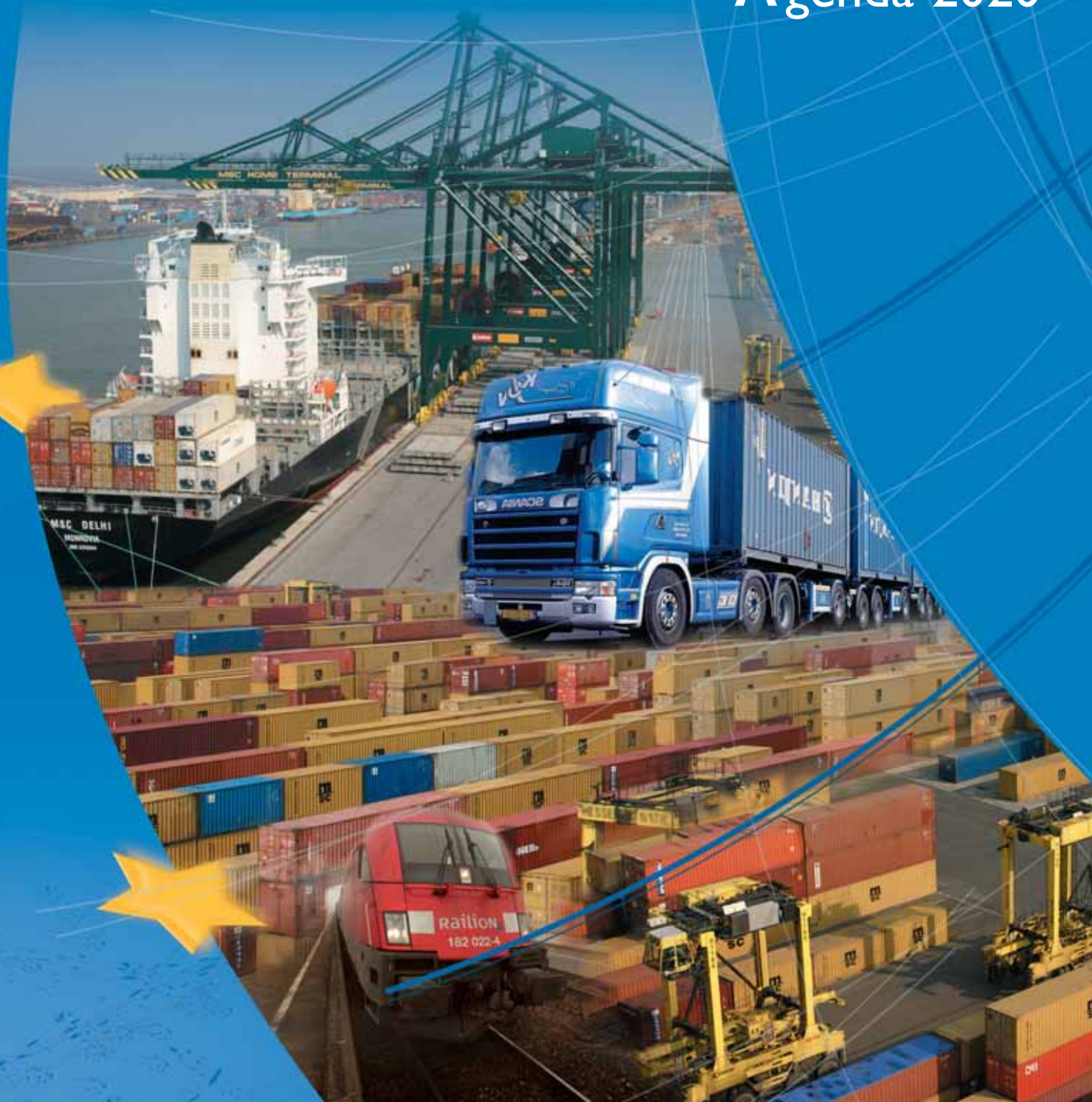


Strategic Intermodal Research Agenda 2020

DECEMBER 2005





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The EIRAC Strategic Intermodal Research Agenda provides an overview of innovation needed in intermodal transport until 2020. Intermodal transport is defined 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 moving the goods themselves in changing modes”. It is a beautiful description and everyone understands what it is, but I would like to make clear the real meaning of intermodal in the light of some day-to-day examples.

Going to the office five days a week, I spent a lot of time in my car. Quite often, I get into traffic-jams. It does not matter where I am; all over Europe, we are facing the same problem. Watching all the cars and all the trucks polluting our air on the already very busy roads, one cannot even imagine how this will be in Europe in 2020! Suddenly a vision crosses my mind. I imagine huge double stack-trains fully loaded with containers driving on the same track and at the same speed as passenger trains. Close by, there are multimodal hubs and in the distance, a container terminal appears where feeders/short sea and deep-sea ships are lying side by side for loading/discharging their cargo simultaneously. Continental- and maritime cargo is transported combined on big river barges to tri- and even four modal hubs in Europe. New infrastructure is built without delay according to the strategic planning on European level. The road in front of me is free of traffic jams and gives me the possibility to enjoy driving my clean and green engine car. An enormous noise disturbs my dreams, caused by the horn of a truck driver to make clear that I have to move another 50 meters forward because he and I want to be at our final destination on time!

When I finally get to my work at the container terminal, I see an ongoing flow of feeders short sea ships, barges, trains and deep-sea vessels arriving and departing. So far, we are still able to keep those enormous flows going; but to be honest I can imagine that if and when the expected volumes in 2020 will become true, we must act quickly.

If you imagine that we would only duplicate the things we have today, when it comes to transport, I am convinced that it would only come to a complete standstill. Luckily, all stakeholders are already convinced that we have to change. Therefore, that is not an issue, but the issue is how and by whom? The monomodal industries have brilliant ideas and initiatives, but I believe that the optimal solution lies in combining these modalities with regard to future developments. That is why EIRAC's contribution is so important for the total solution, when it comes to intermodal and has to cooperate with the monomodal industry.

I would like to make clear that the action not only has an economical drive, but a social aspect as well. I compare it to a torment of Tantalus if we do nothing about the transport problem. All people in the EU are looking for prosperity (based on the mobility of goods), but cannot really participate because the goods cannot reach the people. We also have to take care of the environment for our children and us.

The industry has of course a responsibility in this respect, which even enables them to safeguard their own business and to make money. Reasons enough why we are convinced that the industry should take the lead. They have the experience and are able to find the balance between all values in the economic field. Therefore, the industry together with all the other stakeholders can make intermodal a success. We would like to challenge the industry to take part in this process right now.

The Strategic Intermodal research Agenda, herewith presented, is not the end but the beginning of an inevitable process of creativity, research and implementation, because for proper intermodality the future starts today.

Wando Boevé

Chairman of the European Intermodal Research Advisory Council



Rising of the European flag
“Enlargement Day” | May 2004
Photo: EIA / P.Wolters

2.1 THE EUROPEAN INTERMODAL RESEARCH ADVISORY COUNCIL

The European Intermodal Research Advisory Council (EIRAC), composed of more than 50 key players from large intermodal businesses, was launched at a high-level round table meeting in the Brussels Hotel Metropole, on 3 May 2005.

CEOs and Managing Directors with decision-making capability from all over Europe have created this advisory body to the European Commission. EIRAC has a balance of major stakeholders from all sectors of the intermodal industry: intermodal rail and road operators, terminal operators, logistic freight integrators, short sea shipping operators, ports, terminal handling, freight villages, ICT equipment suppliers and freight customers. A few selected academics have also been invited.

EIRAC's mission is to determine the vision, scope and content of the Strategic Intermodal Research Agenda 2020 as an important step towards the creation of a co-ordinated intermodal research strategy for Europe. EIRAC will focus on achieving interoperability between modes with a view to the creation of a single European logistic system in line with the objectives set out in the White Paper on Common Transport Policy. Following from the strategy of EIRAC, it will also establish a business scenario for implementation.

