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Pros-Cons of Standardization

Booklet N° 5
November 1999

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FREIGHT & LOGISTICS
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Pros-Cons of Standardization

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Formation and time table _____ 1.1

1. Introduction

The European Freight and Logistics Leaders Club decided in the annual meeting November 14-15 -97 in Paris to form a Working Group to study the Pros & Cons of standardization within the intermodal transport development.

During the two meetings between representatives from Europe and USA in Washington Oct. 30-31, 1997 and Munich Nov. 18-20 1998 under the chairmanship of:

Mr Win A.G. Block, European Commission DG VII

Mr Michael Huerta, US Department of Transportation

Mr Kenneth Wykle, Federal highway Administration

An agreement was reached to exchange close ideas and recommendations between Europe and USA in the area of standardisation.

To cover a broader view of standards of units and equipment the annual meeting of F & L in Vienna, Nov. 13, agreed to extend the frame for the Working Group to present the final report at the Annual General Meeting in Helsinki during Nov. 19-20, 1999.

Scope and Objectives of the Working Group _____ 1.2

- ❖ Europe's increasing traffic volumes will make it necessary to better utilize equipment, infrastructure and systems to avoid heavy disturbances in the cargo movements.
- ❖ Resources to build up the infrastructure network to cope with this increase are limited and better intermodal systems and a stronger integration between all transport modes must develop. A better standardisation of equipment and administrative systems as well as operational and handling technique are activities of great importance to help intermodalism.
- ❖ Standards based on existing equipment, rules, regulations, weights and measurement, but with further adap-



tations, combinations and minor adjustment must be established.

- ❖ The units can easily be separated from the mode of transport and the movement can be planned irrespective of the truck's, drivers, rail-wagon's and ship's working cycles.
- ❖ Within the present measurements, weights and regulations we have to develop best modules.
- ❖ Technically it will be based on the ISO-standards of corner-castings and fixtures.
- ❖ Validity during a longer period.
- ❖ Many people feel that standardisation is bureaucracy, monopoly and with no flexibility. - Not true.
- ❖ To meet increasing volumes with treasonable achievement we have to utilise the existing resources in a better way.
- ❖ High utilisation of equipment, rail- and road network, better planning and around-the-clock operation.
- ❖ Better co-operation between transport operators to develop full-scale intermodal concepts. Also meet the demand from industry of logistics systems.
- ❖ **The main key to such development is a standardized modular unit as well as harmonization of septems and infrasturcture pricing.**

Transport development in Europe _____ 2.1

2. Foreword

Europe's infrastructures and transport systems are facing some challenges in the years to come. The increase in transport volumes which seems to reach twice the present volume in year 2010 will make it necessary to develop new systems and better utilise the existing infrastructure. Many factors are behind this scenario:

- ❖ the steadily increasing trade and global sourcing
- ❖ the restructuring of production, distribution centres and the supply chain systems within the European industry, as the trade barriers are withdrawn, will have a strong influence
- ❖ the new East European countries applying for membership in the Union will further increase traffic and transportation

At the same time the bigger share of manufactured goods which demands high frequencies, short lead times and more developed intermodal systems, will be another factor with new demands from industry of more efficient and effective logistics. We have also in this development to do our outmost in order to reduce the impact on the environment from transportation.

Based on this scenario for Europe the small-scale modes of transport (road and air) will drastically increase their market shares on behalf of the big scale modes of transportation (rail and shipping). To meet this trend there must be closer co-operation and better integration between all modes of transport and we have to development a much more sophisticated intermodal concept in Europe.

Isolated thinking in terms of image-campaigns for road, rail, air and shipping in the future world of logistics has become more and more obsolete. To reach a higher degree of integration between modes of transport, a further developed modular system with units transferable between the modes in one of the main issues.

When developing such intermodal systems there is also a need to exchange views, ideas and experiences with in-



ternational colleagues and organizations in the US, the Far East and other areas. As the investment resources for the infrastructure network in Europe and particularly in eastern Europe will be limited and also, as the environmental issues like disposal of ground for rail and road network will be restricted and go through time consuming discussions we have to utilize the present infrastructure much better.

This can be done by:

- ❖ efficient use of infrastructure
- ❖ better utilisation of equipment
- ❖ more sophisticated planning
- ❖ 24 hours operation in terminals, transfer points and in the systems
- ❖ higher degree of automatization like in the transfer operation between the different modes
- ❖ simplified border crossing handling
- ❖ better developed information and communication systems (GPS etc) in all links of the transport chain.

2.2 Logistics towards the 21st century

Logistics will play a vital role within most industrial and trade enterprises in the future.

