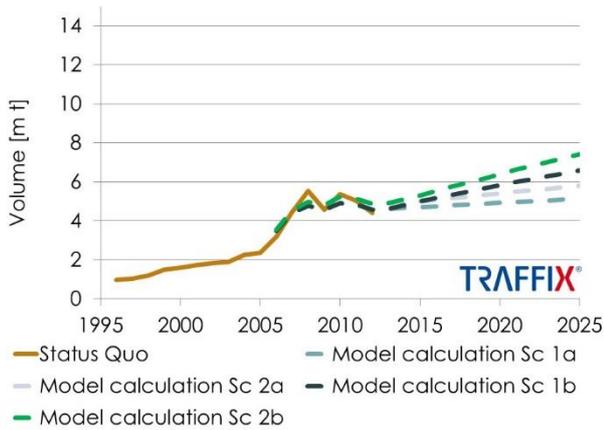


Figure 3. UCT in Austria, inland, prognosis 2025

Compared to inland, bilateral transport of distribution from and receiving in Austria will increase 42 to 60 per cent until 2025, as shown in figure 4.

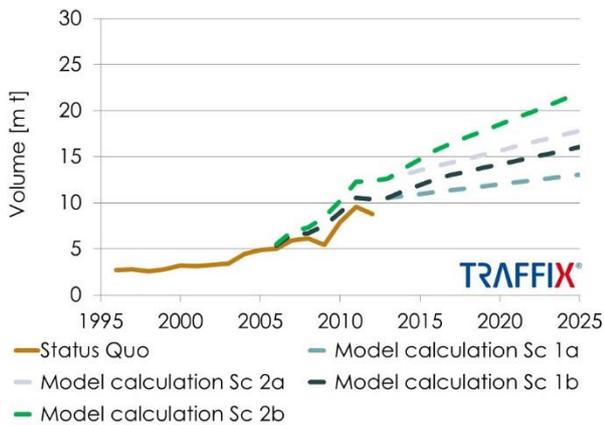


Figure 4. UCT in Austria, distribution/receiving, prognosis 2025

2.2 Flow of goods in Austria

For Austrian inland transport, detailed areal analyses of the flow of goods in transport were made. They focussed on the current transport volume in road transport, which could potentially shift to UCT. Therefore the following figure 5 shows some flow of goods [t/a], which are transported over a distance of at least 150 km between aggregated regions in Austria by road transport.

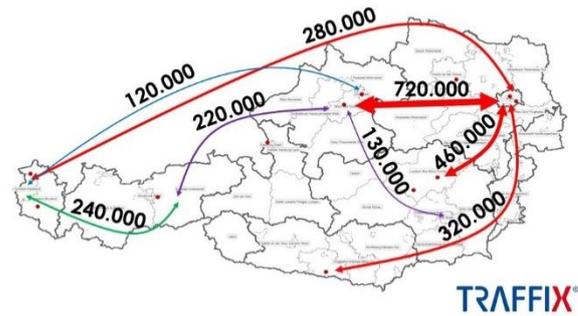


Figure 5. Flow of goods in road transport between aggregated regions (distance > 150 km)

2.3 Potential of Combined Transport in Austria

Finally, the findings of analyses were combined with estimations of experts about the affinity of each group of goods (referring to NST classification) for transport by UCT. The derivation and the results are shown in figure 6. As final result, based on 345 million tons of transport volume in inland road transport [2], 2.4 to 5.4 million tons remain as potential to be shifted to UCT.

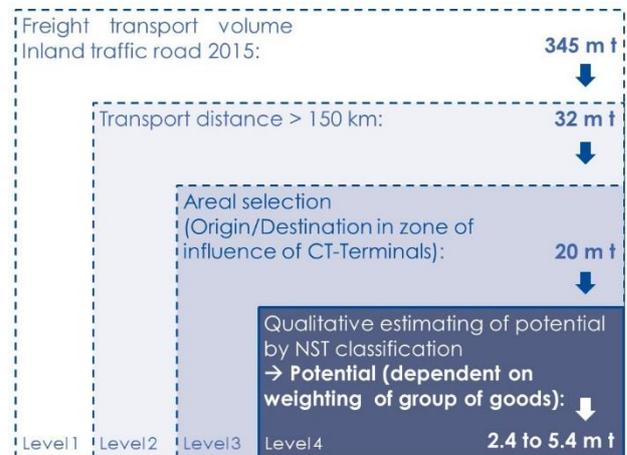


Figure 6. Schematic summary of the analysis of potential of transport volume shift to UCT

3 Service concept

Based on the above described comprehensive analysis of transport flows and the corresponding demand potentials, an innovative rail transport concept building on an efficient backbone of optimally adjusted rail service connections between the main terminals in Austria has been elaborated. A schematic system can be seen in figure 7.

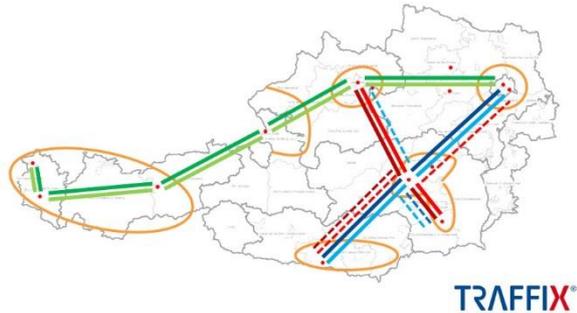


Figure 7. Service concept “Turning platform Upper Styria”

Each night there run three trains per direction (six in total). In Upper Styria a group of waggons from nearly all directions can be shunted by the traction vehicle to offer connections to the whole eastern part of Austria. Shippers meet a customer-friendly offer of closing and disposal of cargo except in the western part of Austria, where those times lie around midday.

4 Business model and platform

The most appropriate organisational model for the task is called “Agent/broker for CT”. Focus should lie on acquisition and customers service of transport services, but also on planning and coordination of timetables. On the one hand such an organisation keeps in mind customers who are interested in a door-to-door-service including UCT. On the other hand there can be direct contact to all stakeholders to at least fasten the connection of offer and demand in UCT.

The ILKOe business model addresses the considerable backlog of the rail freight sector regarding logistics competence, integration, customer-orientation and competitiveness by a combination of organisational and technological solution approaches. In ILKOe, a concept for an integrated, customer-oriented and competitive door-to-door logistics service network building on Combined Transport was designed. Furthermore,

there is a prototype for a neutral integrated logistics platform in terms of a one-stop-shop. A key element of this platform is a comprehensive software architecture that allows an efficient integration and processing of all relevant data provided by different players within the Combined Transport chain. Within ILKOe, an online tool was developed as a demonstration model that can be used as an easily accessible door-to-door “trip planner” for Combined Transport. Using this tool, potential customers can access data about existing transport offers (pre-carriage, carriage, post-carriage) and transport companies can easily adjust their inputs like timetables, trading area of hauliers and prices. The next step will be to extend the existing demonstration model to a comprehensive trip planning and booking system for Combined Transport services as well as to integrate as much real data as possible (especially timetables and prices). In order to effectively address the challenge of incompatible and proprietary IT systems, the approach is to minimize the costs and efforts for data exchange on the one hand and to ensure practicable solutions for a save integration of sensitive commercial data on the other hand.

References

1. BMVIT, Bundesministerium für Verkehr, Innovation und Technologie: KV-Aufkommensstatistik, Wien, (2014)
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