Newsletter 2
April 2014

ViWaS

VIABLE WAGONLOAD PRODUCTION SCHEMES

COST EFFICIENCY AS A KEY FACTOR FOR RAISING THE COMPETITIVENESS OF SWL TRANSPORT

„Last mile“ services are the major cost driver, improvements necessary

In rail freight transportation, the market share of single wagonload (SWL) has decreased across Europe in the last decade. In 2005, SWL accounted for 39% of the European rail freight performance (in Germany, Switzerland, France, Italy, Sweden, Poland, Slovenia) compared to only 30% in 2010.

The following main challenges and reasons for the decrease of SWL have been identified:

- **Costs:** high rail production costs, e.g. linked to infrastructure and operation of marshalling yards;
- **Access and “Last mile” operations:** decreasing number of sidings deteriorate direct access to SWL transport; “last mile” rail services are complex and costly; shippers have to bear extra costs for operation of their sidings;
- **Logistics requirements:** high requirements from customers’ side regarding reliability and real-time transport transparency;
- **Competition:** on one hand negligible competition within the SWL market itself, but strong competition with block trains /intermodal transport and road transport.

In view of the described conditions and requirements, the SWL market in European countries has changed. Behind this background, within the ViWaS Work Package 4, the development of SWL in Germany, Switzerland, Italy and France has been examined in detail.

The results of the analysis have shown two major transitions: Firstly, in many European countries such as Italy, the “classic” SWL system has almost completely disappeared. Secondly, new production systems have been introduced to increase the competitiveness of SWL services.

COST STRUCTURE

Major cost factors in single wagonload transport are related to “last mile” operations such as shunting at the shippers’ rail sidings but also sorting and train building processes in marshalling yards.

In comparison, shunting is avoided in intermodal transport whenever possible, which leads to significant cost advantages.

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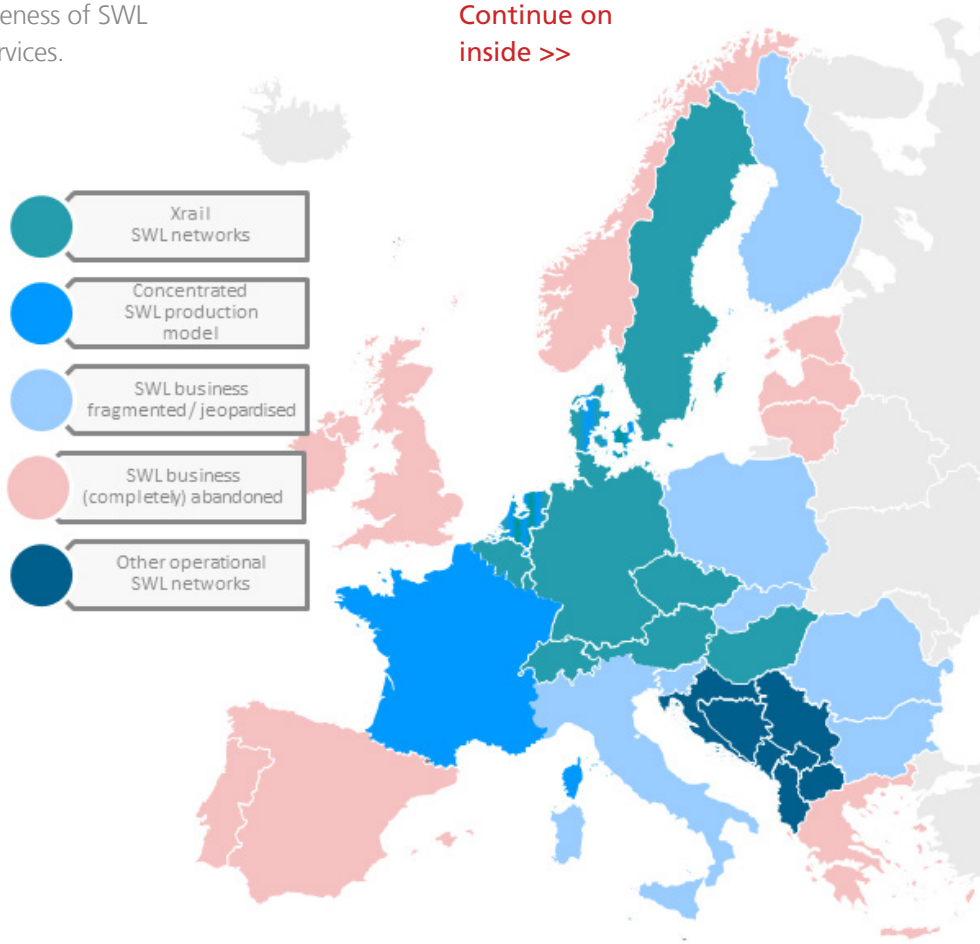


Overview of SWL networks in Europe. Source: HaCon

Beside the "last mile" operations, also the overall cost structure of SWL services is affecting the competitiveness. Four important cost drivers have been identified:

- Traction (locomotive and energy);
- Train paths;
- Wagon provision;
- Personnel.

