

Invitation to Licentiate Seminar

""An electronic waybill can do more than just reducing papers—by utilizing ITS services for more sustainable and efficient transportation""

Where: Blekinge Tekniska Högskola , Karlshamn Campus.
When: November 7th, 2013, kl 13.00
Address: Room: Rio-Grande, 1st Floor, Bibliotekgatan 4, Karlshamn.
Thesis Title: On the Synergies Between an Electronic Waybill and Intelligent Transport Systems Services".
Opponent: Jonas Flodén, University of Göteborg.
Language: English.



Shoaib Bakhtyar completed his Master degree in Computer Science in 2010 and has since been a PhD student in Intelligent Transportation Systems at the Blekinge Institute of Technology. His research interests include electronic waybill solutions and the synergies between an electronic waybill and other ITS services. The synergistic approach towards electronic waybill solutions will result in achieving the benefits of the electronic waybill together with the benefits of different other ITS services.



Summary of the thesis

A waybill is a type of document that accompanies the freight during transportation and it contains essential information about a consignment. In cross-border transport, a copy of the waybill should by law follow the consignment, and for freight transport within a country, there often exist similar regulations based on the CMR convention.

The existing research on electronic waybill (e-Waybill) for different modes of transport is limited to e-Waybill solutions that are focussed on back-office-to-back-office communication. In addition, the existing research on investigating synergies between Intelligent Transport Systems (ITS) services is limited to ITS services without considering the e-Waybill for synergies. Synergies can be achieved between services if they are able to share the resources needed by them. In this thesis we have investigated e-Waybill solutions that are focused on back-office, as well as, on freight-level storage and access to the e-Waybill information. Additionally, the purpose of our research is on investigating potential synergies between an e-Waybill and other ITS services. In the existing research, according to the best of our knowledge, there is no study that concerns synergies between an e-Waybill and other ITS services. We consider this type of investigation to be of particular interest to study, because an e-Waybill has essential information about a consignment (under transport) and it follows the consignment.

Achieving synergies between an e-Waybill and other ITS services can potentially increase the effectiveness of the e-Waybill and ITS services in different ways. The e-Waybill, if implemented by utilizing synergies with other ITS services, will possibly increase the benefits of an e-Waybill service, as well as, the benefits of the other ITS services. An e-Waybill service, if implemented alone, has the potential to contribute to a paperless flow of information in freight transport, by replacing the traditional paper Waybill with an e-Waybill. In addition to a paperless flow of information in freight transport, an e-Waybill service (through utilizing synergies with other ITS

services) may provide benefits, such as, reducing emissions, traffic congestion, and the number of accidents, and utilizing the infrastructure and vehicles capacity efficiently. For ITS service providers, the total implementation cost of the services may be reduced if synergies are achieved between the services due to the possibility of sharing different types of resources. For ITS service developers, the benefits of sharing resources can be possibly to reduce development cost and time by reusing the already developed components (i.e., resources) in multiple services, where those particular components are required. For the services users, the benefits could possibly include reducing the cost of having multiple platforms for different services, i.e., achieving benefits of all the services from a single platform without having to use different platforms for different services.

To investigate synergies between the e-Waybill and other ITS services, we present 5 conceptual e-Waybill solutions that differ in where the e-Waybill information is stored, read, and written. A set of 20 ITS services are considered for synergy analysis in this thesis. These services are mainly for road transport, however most of them are relevant to be considered for utilization in other modes of transport as well. For information synergy analysis, the e-Waybill solutions are assessed based on their synergies with ITS services. The result from our synergy analysis may support the choice of practical e-Waybill systems, which has the possibility to provide high synergy with ITS services. This may lead to a higher utilization of ITS services and more sustainable transport, e.g., in terms of reduced congestion and emissions. Additionally, a service design method has been proposed for supporting the process of designing new ITS services, which primarily utilizes on functional synergies with already existing ITS services. In order to illustrate the usage of the suggested method, we have applied it for designing a new ITS service, i.e., the Liability Intelligent Transport System (LITS) service. The purpose of the LITS service is to support the process of identifying when, where, and by whom a consignment has been damaged and who was responsible when the consignment was damaged.