2.2 THE STRATEGIC INTERMODAL RESEARCH AGENDA 2020

EIRAC introduces the “Strategic Intermodal Research Agenda 2020” (SIRA). The agenda identifies key research drivers which will place intermodality at the core of the European Transport system.

The SIRA is an initial document, which will be developed taking advantage of the contributions proposed by other players in the intermodal industry. It will be accompanied by a Technical Annex, which will detail the themes of research and determine the expected contribution that each of them would bring to enhancing the characteristics of intermodal transport over the period to 2020.



Wando Boevé (EIRAC Chairman)
and Benoit Passard (EIRAC Vice-Chairman)



Joost De Bock (EU Commission - DG RTD);
Astrid Schlewing (EU Commission, DG TREN);
and Wando Boevé (EIRAC chairman)

2.3 THE BUSINESS SCENARIO

The Intermodal Industry has the vision to enable Europe to cope with growth, to lower the burden on the environment, and to enhance the competitiveness of the European Union. If the capacity of intermodal transport will not increase sufficiently, these three objectives will not be achieved.

This vision is accompanied, in the SIRA, by the definition of a Business Scenario in 2020, which reveals the EIRAC ambition to provide a seamless, reliable, available, accessible, as well as secure, sustainable, accountable, affordable, and transparent European Intermodal Transport System.

2.4 STRATEGIC TARGETS

The intermodal industry faces specific challenges of interoperability, logistics, security, socio-economics and education. The SIRA addresses all these challenges. The goal is to develop intermodal transport as an important part of the sustainable transport system. Intermodal transport then becomes a high quality service, which is seamless, reliable, available, accessible, secure, sustainable, accountable, and affordable.

2.5 SIGNIFICANCE OF THE SIRA FOR THE STAKEHOLDERS

The SIRA has been developed by the European Intermodal Research Advisory Council (EIRAC), an initiative of the European Intermodal industry, the European Commission and the EU member states. It includes reference to research for private stakeholders in the industry as well as joint research.

Through the Strategic Intermodal Research Agenda, the EIRAC clearly lays down the challenge for all stakeholders involved in the intermodal industry, whether they are industry, service providers, universities, member states, or the European Commission. This requires not only financial commitment, but also investment in human resources.

In 2020, intermodal transport is seen to be the natural choice for the movement of goods in Europe. By 2020, the European intermodal transport system, featuring also Multimodal and Combined Transport, is envisaged as accounting for 40% of the movement of goods, as the transport of freight, even bulk, will become increasingly unitised. Intermodal transport will be an industry with its own identity, its own strategy, and its own voice.

This consistent use of intermodal transport will enable Europe to:

- Cope with the growth of demand for transport and associated services
- Lower the burden on the environment
- Enhance competitiveness

In order to meet the challenge, the intermodal transport system needs to be:

- **Seamless**: barriers of modal exchange at nodes are minimised
- **Reliable**: deliveries are punctual and commodities are undamaged
- **Available**: door to door services are provided 24X7, and Europe-wide
- **Accessible**: customers deal with one stop shops / single entry points
- **Secure**: commodities get into the hands of those entitled to receive them, and no intrusions are possible;
- **Sustainable**: built to last and strikes the right balance between the cost to the customer and achieving the overall objectives of society
- **Accountable**: customers have a contract with one party responsible for performance during transport
- **Affordable**: intermodal transport is in the position to offer competitive prices to customers and sufficient profits to operators and investors
- **Transparent**: all stakeholders understand the relation between public costs and market prices (per infra / slot / facility / commodity).



Photo courtesy of Die Bahn

4.1 INTRODUCTION

Trade is becoming more and more globalised. There is a large increase in trade from the Far-East, mainly China. Add to this, the shift of production to Eastern Europe and the result is a major shift in the flow of goods and a large increase of the transport volume (see table).

SOURCE	DESTINATION	1997 MTEU	2003 MTEU	Change
Europe	USA	1.5	2.2	+ 47%
USA	Europe	1.5	1.6	+ 7%
Far East	Europe	2.9	5.2	+ 79%
Europe	Far East	2.4	3.2	+ 33%
Far East	USA	4.8	9.4	+ 96%
USA	Far East	3.5	4.3	+ 23%

Changes in Trade Balances between the major Trade Blocks

Source: Drewry Shipping Consultants, in: *Container Market Quarterly*, Dec 2003

Since availability of the goods is of major significance, the importance of logistics services and the magnitude of transport for the economy increases. transport has become important as an economic sector in its own right.

When the transport system stagnates or collapses, it influences the economy directly. The stakeholder controlling the logistics chain, will play a leading role in the global economic of the future.

Globalisation of trade has consequences on different levels.

Geographic. Raw materials and production do not have to be on the same location. Places of business are mostly determined by costs and the accessibility. But accessibility is, in turn, determined by the capacity of the transport system. As manufacturers relocate production to Eastern Europe or Asia, therefore stretching the logistics chain throughout a wider geographical area, the impact on the European transport system is significant. Large sea hubs have to manage the large growth of volume and a network of rail, road and waterways has to deliver a seamless high quality service. To get the goods from China to Europe in time, a part will go by land. New markets and production sites will come up in Northern Africa, namely Tunisia, Morocco and Algeria. This will again result in a shift of transport flows.



Source: Audiovisual Library of the European Commission
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Another geographic trend, starting to occur in the final consumer goods sector, is the decline of single European Distribution Centres (EDCs) and the increase in regional distribution centres closer to markets and centres of population. These regional centres are also used to customise products. For commodities, EDCs will still be built, but a shift to the east is foreseen as consumer markets in Eastern Europe grow.

Customs and quality controls will not be limited to a single location (e.g., large sea hubs), but will take place on different locations since the congestion in one location leads to a stand still of transportation and therefore influencing the economy.

Macro-economic. The distance between production and consuming markets is for intermediate goods getting longer, so investments are made across larger distances. National economies are not leading anymore. Global patterns have higher flows and take longer to stabilise, due to international dependencies.

Logistics services. Since trade is becoming more global, logistics chains are becoming more complex and need to be managed globally. New stakeholders will appear which offer intelligent supply chain solutions, to be able to deal with the increased complexity. These organisations will have a high level of education and will be leading in ICT. The party controlling the capacity or managing the logistics chain gets a leading role. Flexibility/Agility is the key word. The flexible use of services takes a different type of organisation, where subcontracting is a necessity to stabilise the large differences in the need for capacity. They will use many subcontractors in intermodal transport and changed combinations of subcontractors regularly.

Organisation. Due to low labour costs, not only will production shift to the East, but also trucking and other low cost jobs will tend to be done by Eastern Europe labour. Many of these companies will be owned by Western, Central or Southern European companies.



Photo courtesy of Procter & Gamble

4.2 POLITICAL AND LEGAL FRAMEWORK

Europe needs intermodal transport to be an enabler of the internal market. In order to achieve this goal a minimum of political and legislative initiatives have to be taken, particularly in the following fields:

- Technical interoperability beyond the generally targeted intramodal interoperability; the seamless logistic chain requires the intermodal technical interoperability. The technical specifications have to be prescribed by the business community and endorsed by standardisation organisations.



Photo courtesy of Die Bahn

- The transport administrative documentation must be unified for all modes and in all countries. They must respond to the needs of all partners in the transport chain, operators, terminals, customs and police services etc.
- The information technology has to build a system allowing the transport of all necessary accompanying data as loading bill, operational data and the use of relating equipment like tags and electronic seals, compatible with the international satellite positioning systems. Protection of commercially or personally sensitive data has to be guaranteed. Transfer of information relevant to intermodal transport should be made compatible with the standards in use by Container Shipping Lines and Terminals.
- A coherent infrastructure policy has to be defined and executed by the EU and the Member States, so that priorities for investment along the axes appropriate for the growing continental and intercontinental transport flows, are accompanied with suitable financial instruments for their implementation.
- Worldwide compatible security and safety standards and rules have to be established.

