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2012 Theme: Intelligent Transport Systems (ITS):
Challenges and opportunities for intermodal transport

Intelligent Transport Systems (ITS): Opportunities and challenges for intermodal transport

Note by the WP.24 informal group of experts

I. Mandate

1.   As decided by the Working Party at its last session and in line with its road map on future work and operation (ECE/TRANS/WP.24/129, paras. 30 and 31; ECE/TRANS/WP.24/125, paras. 18–22 and 40 and 41), the theme for substantive discussion at the 2012 session of the Working Party will be: Intelligent Transport Systems (ITS): Challenges and opportunities for intermodal transport.

2.   In March 2012 the UNECE Inland Transport Committee (ITC) convened a round table on ITS and approved an UNECE road map for promoting the use of ITS (ECE/TRANS/224, paras. 31–32, 66–67 and annex II). This road map contains 20 global actions to be undertaken in the period 2012–2020 and explicitly recommends under action 6 that all Working Parties of the ITC should scale up work on ITS and should continue:

   • to align their work with sustainable mobility principles that include efficient, safe environmentally friendly and affordable transport services; and

   • to determine how relevant ITS solutions could assist in bringing this about.

3.   Further information on this subject is contained in the UNECE publication "ITS for sustainable mobility" (www.unece.org/trans/publications/its_sustainable_mobility) and on a dedicated UNECE web site (www.unece.org/trans/theme_its).

4.   Taking into account these UNECE activities, the WP.24 informal group of experts has prepared the present document as a basis for discussion. It lays out the opportunities and challenges of ITS for intermodal transport operations and focuses on electronic data interchange systems among the stakeholders in intermodal transport chains.

II.   Definitions

A.   Intelligent Transport Systems

5.   A large number of definitions for Intelligent Transport Systems (ITS) exists and a myriad of different definitions are used. Because this may lead to a lack of understanding in ITS deployment, action 1 of the UNECE road map calls for the development of a common definition on ITS to be designed in a holistic way.

6.   For the purposes of this document, ITS means: Systems in which information and communication technologies are applied in different modes of transport, transport chains and for the interfaces between modes covering transport infrastructure, rolling stock and users.

B.   Intermodal transport

7.   Intermodal transport has been defined by the European Commission, the (then) European Conference of Ministers of Transport (ECMT) – now International Transport Forum (ITF) as:

> "The movement of goods in one and the same loading unit or road vehicle, which uses successively two or more modes of transport without handling the goods themselves in changing modes.

> By extension, the term intermodality has been used to describe a system of transport whereby two or more modes of transport are used to transport the same loading unit or truck in an integrated manner, without loading or unloading, in a [door to door] transport chain."

III.   The transport policy background

8.   Transport policies in most UNECE countries, covering transport infrastructure development, rolling stock and regulations, require that modern transport systems are in line with all aspects of sustainable development (environmental, social, economic, health).

9.   Land freight transport operations will therefore have to be:

• Efficient: Provide efficient means and facilitate the exchange of goods at national and international levels;

• Make optimum use of existing infrastructure and transport systems: Utilize existing transport infrastructures, storage and transhipment facilities at its best and provide for its flexible use in line with industry demands;

• Safe and secure: Improve safety during transport, storage and transhipment operations and increase security along the total transport chain at national and international levels; and

- Clean and green: Reduce noise and air pollution as well as energy consumption and greenhouse gas emissions, minimize congestion and reduce conflicts with the mobility demands of our citizens.

10. Intermodal transport could assist in resolving these challenges as it can combine and make use of the inherent advantages of transport by air, sea, road, rail and inland waterways in terms of cost, speed, flexibility, reliability, safety, security and availability, as well as environmental and health impacts. The challenge for intermodal transport is to achieve seamless transport operations that ensure that the advantages of using several modes along a given transport chain outweigh the disadvantages that come along with the coordination of different modal systems (information transfer) and the hindrances and delays due to unavoidable transhipment operations (transhipment of loading units).

11. Modern electronic data exchange systems could make long international multi-stakeholder transport operations and intermodal transport systems attractive and competitive. They could provide the means and tools to ensure comprehensive and accurate information exchange as well as transparency for all stakeholders during transport and transhipment operations at all times and affordable costs. Such ITS solutions could thus provide for "seamlessness" within intermodal transport chains and allow for optimum data exchange management and for efficient deployment of personnel, rolling stock and transport infrastructures including terminals.

