



**Economic and Social
Council**

Distr.
GENERAL

Informal document No. 6 (2001)
18 April 2001

ENGLISH ONLY

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on Combined Transport
Working Party on Rail Transport

Joint Meeting on the Working Parties on
Combined Transport and Rail Transport
(First session, 19 April 2001,
agenda item 3 (c))

THE ROLE OF RAILWAYS IN THE PROMOTION OF COMBINED TRANSPORT

Possible solutions to overcome problems and best practices

Transmitted by the European Intermodal Association (EIA)

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INNOVATION IN INTERMODAL TRANSPORT

By taking the definition of the french dictionary “Petit Robert”, innovation can be defined as **“the action to introduce something new into an established thing”**.

It is indeed necessary to avoid the first reflex consisting in comparing the concept of innovation to the technological innovation which constitutes a major element, certainly, but not only.

It is this very broad significance which we will retain to evoke the various aspects of innovation in intermodal transport, not to redefine this last, but to explore the whole of the tracks which can give a new breath to the concept of “intermodalism”¹.

Intermodal transport consisting in assembling several components in logistic chains, the specific innovations carried out in each one of these components constitute also innovations for intermodal transport². One thus sees appearing several possible approaches of the concept of innovation for intermodal transport:

- An approach by natures of innovations: the technological innovation, the innovation of management of the actors of intermodal transport, the innovation in the politico-regulatory environment of intermodal transport.
- A modal approach: intermodal chain, transshipment, railroad, short sea shipping, waterway and road.

1. The technological innovation

Three fields seem essential to us:

- the information technology
- the technology of the intermodal transport vehicles
- the technology of the transshipment.

1.1 The information technology

In this sector, one of the engines of the modern economy, we should find, in the future years, some operational innovations of interest for intermodal transport, more especially as the control of information is completely determining to compensate for the risks of non quality related to the control of logistic chains.

Industrial processes are changing, manufacturers are streamlining their production lines so their

¹ To be positive, an innovation must of course improve quality of the intermodal services, improve their profitability for the intermodal operators, and lead to a better total balance of the European systems of transport.

² We will retain however only those which have a direct link with intermodal transport.

products only arrive just before they are required, and they only manufacture when they have already received orders. These changes put more and more pressure on the supply chain, to provide continuous, accurate information about shipments.

Moreover, effective IT systems enable cost control and cost reduction by providing everybody with an accurate real-time picture of the company's operations. Effectively integrating the data in ones organisation will ensure to be able to collate this information internally and deliver relevant external information to the customers and the partners. The transportation industry is necessarily implied in these evolutions, and container tracking is a hot issue and can't become a gap in this need of continuous logistic chains.

Tracking data will have to be more and more shared between transport companies. For example, a shipping line can notify a container terminal if the vessel is delayed or early. A terminal can notify a haulage company about containers which are ready to be collected. A rail company can provide data to a terminal about the containers or swapbodies on a train.....

There are also other facets to the demand for tracking services : container theft is becoming more and more a concern and some insurance companies are lowering the premiums for containers with tracking services. For other reasons, the shippers of hazardous goods want to know about their shipments.

From a strict technical point of view, these some examples give an idea of the evolutions :

- TransCare, a German company, has developped a tracking system which transmits GPS positioning by GSM and has a solar panel, requiring no battery. The unit cost, presently \$ 1.200, should decrease towards \$ 300 within a few years.
- The price of satellite tracking of containers is set to drop dramatically, as the Orbcomm Low Earth Orbiting satellites come into service, at 825 km above the surface of Earth, compared to 36.000 km above the surface for conventional geostationary satellites. Therefore, the cost of launching them and communicating with them will be much lower. Orbcomm will have 48 satellites.
- Developments in radio tag technology promise to reduce the costs of manufacturing radio tags and to increase their memory capacity and transmitting distance. Active tags have been developped which are connected to a power supply and sensors to communicate information. Low cost tags are being developped which could be applied to every container or swapbody or trailer in a terminal.
- Using the Internet as a communication medium has a lot of advantages over direct-dial networks. The Internet is cheaper, allowing even the smallest companies to communicate electronically. It allows computers to be in continuous communication, rather than just sending messages to indicate a status change. It makes very easy for one computer to talk to several other computers at the same time.