4.3 THE NETWORK

The European Intermodal Transport services at 2020 will operate on a safe, available and secure EU Network of physical infrastructures, made of links (rail, roads, and inland waterways) and terminals (ports, freight villages, motorways of the sea, and inland waterway terminals). Compared with the current EU transport network, the network in year 2020 should supply more capacity to accommodate the growing demand for transport of the time, featuring higher level of safety and security, and seamless interoperability between modes.

The European Network at 2020 will be a network of networks, each one centred on a hub, and connected among themselves by seamless railway links or deep-sea services. Very Large Container Carriers (or Huge Container Carriers) will connect the deep-sea hubs, whilst shuttle trains, new generation of feeders, and barges will guarantee the transfer both from the Sea to the inland network, and between the different land-hubs.

The selection of well-defined sea main routes and the efficient integration of ports with the landside and the Trans-European Transport Network will be a challenging issue for the future of the overall transport system in Europe, and the market will lead the process to identify the hub-locations.





Photo courtesy of Europe Container Terminals

4.4 SEA HUBS AND THE MOTORWAYS OF THE SEA

The majority of overseas traffic flows will be served through a limited number of European sea-hubs, i.e., big deep-sea terminals. Those new sea-hubs will feed regional services by feeders and short-sea ships to other ports; at the same time, sea-hubs will be connected by dedicated railway links or waterway links to land-hubs, i.e., new and bigger freight villages, conveniently located to serve the surface networks (mainly rails and inland waterways, but also road for short haul). Such sea-hubs could include off-shore port facilities, in case the current exploitation of the waterfront would not allow for the realisation of any sustainable on-shore port facility or terminal.

Sea-hubs will provide quick turnaround time for deep-sea vessels by fast cranes. To achieve this turnaround time, the cranes will have an average of more than several hundred lifts per hour, having multi-quay cranes operating in parallel on the vessel. Cranes will have high grades of utilisation as they are continuously served by a fleet of automatic shuttles queuing underneath, waiting for containers to move from the quay to the yard or directly to the second modalities and vice-versa. Moreover berths can allow dual mode of ship loading, vertical and horizontal, at the same time, accordingly with vessels features.

The Motorways of the Sea will be the main arterial sea routes to connect the Sea-Hubs to the regional land networks. The Motorways of the Sea will ensure the inter-linkages and cohesion between the regional ports and the economic regions in their hinterland, and the production and distribution centres, taking into consideration the TEN-T Corridors and the priority projects/supported actions.

4.5 LAND SERVICES, LAND-HUBS AND INLAND TERMINALS

Land services between sea and land hubs and among the latter, will be provided over a European railway network with separate tracks dedicated to freight, where long, double-deck, heavy axle-loaded, multi-locomotive trains could be operated thanks to the extended gauge. Freight railway links will improve availability and punctuality of services, a must for effective and efficient intermodal transport.

New and efficient **inland waterway services** will cooperate with road and rail. For instance, networks of scheduled container services by water will be implemented, using large motor vessels or flexible convoys with several barges. Inland waterways will also be used to cover shorter distances and deliver pallets to retail distribution centres. New stackable loading units and transshipment techniques will be introduced, resulting in new transport volumes for inland navigation.

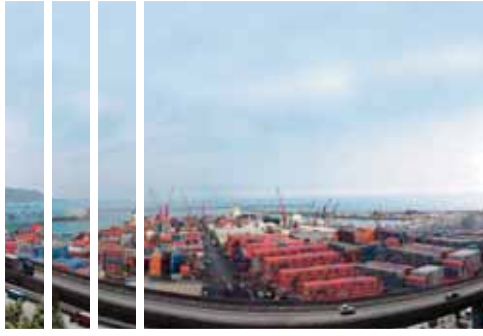


Photo Courtesy of Gallozzi

Vessel emission levels will be drastically reduced and inland navigation will have retained its leading safety and environmental record. Sustainable and future-oriented employment and entrepreneurship in the inland navigation industry will guarantee further professionalism, more than the half of all vessels will be active in regular liner services.

Tri-modal land-hubs will provide fast transshipment between rail, inland waterways and road services. Similar transshipment points will evolve at major international air hubs connecting air freight services to regional road and rail networks. Horizontal transshipment will be one (important) way of loading and discharging trains, thus reducing the idle time in terminals by eliminating manoeuvres. In fact, electric locomotives will no longer need to be detached from the trains, as transshipment could be done under the overhead catenary.

Load and discharge will be done for more containers at the same time and at two decks, since trains and the dedicated railway network will have a gauge tailored for double-deck trains.

Conventional inland terminals, as today's ones, will still be operating, serving regional traffic and local distribution. At these sites, fast but cost effective horizontal transshipment will take place to load and discharge trains and barges for inland waterways. Small lifting equipment would be used for loading of trucks, when needed for short haul.

4.6 THE INTERMODAL TRAIN OF THE FUTURE

According to the vision of the European Rail Research Advisory Council (ERRAC), trains connecting major network hubs would be longer than today's, be pulled by teams of locomotives, driven through lines connecting the sea-hubs with land-hubs, and land-hubs among themselves, mainly dedicated to freight traffic. Running at a higher speed, combined with reduced transshipment times, they will contribute to increase the commercial speed, also bringing punctuality at the highest performance ever. To improve the effectiveness of transshipment with deep-sea vessels in sea-hubs, trains will provide more rooms for intermodal loading units, thanks to double deck and increased length features. Shorter distances would be covered by shorter trains, to better fit the demand for transport typical of the shorter distances.

With longer trains on a pan-European backbone network, efficient feeder and distribution networks become imperative to secure sufficient utilisation levels outside "natural" consolidation points such as seaports and air hubs.

These will include both modular short trains, and road transport with single trucks up to “road-trains” with electronic coupling. A network of intermodal transfer points of various size and reach will facilitate seamless transitions of cargo between the backbone and regional networks.

Horizontal transshipment will be eased by automatic locking on container castings or on tray castings, in combination with the automatic positioning of the train at the loading floor.

4.7 THE INLAND BARGE OF THE FUTURE

Dedicated container vessels will be in operation on a large scale. Depending on the operational area, either large self-propelled vessels with 700 TEU or pushed convoys - combining 4 or even 6 barges, each carrying 150-200 TEU – will be used. New markets will be opened for inland navigation by providing innovative vessels for general cargo: they will be used as floating stock, the entire loading and unloading process is automated and it is possible to get the orders for the following port ready en route. General fleet modernisation will result in higher logistics efficiency and lower operating costs. The introduction of technology to further reduce fuel consumption and harmful emissions, e.g. hydrodynamics, improved propulsion, fuel-efficiency and filtering techniques, will allow inland navigation to maintain its high standards. Meanwhile, research into commercially viable non-carbon fuels, e.g. hydrogen fuel cells, and zero-emission engines has come to remarkable results. ICT and River Information Services (RIS) will be deployed on a large scale, making use of harmonised systems and supporting traffic and transport management along the entire door-to-door logistics chain.

4.8 THE CONTAINER VESSEL OF THE FUTURE

In 2020, the ‘gigantism’ of Container Carriers is a trend that will continue. 18-20.000 TEUs vessels will be sailing between sea-hubs, serving Europe. These vessels will be faster than today’s, powered by new and greener propulsion systems, using less pollutant fuels, respective to more restrictive regulation on air emissions, and more “silent” to safeguard wildlife at sea. To reduce duty cycles at ports, the new generation of vessels would combine the advantages of dual container loading: horizontal, by making use of automatic shuttles rolling on and off the vessels, and vertical, using batteries of container cranes in parallel loading more containers under the same spreader, at the same time.



