

SMART SC

eBusiness Standardization in the maritime Supply Chain



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Brief Summary

Currently the logistics related business processes are arranged error-prone and inefficient because of media disruptions at interfaces between the supply chain actors. A central goal is to largely exclude existing media disruptions through the implementation of a mediator. The presented essay discusses the research project “SMART SC – eBusiness **S**tandardization in the **m**aritime **S**upply **C**hain”, which focuses on the sustainable improvement of inter-company communication structures in the port-related supply chain to increase the interconnectivity and interoperability of the maritime supply chain as well as the national competitiveness in the international freight transport through the cross-company use of eBusiness standards.



Project Summary

SMART SC is funded by the Federal Ministry of Economics and Energy within the framework of the initiative eStandards. The research project has a large application-oriented focus with the goal of improving the efficiency of cross-company data communications in the maritime supply chain (SC) with respect to the road-related container traffic. The research project is running since 01.04.2012 and has a duration of three years. After the research phase the project aims the development of a real system, which supports an efficient exchange of data, information and documents accompanying the physical flow of goods with minimal error rate between the participating companies in the supply chain, which presents an increasing challenge with growing international transport volumes. The aim of SMART SC is to increase the efficiency of existing logistics processes along the entire container-related value chain in import and export to improve the performance of the physical processes (transport, handling, storage, etc.) through the harmonization of information, communication and transactions. By implementing an eBusiness standard in the maritime supply chain, SMART SC designs an integrated solution for the settlement of cross-company electronic communication processes for all involved companies (freight forwarders, shippers, terminals, trucking companies, etc.) and administrative bodies (customs, port authorities, etc.) in the container-related supply chain in form of a mediator. As the core system of SMART SC the mediator enables data communication processes of the supply chain via a central system, which will particularly be beneficial to SMEs (forwarders and trucking company), and support a data transfer and communication harmonization of the existing EDI and XML standards along the supply chain considering all involved SC-actors.

Results/Benefits

The aim of SMART SC is to enhance efficiency of existing logistics processes along the entire container-related value chain in the import and export to improve the performance of the physical processes (transport, handling, storage, etc.) through harmonization of information, communication and transactions. This includes:

Improvements for small and medium sized enterprises (SMEs):

- Enhanced integration of SMEs into planning and monitoring processes along the supply chain
- Simplification for SMEs to integrate into existing chains and networks

Optimization of planning processes along the chain:

- Increase in reliability and transparency of planning processes by improved information flows
- Acceleration and quality improvement of the information base for importers and exporters as a competition advantage for the optimization of existing planning processes

Optimization of the feed control to the container terminals and logistics zones exemplary for Wilhelmshaven (JadeWeserPort) and Bremerhaven:

- Reduction of bottlenecks in transshipment locations by targeted control of the feeds at planned clearance times
- Prevention of congestions on the streets to the transshipment locations of the JadeWeserPort (JWP) by provision of parking space, intelligent traffic control and better predictability of the transshipment activities
- Traffic-related improvements of the JWP-environment for relief of the nearby populated and downtown areas
- Increase in efficiency at clearance by earlier provision of the planning guides and control of a consistent in- and outflow of truck traffic

Improvements in utilization of loading and traffic carriers and terminal capacities:

- Improvements in utilization and reduction of empty runs
- Reduction of exhaust emissions by intelligent parking management instead of creation of congestion
- Use of occurring waiting times up to the clearance as rest period in terms of the driving and rest period regulations for truck drivers

- Development of an innovative cluster environment and promotion of the development of a maritime cluster North West Germany

Obstacles

The main challenge of SMART SC is to achieve a high acceptance in practice. On the one hand, a major challenge is represented in the evaluation and presentation of the efficiency of this project and its sustainable effects on freight transport system in the immediate environment of the terminal and on the environment. On the other hand, strategies for a comprehensive transfer concept have to be developed, to motivate especially SMEs, in addition to the presentation of the feasibility and cost-effectiveness, to actively participate in a data communication using SMART SC mediator achieving standardized, collaborative eBusiness strategy in the container related supply chain within North West Germany. Furthermore, in the context of the project it is necessary to present the applicability of the measure to other port locations. By activating a critical mass of system users, SMART SC is able to improve the efficiency of existing logistics processes along the entire container-related value chain.