We can sum up these considerations by saying that these new techniques are more and more powerful and cheaper and cheaper.

A lot of systems exist and are being developed, more or less widespread. They obviously have in common the fact to have been thought in a specific context of needs identified.

According to the needs of their customers, it's absolutely necessary to understand that the combined transport operators will keep on building up specific IT systems. It's also necessary to understand that these different systems will have more and more to integrate data coming from other systems without solutions of continuity to be efficient ³.

It seems to us that the main challenges of this approach will be the following ones :

- moving towards the concepts of global systems able to make different approaches work together.
- organising the neutrality of databanks to draw more and more operators,
- letting the operators bring added value of IT services towards the final customers,
- connecting these databanks with deepsea transport systems,
- Improving the productivity and the quality of intermodal transport by using IT.

A right, proactive and concrete management of IT is an obvious priority for the future of intermodalism. It's an essential key of its competitiveness.

1.2 The technology of the intermodal transport vehicles

To satisfy the needs of the shippers and their logistics, that's clear that the transport vehicles will diversify always more and these evolutions, dictated by the market of transport ⁴, are important for the productivity of intermodal transport. One can discuss the fact of qualifying them (or not) innovations, and, as for us, we qualify them thus. More basically:

1.2.1 **On the level of the containers** (containers, swapbodies, semitrailers), it seems that one can identify two ways of technological innovations:

- the terrestrial containers should gradually integrate in their technical design the possibility of being stacked loaded and not only empty as it is currently the case,
- the ISO standards of the maritime containers, which have their origin in the years 1950, should approach to terrestrial standards. However the principal difficulty in this field is to define which terrestrial standards: those of the American continent or those of the European continent?

1.2.2 **On the level of the terrestrial vehicles** (road tractors, railcars, river barges), their adaptability is primarily conditioned by the gauges of the corresponding infrastructures.

³ For example, data coming from deepsea transport systems.

⁴ For example, « super high cube » curtain-sided swap bodies (with a 13.6m length and over 3m internal height), so-called Mega-Combi units, were constructed five years ago for the Spanish intermodal operator, Transfesa and many have since been placed in service with a range of vehicle manufacturers, including General Motors, Ford and Volkswagen, which favour the extra cube for the carriage of vehicle spare parts and components between their various distribution centers in Europe. The basic design is non-stackable and comes fitted with a special detachable roof section, which can be removed.

On the level of the maritime ships operated in short sea shipping, the essential problem, to be solved, to make short sea shipping an important element of intermodal transport is the adaptation of the ships to the transport of stackable **terrestrial** intermodal containers, because Ro-Ro cannot constitute the only solution of the short sea shipping.

1.3 The technology of the transshipment

One should rather speak about interfaces in the intermodal logistic chains between the various means of transport not to limit the debate to the only terminals of vertical transshipment of the intermodal containers.

1.3.1 **The horizontal transshipment** should not know determining innovations. Because of the reduction of the costs related to the absence of large terminals of vertical transshipment, it will continue to develop on specific “niches” of traffic where it is accompanied by gains of productivity by comparison to the more traditional solutions:

- **the bimodal trailers**, whose marketing really starts to develop in Europe (let us quote in particular BTZ – Bayerische Trailer Zug)
- the **rail motorway** (Ro-La) should continue its developments related in particular to

the crossing of the Alps

- **maritime Ro-Ro**, related to the short sea shipping, constitutes one of the possible alternatives to the “all-road”, in particular around the Méditerranée Sea and in Scandinavia.

1.3.2 The productivity of **the vertical transshipment** will be always subordinated to important transhipped volumes, either in maritime terminals or terrestrial terminals. The principal challenge for these terminals, and thus the principal innovation, will be the implementation of methods of management integrating the needs for the information technology of the whole of the logistic chains.