Photo courtesy of Europe Container Terminals



Photo courtesy of Kalmar Industries

Very Large Container Carriers will be backed, for regional, Short Sea Shipping and Motorway of the Sea services, by the new generation of feeders. These feeders will be featuring higher cruise speed provided by greener engines.

4.9 INTERMODALITY AND THE ENVIRONMENT

The increase of traffic flows and transport worldwide causes environmental damage, such as air emissions, noise impacts, climate change, and other 'external' costs such as congestion, accidents.

One of the main goals of intermodality is to reduce the environmental impacts of transport.

Recent transport research at European level (e.g. REALISE, Environmental Transport Performance Assessment) reveals that the environmental impact of intermodal transport, especially where short sea shipping legs are involved, shows a better performance than uni-modal road transport, concerning CO₂ emissions, noise, congestion and accidents. Despite these advantages, further environmental performance improvements in all the transport modes are needed in order to cope with the foreseen increase of transport in the next decade.

To achieve these targets, intermodality needs further research and increase of awareness in the following areas: local and global air emissions, fleet and engine techniques, noise pollution, congestion and accidents.

4.9.1 Climate Change Issues

An important environmental issue is the reduction of emissions of greenhouse gases, especially CO₂ that are generally regarded as main contributor to global warming. In this respect, ships and rail keep outperforming road transport on a ton-km basis. Regarding rail, by 2020 a 20% improvement in terms of reduced environmental impact related to electricity generation compared to a current situation can be assumed, and a 10% improvement for diesel traction on CO₂. Lean-burn engines and alternative fuels can be expected to achieve improved conditions also in the road sector, however the advantages of larger collective transport modes such as ship or rail in this regard can be expected to prevail.

4.9.2 Local Air Pollution

Another important environmental issue is the need to reduce local air pollution by SO_x, NO_x and particulates. All three pollutants are rated as among the most damaging pollutants of transport to society.

In the road sector, emissions of these pollutants are further restricted with the enforcement of the Euro IV standard in 2005 and Euro V in 2008. The principal merits of these must however be reviewed against the development of overall road traffic volumes, and the continued use of older vehicles still adhering to lower emission standards. The performance of maritime transport with regard to air emissions will be strengthened by the marine sulphur directive, published by the European Commission in 2005, which is intended to lower sulphur levels in marine fuels down to 0,1% from January 2010 (Directive 2005/33), reducing the relevant emissions of SO_x by 40%. Meanwhile, the compliance with the MARPOL regulation will have reduced NO_x emissions by nearly 70% at 2020.

4.9.3 Noise Emissions

Noise pollution is another serious local problem in relation to road, rail and air transport, regarding the exposure of both workers and residents or other third parties. Regulations such as the EU Noise Directive are tightened on all sources of noise, including the various transport modes. Technologies and procedures for noise abatement are consequently being enhanced to ensure compliance with new standards. For example, the rail sector will have improved environmental performance by lowering noise emission by -20 dB at 2020 with respect of 2005.

4.9.4 Congestion

Congestion has a negative impact on the economy in the form of lost time T&E (Transport & Environment/Commission's Green Paper: costs congestion EU: 5%GDP). It also influences negatively the use of fuel and therefore has unwanted impacts on emissions to air and global warming. As far as congestion is concerned shifting of freight from road-only chains to intermodal transport chains will lead to smother operations with less time loss, improve of environmental performance.



Photo courtesy of Die Bahn

4.9.5 Accidents

Accidents are a function of exposure to traffic or traffic intensity (e.g. amount of vehicle or tonne kilometers) and risk probability per traffic intensity unit. Trucks are regularly involved in major accidents where highways and roads are crowded or congested. Increasing intermodality will reduce the intensification of traffic flows and reduce the risks of having accidents.

4.9.6 Internalisation of External Costs

If there is to be a move to a more sustainable intermodal transport, then it will need to be accompanied by a pricing structure that reflects, in market prices, the resource costs to society. In so far as this is done by the appropriate internalisation of external costs, via taxation, then it will mean that the relative prices of the less sustainable modes will rise. The aim is to shift usage to the more sustainable modes and not to increase overall transport costs.



Photo courtesy of Die Bahn

4.10 EDUCATION AND TRAINING

By 2020, the intermodal industry and related service providers have access to a large, highly skilled and motivated, gender-balanced intermodal work force. It is a personal goal of young people to become intermodal manager/organiser who designs efficient and effective logistics chains based on unbiased neutral information and documentation. He must have 'creative intelligence' and the skills to forge strategic alliances with partners in the logistics chain, to forecast demand, to make well-balanced decisions about investment in intermodal assets and subsequently to know how to combine limited resources in order to make a profit. Prominent European universities, business schools and other institutes offer dedicated intermodal modules relying on a harmonised European curriculum. Students are globally connected via virtual e-learning platforms and collaborative working environments; they can use intermodal simulation games and decision-support-tools to design new logistic solutions. Agreements with key stakeholders boost the implementation of on-the-job-training, e.g. work placements inside large sea and inland hubs which have emerged.

On the basis of the vision of intermodal transport at 2020 and having in mind the business scenario depicted for the same horizon, the EIRAC has selected research priorities in the Strategic Research Agenda. The selection of priorities has been done on the basis of objective criteria that EIRAC has established, taking into account relevant policies related to the fields that have been found to be the most important:

- Interoperability between modes;
- Logistics ;
- Security;
- Socio-economic aspects;
- Education and training.

5.1 THE SKETCH

Each field, or research pillar, is intended to contribute to the achievement of one or more characteristics which intermodal transport shall feature in 2020 to sustain the European Competitiveness.

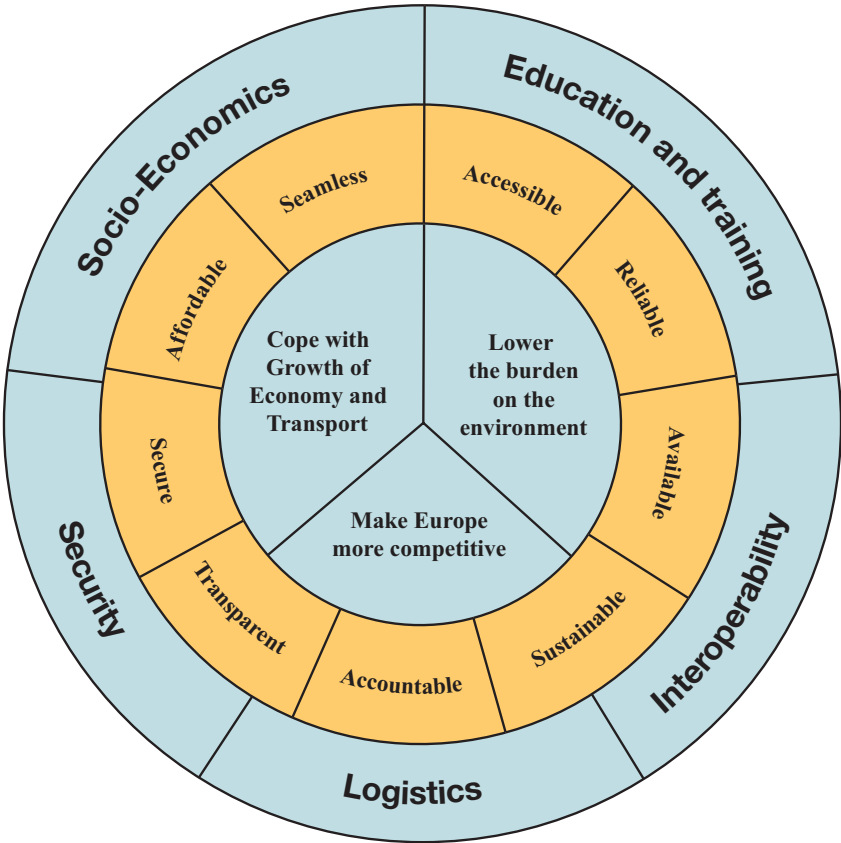




Photo courtesy of Die Bahn

The previous picture represents the 9 main characteristics of intermodal transport depicted accordingly with the vision, as they are expected to contribute to the achievement of the strategic objectives for Europe. The 9 features shall be reached as the improvements in the five pillars of research are completed.