To compare cost structures of SWL services and intermodal transport different transport chains have been examined. The examination shows that the transport distance is of significant importance for the efficiency of SWL. By implication, rail can hardly compete with road services on short distances. To increase the competitiveness of SWL, costs for "last mile" services have to be reduced considerably. This applies also for necessary transshipments between trucks and rail wagons in rail logistics centres (e.g. railports) in transport chains, where shippers do not have an own rail siding and the "last mile" is served by road transport.

APPROACHES FOR REDUCTIONS OF SWL PRODUCTION COSTS

The following approaches for cost reductions in SWL transport chains have been determined:

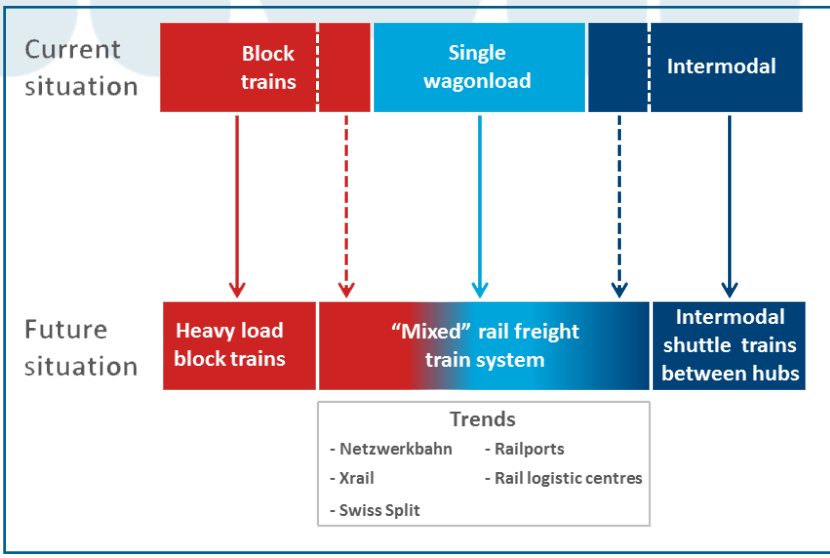
- **Stable and continuous volumes:** SWL service costs depend significantly on capacity utilisation. Volume declines lead to massive cost increases (e.g. cutting the number of transported wagons per train by 50% leads to an increase of average transport costs of some 43%);
- **Shunting engines:** The use of hybrid locomotives or bimodal rail-road vehicles can support a better cost efficiency within "last mile" operations;
- **Enhanced access to SWL via rail logistics centres (such as Railports):** Customers without an own siding are supported in getting access to SWL transport; the group of potential clients is enlarged.
- **Cross-border operations:** A harmonisation of European railway services and operation standards can lead to an optimised efficiency in international long haul transports.
- **Information and communication technologies:** Advanced ICT systems in SWL will secure improved information flows and contribute to a more efficient process organisation.

CONCLUSIONS

SWL is still a major component in numerous European states' rail transport systems. Although SWL market shares decreased in the past years, specific industries still demand for rail freight services below the block train segment. In view of enormous reductions in SWL offers in different European countries such as in Italy and a strong competition to road and intermodal transport, considerable improvements need to be done, especially regarding cost efficiency and transport quality.

The demand for SWL services has been realised by some major European railway operators who establish alternative wagonload offers. Existing "borderlines" between the "classic" rail production systems more and more disappear in order to raise capacity utilisation and competitiveness of the entire rail freight system. Netzwerkbahn in Germany and Swiss Split in Switzerland are examples for the trend towards mixed rail freight production forms. Such new production forms should be accompanied with efficient telematics and advanced ICT systems that offer a huge potential for improved information flows and consequently increased transport quality and cost efficiency. Major cost shares of SWL transport are related to "last mile" operations. Hybrid locomotives and bi-modal shunting vehicles can enhance the operating processes. Rail logistics centres (e.g. Railports) provide access to SWL services to a larger group of potential customers and thereby offer bundling opportunities and efficiency improvements. Quality and cost benefits may contribute to a higher acceptance for SWL services. The ViWaS projects takes up the main challenges of SWL transport and therefore develops solutions regarding market driven business models and production systems, "last mile" operation methods, adapted SWL technologies and advanced SWL management procedures & ICT.

All ViWaS developments are tested within real business cases. The success of the expected improvements is measured on the basis of a set of KPIs for each business case, especially considering effects on cost efficiency and quality improvement.



Rail production systems and future trends. Source: HaCon.