In short, one can consider 2 essential axes of innovation in the field of the transshipment of the intermodal containers :

- the implementation of integrated softwares in the terrestrial terminals ⁵,
- the complementarity between terminals of vertical and horizontal transshipment, so that same intermodal containers can be handled indifferently in these 2 types of terminals along the logistic chains.

⁵ These softwares are already largely present in the maritime terminals.

2. Innovations of the management and the politico-regulatory environment of intermodal transport.

2.1 With regard to the management of the transport operators,

we will find primarily the topics already evoked above. The principal innovations will result from new information technology, allowing at the same time improvements of the quality of the services sold to the shippers and improvements of the productivity, therefore of the competitiveness of intermodal transport. We thus find 3 principal families of innovations, more or less related to the information technology, which will be introduced into the world of intermodal transport during future years:

- moving towards the concepts of global systems able to make different approaches work together, by organising the neutrality of databanks to draw more and more operators,
- integrated and computerized management of terminals of transshipment, and increase in their schedules of opening, in connection with new concepts of timetables of the intermodal trains,
- optimization of the exploitation of the intermodal vehicles, to improve the costs related to empty transport and their immobilization, in particular of the containers and the railcars.

2.2 With regard to the politico-regulatory environment

of intermodal transport, to come back to the initial definitions, the majority of the innovations will consist, but not only, of concretizing, on the 2 levels of the European Union and the States of the European Union, the intermodal orientations already defined in the european policy of “sustainable mobility” :

- To develop a “Reference Centre” of intermodal transport allowing an organized and systematic dissemination of the best practices of intermodal transport,
- To help intermodal transport by methods not causing distortions of necessary competition between the various actors of intermodal transport. It is necessary in particular to harmonize the conditions of access with the infrastructures of intermodal transport and specifically to subsidize the managers of the infrastructures considered to be powerful within the framework of the European transport networks,
- As soon as possible to create the conditions of a restarting of intermodal transport in Central and Eastern Europe to prevent that the already noted tendencies of intensive recourse to the road transport develop too much.

6 One can look at the EIA website (<http://www.eia-ngo.com/Presentations.htm>) and see the point of view of EIA about the necessary approaches to make this restarting of intermodal transport in Central and Eastern Europe possible.

3. The modal innovation

Without entering the specific debate of each mode of transport, we will retain in this chapter, from our point of view, the only principal modal innovations likely to have an important impact on the development of intermodal transport.

3.1 Railroad

- Effective liberalization of access with the railway infrastructures for the transport operators, existing operators or new operators,
- Harmonization of the concepts of prices of access with the railway infrastructures,
- Progressive definition of a network of railway infrastructures on which the freight trains would not be chronically any more penalized by the coexistence with the passenger trains,
- European systematic research for freight routes comprising an inexpensive potential of widening of the authorized gauges (by thinking of the possibilities of the “double stack” of the American railroads).

3.2 Short sea shipping

- To reconsider, harmonize and simplify the administrative procedures related to the short sea shipping in the European countries so that this last is not penalized any more by these administrative processes by comparison with the terrestrial means of transport and especially road transport ⁷.
- Proactive research by the harbour authorities of the investments necessary (infrastructure, transshipment equipment, powerful connections with the hinterland) for the competitiveness of the short sea shipping.

3.3 Waterway

- The inland waterway transport is limited to the routing of ISO containers owing to the fact that the swapbodies and terrestrial intermodal vehicles cannot be stacked loaded ⁸.
- As for the railroad, the European systematic research of the river routes whose enlarging of the headrooms and the draughts would not require excessive investments would constitute a real promotion of the river transport. In this way, the reconstitution of the potential of the Danube after the conflict of Kosovo is of first importance for the river transport.

⁷ The European customs legislation disadvantages the short sea shipping which is regarded as intra-European transport when the goods are transported by ferries and/or regular lines in European territorial seas. This legislation causes obviously problems with the ships serving, by means of their short-sea services, also North Africa, the Baltic countries and/or Northern Europe, for, in this case, the carriage of these goods is not regarded as intra-union transport.

⁸ The technical committee 119 of CEN currently works out standards for European stackable swapbodies and the competitiveness of waterway could then change basically.