The following sections of the Strategic Research Agenda describes the main research items identified for each of the 5 pillars of research; which would contribute to the improvement of the 9 identified features of intermodal transport according to the following table:

	Interoperability Between Modes	Logistics	Security	Socio- Economics	Education and Training
Seamless	✍	✍			✍
Accessible		✍			
Reliable	✍	✍	✍	✍	✍
Available		✍		✍	✍
Sustainable	✍			✍	
Accountable		✍			✍
Transparent		✍		✍	✍
Secure			✍	✍	
Affordable			✍	✍	

5.2 INTEROPERABILITY BETWEEN MODES

5.2.1 Introduction

Intermodal transport in Europe is on the way to a second revolution. Through new cooperative partnerships, changes in behaviour and the adoption of a long term strategy, intermodal transport can eventually reach its full potential across the whole logistic chain. However, to make this happen, extensive investment is required in infrastructure, equipment and information systems in order to improve the transfer of loading units between the various modes of transport – rail, ship, barge and road. The Working Group on Interoperability Between Modes has identified the following themes for research.

5.2.2 Standardized Intermodal Equipment

A standard loading unit is central to efficient intermodal transport. In inter-continental trade, the standard loading unit is the ISO container. Within Europe, goods are typically transported on Euro pallets, but these pallets are not fully compatible with ISO containers. This problem was identified several years ago, but instead of one solution (standard loading unit) being introduced, competing solutions are now in use (e.g. pallet wide containers, swap bodies, semi-trailers). This different equipment means reduced interoperability and the resultant uncertainty has reduced investment. This has slowed the growth of intermodal transport within Europe.

Research is required into

- how to quickly agree on the design features (carrying ability, stackability, handling ease and flexibility) of a standard loading unit for Europe;
- the design and implementation of a worldwide compatible loading unit.

5.2.3 Transfer Nodes

Intermodal transport involves the transfer of loading units from one mode of transport to another. Based on current intermodal activity, there is a projected terminal transshipment capacity shortfall of 1.7 million loading units in Europe by 2015. Any real increase in intermodal transport will require a significant additional increase in transfer nodes across Europe. Increased interoperability depends upon access to sufficient transfer nodes.

Research is required into the setting up of a network of transfer nodes around Europe and should encompass the merits of using both public and private sector investment.

5.2.4 Consistent Regulations

Throughout Europe, there are different national regulations applied across many areas of transport. For example, ISO containers transported by road are subject to different regulations for trailer dimensions in different countries and some countries permit a lower total weight on the road. Rail companies, whilst moving towards greater harmony, still follow their own national standards. These differences constitute barriers to the seamless and flexible interoperability which intermodal transport depends upon.

Research is required into the synchronizing of such regulations across Europe.



Photo courtesy of Die Bahn



Photo courtesy of Die Bahn

5.2.5 IT Systems

The only way truly joined up intermodal transport can function is through the use of information technology. Open IT systems are needed to support booking, invoicing, tracking, transshipment and crucially to allow the user to be fully informed. This is essential to maximising interoperability between modes.

Research is needed to define the most suitable IT system which can serve the needs of all the participants.

5.2.6 Transport Documentation

In order to enhance interoperability within Europe (and even beyond), a simplification of document handling, customs procedures and of contracts is required. The objective of “No Paper at all” is attainable.

There needs to be research into harmonizing paperwork/e-paperwork and reducing the number of transport documents.

5.2.7 Systems of Transfer

Within the intermodal process, loading units are transferred from one mode to another : ship to train, train to road, ship to road, road to barge. Some of these transfers are less efficient than others. This is because either the handling equipment used is not totally compatible or because the system of loading and unloading involves unnecessary re-handling of loading units.

Research needs to be carried out into the most efficient transfer methods available and into when and where they should be applied. It is assumed that with regard to any and all developments that the maintenance of safety standards will remain paramount.

5.2.8 Awareness of Intermodal Transport

The complexity of intermodal transport makes it appear difficult and ineffective. Such beliefs are reflected in assumptions about the interoperability between modes. Thus, investing in infrastructure, equipment and information systems to improve interoperability will only be effective if efforts are made to increase the level of awareness amongst all those who could participate in intermodal transport.

Research must be conducted into the best way to promote intermodal transport in all its aspects. Promotion includes, not only the launching of new products and services, but also the continued life long awareness amongst the target audiences.



Photo courtesy of Die Bahn

5.3 LOGISTICS

5.3.1 Introduction

In the growing demand for transport services, Intermodal transport will become a major player.

From a logistics perspective, the most economic mode or combination of modes will always find its way. This has a few implications:

- not all modes have the same initial framework conditions/the same chances;
- this will not automatically lead to the combination of modes that are least destructive on the environment;
- interoperability between modes is a crucial factor to ensure 'seamless' transport and ensure a high level of efficiency (lowest possible costs, shortest timeframe).

Considering this, the EIRAC WG on Logistics proposes the following topics for the Strategic Research Agenda.

5.3.2 Harmonised Framework Conditions for all Modes

Equal opportunities should be created, something that is not the case today. There should be a level playing field in which all modes pay for the external costs they create and price tags are comparable. Also the cost of security measures is not equal for all modes. Of course, all modes are equally liable to optimise strengths and minimise weaknesses in their own respective niche in the market, based on a level playing field. It is important that a European common policy ensures that all modes have equal conditions as external costs are internalised and that the same conditions apply in all countries (and 'non-European' suppliers have to comply with this). The barriers for changing to equal conditions for all modes are first to be identified, by economics and behavioural research. Once barriers are detected, a roadmap for the implementation of equal conditions for all modes shall be produced, identifying those conditions to be implemented at the EU level, along with others that might be implemented by private investors.



Photo Courtesy of Trinity Rail

5.3.3 High Quality and Efficient Intermodal Services

Intermodal transport requires high quality and very efficient services from all modes. Technology platforms like ERRAC and ERTRAC promote the research that is needed for the single modes. EIRAC will therefore set research goals that are not only specific to a single mode, but will rather formulate research goals related to the interlinking of modes.

To be competitive, intermodal transport should deliver a high quality service (seamless, fast, and reliable) and be highly efficient (low costs). 'Integrated Freight Transport Management Logistic Systems' have been examined/developed in a number of projects. However, there is still an apparent need, as EUTP ('Supporting Research Activities in the EUropean Transfer Points') reports, to ensure that some key issues are further developed. In addition to the research topics proposed by the WG Interoperability, the WG Logistics proposes research on:

- Information technology and logistics must be integrated to form the “smart supply chain”, embedded in a common EU intermodal, cross-border strategy;
- IT system to control all points in the supply chain (based on harmonised information availability and automated tracking & tracing features), including terminals and transshipment points;
- Methodologies and tools for global repositioning of loading units;
- Co-operation and liabilities between transport operators (service quality, reliability, cargo conditions of carriage, legal, competition and insurance issues, loss and damage issues);
- Harmonisation of document handling and customs procedures, contracting, and permitting;
- Different financing schemes.

5.3.4 European Intermodal Network

At this moment in European intermodal transport networks cooperation between stakeholders (including shippers) is mostly vertical in a client – supplier relationship. European networks will evolve from flexible to responsive to agile in the next 5 years. Research is needed on the requirements of agile European Transport networks, where many shippers and service providers (and modes) work together. A very important part of this research is cooperation issues (how to define costs and benefits).

Another important part of this research is on the 'last mile' including city logistics. For intermodal transport this will mainly mean research on the interface between intermodal transport and last mile logistics.