Another important challenge – especially in the background of the achievement of a critical user-mass – is the royalty of the system. Every user who implements the SMART SC-system has to pay a fee for data transfer within the system. In addition to the difficulties in presenting the feasibility and cost-effectiveness of the SMART SC-system, the royalty makes it more difficult to convince possible SMART SC-users to participate in a data communication via mediator.

Technology Base

Technologically, the SMART SC-system is based on the components SMART SC-mediator, Supply Chain Event Management (SCEM)-module and mobile devices.

SMART SC-mediator

Currently the communication processes of the maritime supply chain are arranged error-prone and inefficient because of media disruptions at interfaces between the supply chain actors. One of the main reasons for this inefficiency is the use of different EDI implementation guides across the value chain. The use of coordinated implementation guides on a bilateral level leads to a disruption of a direct communication between all supply chain actors.

As a consequence, crucial information regarding a transport process within the transport chain, especially in case of deviations from the plan process, such as delays, customs stop etc., thus cannot be passed directly across the value chain. Time advantages in the planning of alternative processes cannot be realized.

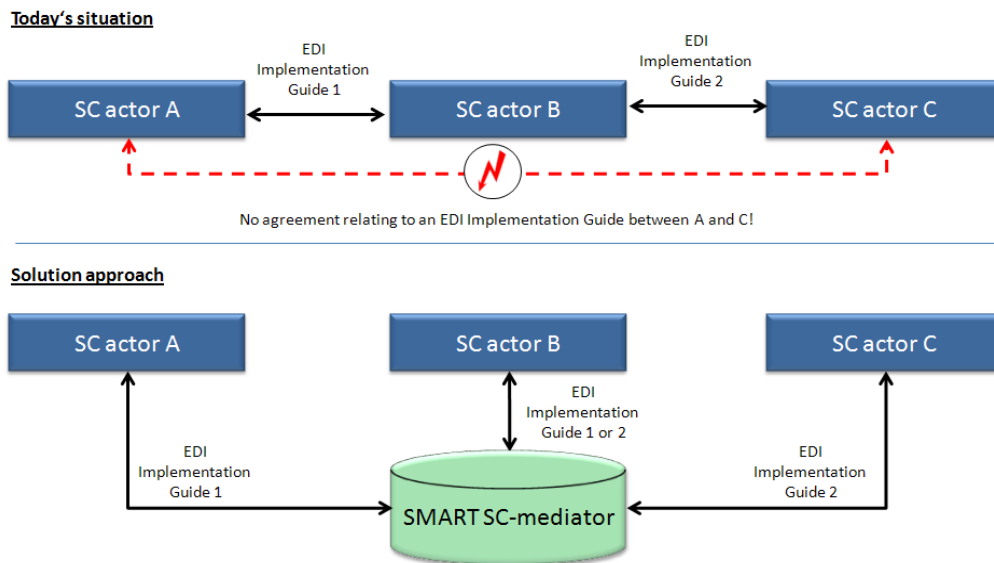


Illustration 1: Integration of business processes by standardization of communication processes in the Supply Chain by means of a mediator

With the integration of the mediator in the communication structures, the direct communication between all SC-actors as well as the simple connection of additional partners is possible. The mediator converts the EDI-messages to the different implementation guides and enables a digital data communication between all parties, without the need of adapting their existing interfaces. The desired IT-solution of the mediator is built scalable, therefore additional modules and IT tools with sustainable value character can be complemented.

SCEM-module

Beyond the pure exchange of information, the mediator is based on the Supply Chain Event Management (SCEM) approach. The developing SCEM module allows an alignment between planned target processes in the transport sector (planned data such as weekly plan, day schedule etc. of different SC-actors) and transport-related actual data (temporal and local recording of the transport process and status information for a specific transport process).