IV. ITS applications for intermodal transport chains (what can be done?)

12. ITS applications are already extensively used in uni-modal transport operations, i.e. in road and rail transport and provide solutions for:

- Standard freight information exchange;

- Tracking and tracing in real time (cargo and loading units);

- Just-in-time transport operations;

- Secure and transparent data transfer;

- Measurement and comparison of emissions (rolling stock, terminal operations and transport infrastructures);

- Paperless transport, particular for international operations;

- Single electronic transport documents and liability systems; and

- Single window (access point) for regulatory processes, such as Customs declarations, transport permits, control of driving times and rest hours, roadworthiness checks, etc.).

13. Intermodal transport would benefit in particular from ITS applications as they are usually more complex and failure prone than uni-modal transport operations. They also regularly comprise more stakeholders (shippers, operators, terminal providers, etc.) that are not always familiar with all procedures and requirements within intermodal transport chains. In particular, ITS could provide solutions for:

- Information interfaces between modes with different data management systems;

- Access to data and information from different transport modes with unfamiliar procedures; and

- Compatible procedures for a transparent, secure and efficient data exchange among transport modes with clearly defined and stable rules.

14.   ITS could also provide solutions for the efficient operation of terminals which are the transhipment points for intermodal transport operations and thus naturally link the different modes. ITS applications could provide for:

- Optimum use of equipment;

- Quick reaction times in case of delay s or malfunctioning.

V.   Accessibility and interoperability of electronic data exchange systems

15.   Effective ITS solutions for intermodal transport operations require well-functioning and internationally-accepted data exchange systems that allow on-line access to data and information at an affordable cost. In addition, these systems must ensure data protection and be in line or at least compatible with systems already used by the profession. Also such systems should, to the extent possible, not rely on third-party, proprietary solutions that would require the purchase of software licences.

16.   For many years, the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), administered by UNECE, has been developing the so-called EDIFACT standard messages for transport and logistics. Today, 250 such international messages exist covering important transport procedures, such as transport contracts (Convention on the Contract for the International Carriage of Goods by Road (CMR), Contract of International Carriage of Goods by Rail (CIM), bill of lading, etc.), transport booking and invoicing as well as logistics and cargo handling.

17.   According to UN/CEFACT, five different areas or layers of interoperability can be distinguished during the development and application of such electronic data exchange systems that address different procedures, activities and stakeholders:

- Technical interoperability: Linkage of computer systems and services (open interfaces, common syntax, technical interconnection systems, etc.);

- Semantic interoperability: Correct and well-defined meaning of exchanged data and information understood by all involved systems;

- Organisational interoperability: Collaboration of different private and public stakeholders to arrive at mutually agreed processes and objectives in line with the "language of the business" (i.e. completion and acceptance of a Customs declaration);

- Legal (contractual) interoperability: Development of the appropriate national and international legal frameworks to ensure that data in electronic information exchange systems are recognized as legally valid; and

- Political interoperability: Good governance in the development and application of electronic data exchange systems based on a common vision and compatible priorities.

VI.   Role of stakeholders

18.   Intermodal transport, which is often international business, is characterized by a large number of actors. Each of these stakeholders has a specific role and has particular

interests and concerns depending on its contractual, operational or regulatory role. These roles and interests need to be taken into account and addressed in developing tailor-made ITS solutions for electronic data exchange systems.

A.   The trade, transport and intermodal industry

19.   Transport users, such as shippers or freight forwarders should be able to easily and transparently identify, intermodal transport solutions and make use of those that are most suited for their purpose. International organizations representing these industry groups, such as the International Federation of Freight Forwarders Associations (FIATA) or the European Organisation for Freight Forwarding and Logistics (CLECAT) have repeatedly advocated clear and robust European, or even better, global guidelines on how to exchange and store data and prevent their unauthorized use among the multiple service providers in international transport chains.

20.   Road, rail and inland water transport operators, as well as combined (intermodal) transport operators and external service providers, should be able to provide information about their services and exchange information electronically with relevant actors while planning, executing and completing transport operations. They should also be able to set up service networks with other operators. Key elements for them are the security and protection of sensitive commercial information (i.e. on clients, prices, operations, etc.), easy access to information and data exchange systems that are in line or at least compatible and familiar with their own systems and processes.