5.4 SECURITY

5.4.1 Introduction

Transport security is the combination of preventive measures and human and material resources intended to protect transport infrastructure, vehicles, systems (incl. for data transmission), cargo and workers against intentional unlawful acts. It should relate to the supply chain, i.e., between factory gate, expedition point and recipients (end-users) or export gate. Although substantial improvements took place in the last few years, such a combination of measures still suffers from lack of harmonisation in legislation and regulation at both EU and International levels, thus leading to unbalances in application. This is a major hindrance to achieve secure supply chain, as Security in a Supply Chain is as strong as its weakest Intermodal link.

The EIRAC WG on Security aims at providing the right answer to the Intermodal Security issues by promoting and investing in research, innovation and policy making by:

- Fostering the integration between the different players: Shippers, Carriers (different modes of transport), Terminal Operators, Customs, moving from bi-lateral to multi-lateral acceptance;
- Defining opportunities for coordination of international security initiatives;
- Creating a Code of Conduct for Intermodal Security;
- Establishing common rules for the assessment of mitigation measures;
- Promoting innovation in physical security, focusing on the features of inter modal transport, and paying particular attention to mitigate consequences of unlawful acts on dangerous goods.

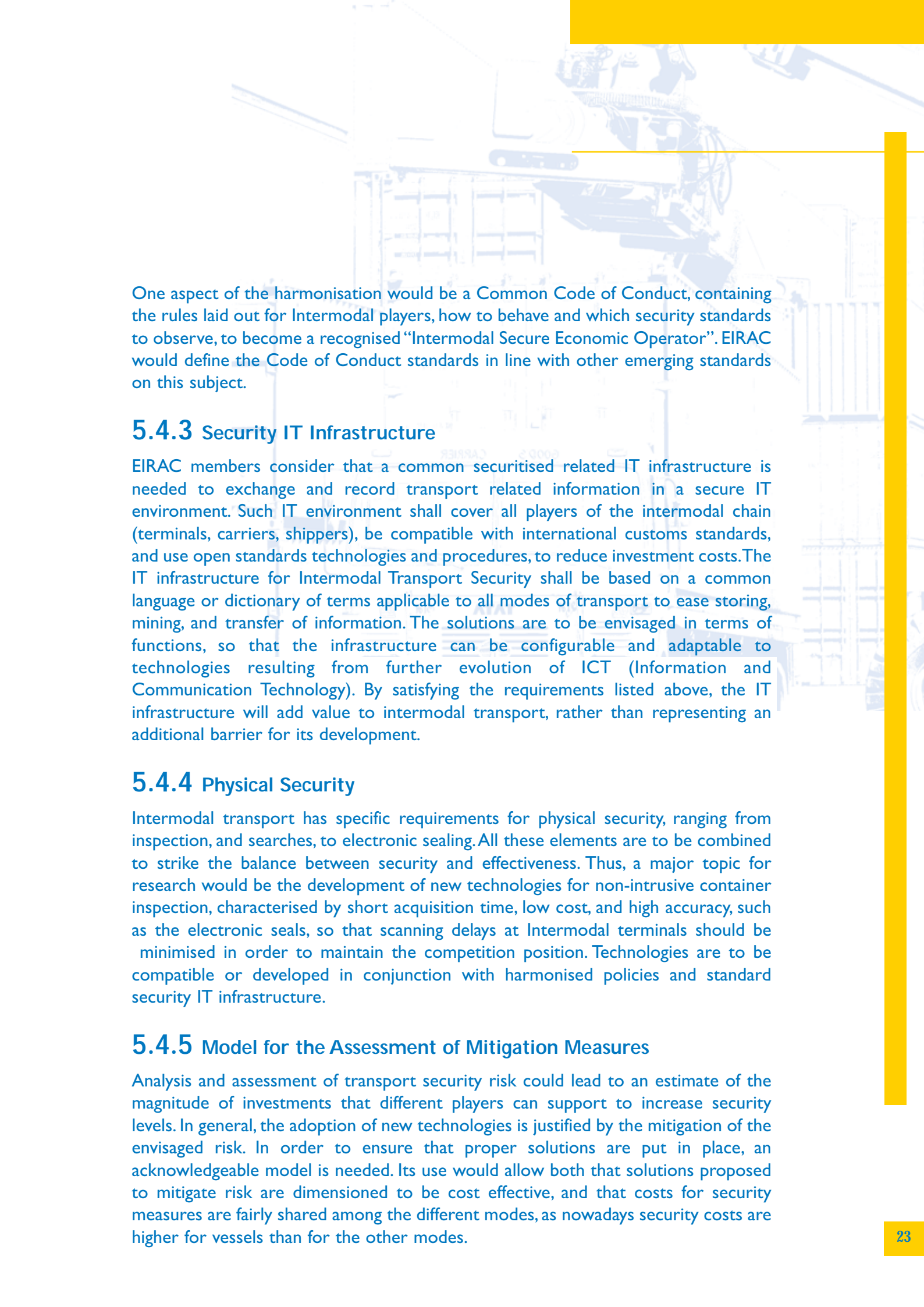
5.4.2 Harmonisation of the Security Policy Framework

Different initiatives are taking place at National and European level to increase security in transport system. The EC has launched studies to assess the effects of a new security directive for European surface transport, to be harmonised with the Port Security Directive and the Airborne International Security rules. Studies aiming at achieving harmonisation of the identification of security-critical transport infrastructures are in also progress.

It is important that a European common policy to secure freight transport is developed and put in place, accompanied by suitable and common liability policies, by the creation of a forum for international cooperation and information exchange in the area of transport security, fostering the growth of a security culture by harmonising security policies of Member States, Accession Countries and main traders.



Photo courtesy of Europe Container Terminals



One aspect of the harmonisation would be a Common Code of Conduct, containing the rules laid out for Intermodal players, how to behave and which security standards to observe, to become a recognised “Intermodal Secure Economic Operator”. EIRAC would define the Code of Conduct standards in line with other emerging standards on this subject.

5.4.3 Security IT Infrastructure

EIRAC members consider that a common securitised related IT infrastructure is needed to exchange and record transport related information in a secure IT environment. Such IT environment shall cover all players of the intermodal chain (terminals, carriers, shippers), be compatible with international customs standards, and use open standards technologies and procedures, to reduce investment costs. The IT infrastructure for Intermodal Transport Security shall be based on a common language or dictionary of terms applicable to all modes of transport to ease storing, mining, and transfer of information. The solutions are to be envisaged in terms of functions, so that the infrastructure can be configurable and adaptable to technologies resulting from further evolution of ICT (Information and Communication Technology). By satisfying the requirements listed above, the IT infrastructure will add value to intermodal transport, rather than representing an additional barrier for its development.

5.4.4 Physical Security

Intermodal transport has specific requirements for physical security, ranging from inspection, and searches, to electronic sealing. All these elements are to be combined to strike the balance between security and effectiveness. Thus, a major topic for research would be the development of new technologies for non-intrusive container inspection, characterised by short acquisition time, low cost, and high accuracy, such as the electronic seals, so that scanning delays at Intermodal terminals should be minimised in order to maintain the competition position. Technologies are to be compatible or developed in conjunction with harmonised policies and standard security IT infrastructure.

5.4.5 Model for the Assessment of Mitigation Measures

Analysis and assessment of transport security risk could lead to an estimate of the magnitude of investments that different players can support to increase security levels. In general, the adoption of new technologies is justified by the mitigation of the envisaged risk. In order to ensure that proper solutions are put in place, an acknowledgeable model is needed. Its use would allow both that solutions proposed to mitigate risk are dimensioned to be cost effective, and that costs for security measures are fairly shared among the different modes, as nowadays security costs are higher for vessels than for the other modes.

5.5 SOCIO-ECONOMICS

5.5.1 Introduction

The term “socio-economy” has a clear business meaning which is recognisable and understandable by all those who invest in innovative transport solutions.