Telematics: Key to Improved SWL Competitiveness

ViWaS workshop on "Temelatics in wagonload transport" organised in October 2013

On 22 October 2013, a ViWaS workshop on „Telematics in wagonload transport" took place in Munich with some 30 representatives of ViWaS project partners, the European Railway Agency and further stakeholders in wagonload transport. At the workshop, specialists involved in the project presented the ViWaS approach for innovative and at the same time practical solutions to ensure sustainable wagonload transport. The focus was on telematics applications in rail freight transport. According to the ViWaS project manager Niklas Galonske (HaCon Ing. GmbH, Hannover), the project partners "have legitimate expectations that their employment will lead to a regain in market shares for rail transport". Furthermore he explained that "modern telematics systems are expected to improve the process stability and competitiveness of rail transports significantly". During the presentation moderated by Dr. Thomas Rieckenberg (International Railway Technology Consulting, Berlin), it became obvious that the issue of cost distribution for investments and operation of telematics systems still needs to be clarified. According to Rieckenberg, railway data users must agree on an adequate business model where data can be cumulated.

The participants of the telematics workshop at Deutsches Museum in Munich.

Upcoming Events:

Transport Research Arena,
poster presentation
14-17 April 2014 | Paris

VAP Forum Güterwagen (freight wagon) Conference
13 May 2014 | Zurich

ViWaS Workshop on „Wagon Technology, Focus: Wood transport"
October 2014 | venue to be defined

ViWaS workshop on „SWL Wagon Technologies, Focus: Swiss Split"
October 2014 | Basel

ViWaS on a Worldwide Business Stage

On 25-28 November 2013, the World Congress of Railway Research (WCRR) took place in Sydney, Australia. At the largest international research conference for railway topics the ViWaS project was represented by Dirk Bruckmann (ETH Zurich). The congress offered the opportunity to present the project approach to experts from all over the world. Specifically experts from Australia and Europe as well as from Asian contries and North America took part. The feedback from non-European experts shall be used for further development within the ViWaS project. Discussions with international participants offered an insight in SWL business beyond Europe. Noteworthy fact: On the international level, the classic Single Wagonload traffic is on the retreat, too. Railway undertakings put the tracks increasingly on block trains and intermodal transport. At the same time, however, there is still the need for freight railways to cover also the market of transport volumes below block trains and not to leave this market solely to road transport. On this subject there is a need for further international exchange.

WCRR 2013
Sydney Australia

New Wagon Enables Container Handling in Sidings

Roll-out of WASCOSA's Swiss Split container wagon

For the enhancement of container handlings in railway sidings, the ViWaS partner WASCOSA has developed a new wagon type, based on a light-weight 60 feet container wagon. The floor is equipped with "plug-in" inlays and thereby serves as a drive-on platform for forklift trucks. This allows a seamless loading and unloading of containers directly at the customer's ramp. The prototype has been delivered to WASCOSA in April 2014. After technical tests and examinations, field tests are about to start at sidings of SBB Cargo customers.

The accessible floor increases flexibility. Source: WASCOSA

In Switzerland, SBB Cargo offers the delivery of maritime containers to railway sidings of the SWL network as an alternative to road transport (Swiss Split). In the ViWaS business case – called "Swiss Split 2" – an advanced operation concept is being elaborated. This concept will implement elements of a new terminal strategy for Switzerland going along with technical innovations such as the new container wagon of WASCOSA, being developed within the ViWaS project. Currently, the transport of containers within the Swiss Split system is done with conventional wood floor flat wagons. Since these wagons are about to be discarded from service, they need to be replaced. With the new WASCOSA wagon a technical solution is provided that allows an improved and cost-efficient loading and unloading of ISO containers on rail wagons in sidings. Based on the requirements, jointly defined by SBB Cargo, ETH Zürich IVT and WASCOSA, a prototype has been built by Fahrzeugwerke Miraustrasse (Berlin, Germany). This prototype has been delivered WASCOSA at the beginning of April 2014 and will be used for field tests. Within ViWaS, another option for the replacement of the old flat wagons is being evaluated: a conventional intermodal wagon in combination with a new loading platform; this concept is based on WASCOSA's flex freight system©. The ViWaS workshops on "SWL wagon technologies" in October 2014 offer the opportunity to discuss these developments with experts and potential customers.

Project Key Facts

- Budget: 4.2 million €
- EU contribution: 2.9 million €
- Duration: 9/2012 – 8/2015
- Coordination: HaCon Ingenieurgesellschaft mbH
- Consortium: Ten European companies and research institutions from the areas of rail transportation and logistics
- Project goals:
  - capturing new markets for SWL
  - optimising "last mile" operations
  - improving flexibility and efficiency of equipment usage
  - increasing transport quality and reliability

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SEVENTH FRAMEWORK PROGRAMME

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Co-funded by the European Union
SEVENTH FRAMEWORK PROGRAMME

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