21.   Rail, and in particular road transport operators, have profound expertise in ITS systems and have already been using electronic exchange systems for many years and across frontiers to track and trace vehicles and cargo and to provide for the required flexibility in operations.

22.   The International Union of Railways (UIC), promoting intermodal transport through its "Developing Infrastructure Use and Operating Models for Intermodal Shift (DIOMIS)" project, encourages new types of cooperation between all stakeholders in intermodal transport: Terminal operators, intermodal transport operators, shippers, railway undertakings, infrastructure managers and national and international authorities. Appropriate ITS systems will play an important part in this development.

23.   The International Road Transport Union (IRU) has stressed that the road transport industry is in favour of ITS applications, as long as they provide significant safety, environmental and economic benefits. Such ITS applications must be standardized and interoperable.

24.   This is particularly important for intermodal transport operations which will be required to share, at least partly, common ITS and electronic data interchange platforms among the involved operators and transport modes. Progress in this field has already been made by the International Union of Combined Road-Rail Transport Companies (UIRR). Since 2004, the so-called Co-operative European system for Advanced information Redistribution (CESAR) booking and tracking system has provided a European-wide harmonized interface between five intermodal transport operators and their customers with a single (Internet based) access point and interfaces for integration of the specific Electronic Data Interchange (EDI) systems of their customers.

25.   Finally, transport infrastructure providers, as well as terminal owners or operators, should ensure the best possible use of their facilities and should be able to support transport users by providing on-line information about the status of network and terminal availability as well as measures to avoid undue delays.

B. Governments and competent public authorities

26. Governments and regulatory authorities are interested in smooth and reliable regulatory procedures and should provide governance as well as the necessary political and legal framework conditions for affordable and secure ITS which are a key element for efficient trade and transport operations. Good ITS governance, particularly for electronic data exchange systems, is not only essential for reliable and secure information flows between public authorities and the private sector, but is also required to ensure standard functionalities, reliability and security of such systems in general.

27. In particular, Governments and competent public authorities may wish to:

• Obtain, in the simplest possible way, all required information for monitoring compliance with applicable regulations and exchange information with other authorities for collaboration in security, environmental risk management (greenhouse gas, air pollutant and noise emissions), sustainable mobility, social regulations, etc.;

• Provide the necessary framework conditions for discriminatory-free access to information by all parties involved in intermodal transport operations. Proprietary solutions requiring purchase of software licences may not guarantee a level playing field for public and private stakeholders; and

• Oversee and foster a neutral governance process to tie loose ends together and allow transport and supply chain partners to keep their data exchange standards viable and effective.

28. Finally, inter-governmental organizations involved in international transport and trade also have important roles to play to promote standardisation or at least harmonization of ITS and electronic data exchange systems to promote intermodal transport.

29. In 2010, the European Commission adopted an ITS action plan in response to the slow and fragmented uptake and deployment of ITS in road transport within the European Union (EU). Based on Directive 2010/40/EU, a Europe-wide coordination framework is planned which will ensure the provision of seamless services for the optimal use of road, traffic and travel data, for the continuity of traffic and freight management ITS services, for ITS road safety and security applications and for linking the road vehicle with the transport infrastructure. Similarly, the so-called e-Freight project, part of the seventh EU Framework Programme, will promote integrated ITS solutions that make regulatory requirements more efficient and secure, such as the European Single Transport Document for the carriage of goods or the simplification and harmonization of border crossing procedures.

30. Similarly, UNECE has taken up work on ITS to share information at the pan-European level and raise awareness about well-functioning ITS solutions, to identify major gaps and impediments to the broad use and rapid dissemination of ITS applications and to outline ITS activities that should be taken. To this end, the UNECE Road Map in ITS was adopted in March 2012 (refer to paragraph 3).

VII. Role of the UNECE Working Party on Intermodal Transport and Logistics (WP.24)

31. Following its discussions and exchange of views on the various opportunities and challenges of ITS for intermodal transport, the Working Party may wish to reflect on possible concrete follow-up activities by international organizations, including the Working Party. Such activities could include:

- Inclusion of best practices into the AGTC Agreement (for example into annex IV: Performance parameters of trains and minimum infrastructure standards or into new annex);

- International guidance on the deployment of ITS to support intermodal transport; and

- Endorsement and support of certain industry and Government driven ITS solutions promoting intermodal transport.

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