It is all about minimising the risk of innovation in both economic (possibility of failure to bring the results to a profitable market implementation) and in social terms (possibility of denying acceptance by some stakeholders for employment, organisational safety or environmental reasons).

The development in world economy and hence transport require that every new initiative should address the critical factors of change and time needed to put in place new structures, new products and services. Socio-economics is the prevision of the future and exploiting its opportunities. Social economy, on the other hand, is financing a social safety net for those affected by the future changes.

The socio-economic challenge is to build the future today; tell our children what we do is right, and to guarantee for a seamless, reliable, available, accessible, secure, sustainable, accountable, affordable, and transparent transport in Europe.

5.5.2 Intermodal transport innovation scenarios

The focus is on identifying the opportunities that changes in world trade and transport have on intermodal transport and in particular the European business community.

Furthermore, it will assess the consequences of major innovative technological initiatives, which are path-breaking such as the introduction of floating terminals, in relation to EU intermodal transport processes, different transport professions etc.

The world economy is rapidly changing face and dimension, and the European Union is no longer the undisputed leader. China aims to have 50% of world's production within the next 20 years, and is getting prepared for that by building new transport infrastructures every year at a much higher rate than any other western country. Other Far East countries are also building up quickly their production, transportation and financial strength. From all these developments we can only expect a growth of the total transportation worldwide, and Europe has to get prepared for that.

To respond to these developments, internal competition on individual basis does not seem to be an option, neither on Member State level, nor on company level.

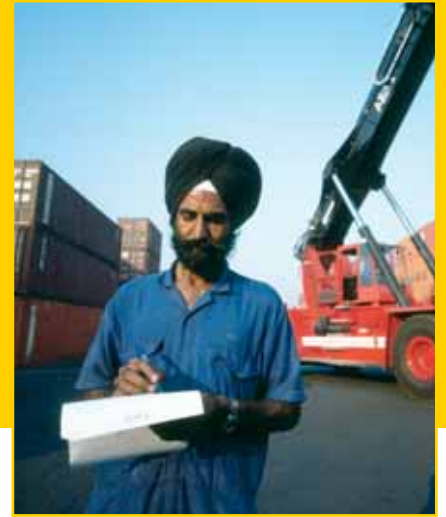


Photo courtesy of Kalmar Industries

The building of a safety net for the EU transport sector as a way forward in order to cope with the negative consequences is also not an option, as the question of future employment of all European workers who risk losing their job as a consequence of the shift from Europe to Far East does still not have an ultimate answer.

The only way forward is to look for new opportunities, to create a stronger and smarter EU network where the difference can be made. This may relate to quality, environment, safety, security; but it will certainly demand a co-operative, EU wide and cross-modal answer.

The aim of this line is to have a permanent structure to identify and prepare strategic scenarios on investments in EU innovations and EU transport capacity.

The result of this first action is to achieve consensus on an efficient answer in terms of technology and organisation to the rapidly developing changes in world economy and transport at a strategic level.

5.5.3 Specific Solutions

The EIRAC vision contains ambitious objectives that have to be matched by ambitious products and services in terms of logistics, interoperability, safety and security.

When embarking on the path of innovation, the public and private decision-makers are in need of a socio-economic business approach that systematically identifies all issues and persons or groups of persons that impact the final success of innovation.

Innovation should be accompanied by a specific business plan for each specific innovative product that is being targeted.

The approach must allow foreseeing the consequences that innovations will have:

- in economic terms (competitiveness and indirect costs such as environmental impact);
- in social terms (creation of new professions, job losses but also structures of co-operation between various stakeholders, migration from “obsolescent” knowledge to new knowledge, safety & security).

It must also allow assuring all the required commitment and investment for major innovations from the outset.

The result must be an approach to minimize the risks that innovations will not yield the targeted implementation and results.



Photo courtesy of Procter & Gamble

5.6 EDUCATION & TRAINING

5.6.1 Introduction

There are a number of urgent human resource developments influencing the growth potential of intermodal transport in 2020. The growth of intermodal transport will generate a huge demand for skilled intermodal work forces which cannot be satisfied easily.

The geographical changes in the logistic landscape will make Europe need new innovative strategies and concepts. Managements will be required to form a new kind of global intermodal logistics network, canalising the massive number of containers entering and leaving Europe towards enlarged and efficient in the seaports.

Undoubtedly, this will generate a huge demand for skilled intermodal work forces which cannot easily be satisfied. Europe needs alternative skills for the handling industry enabling the workforce to deal with the growing congestion of transport infrastructure. At the same time, new efficient hinterland strategies including new logistic terminal IT concepts from sea to hinterland / inland ports has to be researched. It will be essential to attract young people; develop a higher supply of skilled workforces to fully exploit the potential of new solutions, and create the image of an 'intelligent' intermodal profession.

Under these assumptions, the WG on education and training suggests that the following themes are investigated, to boost the evolution of the intermodal industry, so that the impressive challenges foreseen in the vision are properly tackled.

5.6.2 Attract People to Work in the Intermodal Sector

The transport sector as such has to compete with more attractive sectors (telecommunication, energy etc.). It is essential to attract young people, men and women, to cover the demand for intermodal workforce. Therefore the image of the transport profession including typical 'smart' intermodal characteristics has to be improved, aiming to attract a higher supply of skilled workers. One option or 'starter' for Europe is to research how to make the transport sector more appealing, via traditional educational channels but alternatively also via media channels. It is all about starting the circle! Another option or "starter" could be the development of 'embedded' education and training measures, e.g. linking the education sector to the practitioners.

Due to the geographical changes in the logistic landscape, Europe will need new innovative strategies and concepts enabling managements to form a new kind of 'reverse' global logistic chains, especially in the growing Asian-EU context.

5.6.3 Harmonise the European Intermodal Education & Training Curriculum (What Should be Taught?).

Within this council, the education of the operative personnel in the transport modes (e.g. train or truck driver) is being dealt with only generally, as it is already covered by the specialised councils on Rail, Road, Air and Waterborne transport. We focus on the education and training of an "intermodal organiser/manager", a person responsible for combining the typically system advantages of different modes of transport to a cost and time-efficient transport chain, while having access to un-biased information and documentation.

Based on the development of a harmonised European competence profile for this intermodal organiser a specific curriculum (modular, different levels, junior and senior) has to be developed in cooperation with educational institutes and industries. (the results of the DG TREN ISIC project, Task E3 should be considered).

Current and future, and especially emerging technological developments will need to be proactively integrated into the curriculum. For example, the Galileo technology or Security Regulations will have great influence on management decisions. This may involve different cost/benefit analyses as consequence of the opportunities arising from new ways of (data) communication and applications; more precise technologies in the area of tracking & tracing etc. and also new working procedures (ISO and other quality standards) in the sector. Finally, the needs of educational institutes and practitioners concerning training content must be evaluated and considered in the following research area.





Photo courtesy of Procter & Gamble

5.6.4 Develop New Methods of Intermodal Learning and Training

Several studies show that there is a need for new and comfortable methods of education within intermodal transportation (EU project ISIC: only 5% of transport universities offer dedicated intermodal training modules).

There must be an assessment of the existing methods and an estimation of the impact of new methods which could be:

- Paper matter (printed) handbooks (“Intermodal A-Z”) as concrete reference point for the intermodal industry based on existing handbooks and EU & national project results and market best-practices (e.g. researching cost/benefit solutions of the implementation of the available R&D results in cooperation with the manufacturing industry);
- digital and interactive handbooks, CD ROMS, Media material;
- eLearning-platforms, simulations, business games;
- Decision-Support-Tools (supporting the organiser of intermodal chains: planning and simulating the intermodal chain before the physical realisation, calculating: lead times, total cost, environmental costs, calculating: savings as a consequence of implementing quality standards, calculating: savings as a consequent of sustainable long term (safety and ‘green’) investments, etc. The model of digital factory in the production industry should be emulated in the intermodal transport sector. Decision-Support-Tools used in operative companies should be available for educational purposes. The future designer of intermodal chains has to know the tools he will work with in daily business;
- Networks, Collaborative Working Environment, simulation based planning platforms;
- Intermodal Development and Training Centres in the regions.