Core content is the control and monitoring of workflow processes in transportation. In the course of transportation of a container mainly occur expected events (events) that document the progress of transportation (eg. loading and unloading reports). Besides, unexpected events that indicate problems (e.g. road closures or delays reports) should be taken into consideration. The aim of this part of the project is to create a system that automatically receives and processes events while also reacts to the absence of them. In case of deviations from the desired course of transportation, every present or absent event is detected as early as possible by the SCEM-module and reported to the SC SMART-mediator, so that the transport organizer is informed in time and can intervene in the transport process.

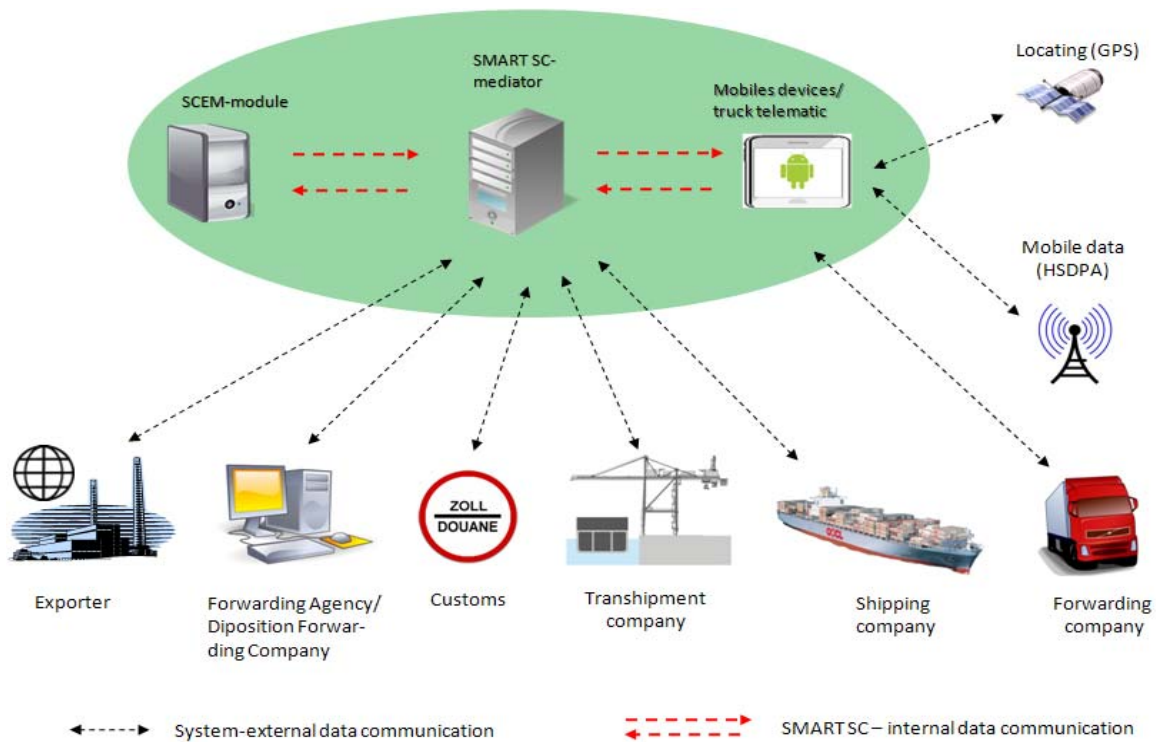


Illustration 2: Components and function of the SMART SC-system

Interfaces to mobile devices

Interfaces between the SMART SC mediator and mobile devices are developed to provide a bi-directional connection of freight forwarders to the SC SMART mediator. These interfaces allow the trucker both to receive and to give information concerning the transport process from and to the mediator. Thus a system integration of mobile devices allows the transport organizer to create the transport process more efficient based on the received information of the mediator.