The research is to focus on methods and tools for integration of education and training into the planning processes of intermodal transport.



6.1 INTRODUCTION

On the basis of the vision, it is necessary to combine the following elements into a single framework:

- the almost critical picture of Europe (featuring a general lack of interoperability between modes, the number of investments in infrastructure not sufficiently supported by the stakeholders of the different Member States);
- the trends of global economics;
- the recognition that high private and public investment is needed in innovation and infrastructure development;
- the need for change and the time necessary to plan, design, realise and operate new infrastructures;
- the speed in which strategic decisions must be taken and implemented.

Such a framework is represented by a public/private partnership structure, developed to achieve mutual supportive public and private investments in innovation and new infrastructure on the long term.

This structure is the proper candidate to lead investments and implementation for innovation in the intermodal transport domain. In the following section, the indications for the implementation of the Strategic Intermodal Research Agenda 2020 are sketched.

6.2 THE EIRAC SETS THE AGENDA FOR FUTURE INTERMODAL RESEARCH

As indicated in the White Paper on European Transport Policy, intermodal transport is the way to more sustainable transport of goods. To make a large increase in intermodal transport possible it is essential that steps are taken quickly and effectively to upgrade intermodal services.

Through the Strategic Intermodal Research Agenda, the EIRAC clearly laid down the challenge for all stakeholders involved in the intermodal industry, whether they are industry, service providers, universities, member states, or the European Commission. This requires not only financial commitment, but also in human resources.

The Strategic Intermodal Research Agenda is not a static document. It is the first step into a process of continuous improvement. With changes in market demand, achievement of goals and legislative conditions, the Strategic Intermodal Research Agenda have to be updated.

6.3 WHERE TO IMPLEMENT THE STRATEGIC INTERMODAL RESEARCH AGENDA

Now that the Strategic Intermodal Research Agenda is formulated, the next step will be its implementation. To this aim, an implementation plan will be formulated during 2006. Involved in the implementation will be the EIRAC members, other industry stakeholders, the Mirror Group of Member States Representatives and the EC.

The implementation plan will be based on the research topics of the Strategic Intermodal Research Agenda. With each topic there has to be decided who will take advantage of executing this research and on which level, national or European, problems will be solved. This will influence what stakeholders have to be involved and where the topic has to be implemented. The next table shows the topic categories and where to implement the topics in this category.

	Public	Private
EU	Topics category 1 • To be implemented in FP 7	Topics category 2 • EIRAC members and other intermodal stakeholders • Possible EU co-financing (FP 7)
National	Topics category 3 • Member state research programs • Promote joint research between countries	Topics category 4 • EIRAC members and other intermodal stakeholders • Possible National co-financing

Topics in category 1 solve problems on a EU level and lead to public benefits. Framework Program 7 is the place to implement these topics.

Topics in category 2 solve problems on a EU level and lead to private benefits. Main investors will be stakeholders in the intermodal industry, like EIRAC members. Since this research will most of the time also benefit public goals, EU co-financing in FP 7 might be possible.

Topics in category 3 solve problems on a national level and lead to public benefits. National programs are the place to implement these research topics. It is important to try to achieve joint research between countries.

Topics in category 4 solve problems on a national level and lead to private benefits. The intermodal stakeholders will be the main investors in this research. When public goals are met, National co-funding arrangements might be possible.

The Technical Annex, which will be developed in the first half of 2006, will go into which research topics fall into which category, stakeholders' roles and responsibilities, and required budgets.

6.4 HOW TO CHECK FEASIBILITY OF IMPLEMENTATION

Implementation and investments based on the EIRAC Strategic Intermodal Research Agenda are dependent on other investments, for instance investments in infrastructure. These might serve different policy goals, and creating opposite effects. Also the research agendas of mode-related Advisory Councils will influence the investments and impact of the intermodal Strategic Intermodal Research Agenda. Therefore a quality check for implementation will have to be made regarding other investments and (policy) goals. The implementation plan mentioned earlier will go into this in greater detail.



EIRAC members:

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Vice Chairman Mr Benoît Passard, KALMAR Industries

Mr Livio Ambrogio, Ambrogio Trasporti – Mr Cumhur Atilgan, RODER – Mr Sergio Barbarino, Procter & Gamble – Mr Arjan Barto, PRO LOG B.V. -Mr Mircea Banias, N.C. Maritime Ports Administration S.A. Constantza – Mr Peter Barham, Associated British Ports Holdings PLC – Mr Eberhard Blümel, FRAUNHOFER Institute – Mr Karl Brewi, MULTINAUT Donaulogistik GmbH – Mr Fabio Capocaccia, Rete Autostrade Mediterranee S.p.A. – Mr Leonardo Carbone, GRIMALDI LOGISTICA ESPANA – Mr Giuseppe Casini, TRENITALIA S.p.A. – Mr Aldo Croci, HUPAC INTERMODAL (Cesar Informative Services) – Mr Juan Antonio Delgado, AUTORIDAD PORTUARIA DE VALENCIA – Mr Jean Loius Deyris – Mr Frank Erschkat, STINNES AG – Mr Walter Flöck, ARGE KORRIDOR X – Mr Gilberto Galloni, EUROPLATFORMS – Mr Klemens Grosse-Vehne, KÖGEL Fahrzeugwerke GmbH – Mr Srecko Krec, Railway Design Bureau Ltd. – Mr Otmar Halfmann, Regionalverkehr Mittelland AG – Mr Albert Hartmann, TRINITY RAIL GmbH – Franz-Josef Hemker, WECON GmbH – Mr Cor Hoenders, Rail Service Center Rotterdam B.V. - Mr Andreas Janetzko, UPS Supply Chain Solutions – Mr Frans Jol, GALLOZZI GROUP – Mr Frank Kho, Hesse Noord Natie (PSA) – Mr Johan Korteweg, HOYER – Mr Horst Kubek, LKW Walter Internationale Organisation AG – Mr Piet Lamon, Intercontainer-Interfrigo SA – Mr Christophe Leclerc, Port Autonome de Nantes Saint-Nazaire– Mr Dimitrios Makris, THESSALONIKI PORT AUTHORITY S.A. – Mr Karlheinz Martin, DB SYSTEMS – Mr Luigi Mor, CETENA S.p.A – Mr Wolfgang Müller, Deutsche Umschlag Gesellschaft Schiene-Straße (DUSS) – Mr Udo Niessen, INFORM GmbH – Mr Ronald Poort, Jan De Rijk Logistics – Mr Alain Poupart, SNCF – Mr Wout Pronk, Geest North Sea Line – Mr Albert Richey, RAILION DEUTSCHLAND AG– Mr Armin Riedl, KOMBIVERKEHR GK- Mr Gerry Robinson, Capital Intermodal – Mr Ton Roos, Centraal Bureau voor Rijn en Binnenvaart (CBRB) – Mr Franck Roth, COMBIPASS – Mr Walter Schulze-Freyberg, POLZUG GmbH – Mr Manfred Seitz, VIA DONAU – Mr Heiko Sennewald, EWALS CARGO CARE B.V. – Mr Peter Sonnabend, Deutsche Post AG (DHL) – Mr Robert Spierings, European Bulls Rail Freight Alliance – Mr Simon Spoormaker, SMDG– Mr Dirk Stahl, BLS Cargo AG – Mr Lothar Thoma, KÜHNE & NAGEL – Mr Tomas Vanek, Maersk Sealand Intermodal s.r.o. – Mr Maximilian von Haller TRANSPRACHT – Mr Andrew Webster, Thomas Miller & Co – Mr Johan Woxenius, CHALMERS University – Mr Joachim Zimmermann, Bayerische Landeshäfen



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