The trade blocks we see being developed around the world will increase the need and demands of more sophisticated and effective transportation within and between these trade areas. This will have a strong influence on the development of all modes of transportation and the access to a good infrastructure.

At present we do not see sufficient investment resources to build and extend the infrastructure mainly in the rail and load sector to meet the increased volumes.

A better utilisation of the existing transport and infrastructure resources must be developed and logistics will therefore be a necessary tool.

A change in certain key words can be foreseen.

Steering process	⇒	Main business strategy
Purchasing	⇒	Time guaranteed supply systems
Transport systems	⇒	Intermodal solutions
Lean production	⇒	Lean administration
Suppliers structure	⇒	Network between suppliers (Tier Classification)
Marketing	⇒	Customer oriented additional value
Outsourcing	⇒	Strategic insourcing



**THE WAY TO A COMPETITIVE
EDGE IN THE NEXT CENTURY**

Pros and Cons of standardisation _____ 2.3

Pros:

- ❖ Better possibilities of intermodal development.
- ❖ Higher utilisation of modes and equipment in transportation.
- ❖ More efficient use of the infrastructure.
- ❖ Worldwide packing standards.
- ❖ Facilitate long term investments in transportation.
- ❖ Good potential of cost rationalisation.
- ❖ A base for developing integrated systems with short lead-times in ports, terminals and transfer points.
- ❖ A positive effect on administration, control and EDI languages.

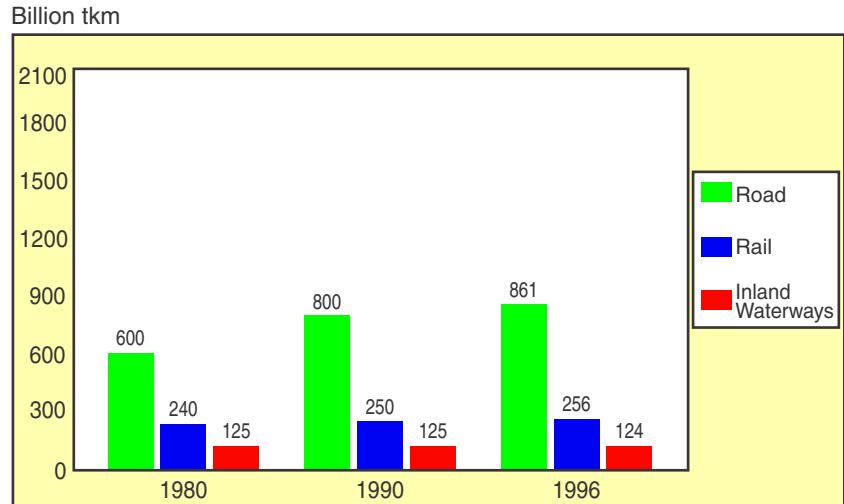
Cons:

- ❖ Limited innovation within certain modes of transportation.
- ❖ Can be sub-optimal for individual shippers.
- ❖ Reduction of competitive advantages of certain modes.
- ❖ Limitation of the high degree of flexibility.

3. Statistics

3.1 EC - Transport volumes 1980 - 1996

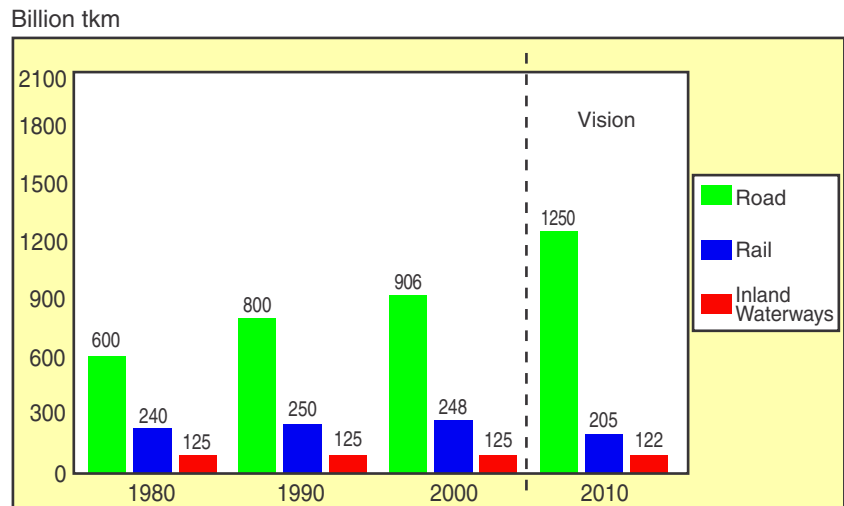
Goods transport within ECMT
1980 - 1996
Performance by mode of transport



Source: Eurostat >2000
"-": VTAB 2000-2010

3.2 EC - Transport volumes 1980 - 2010

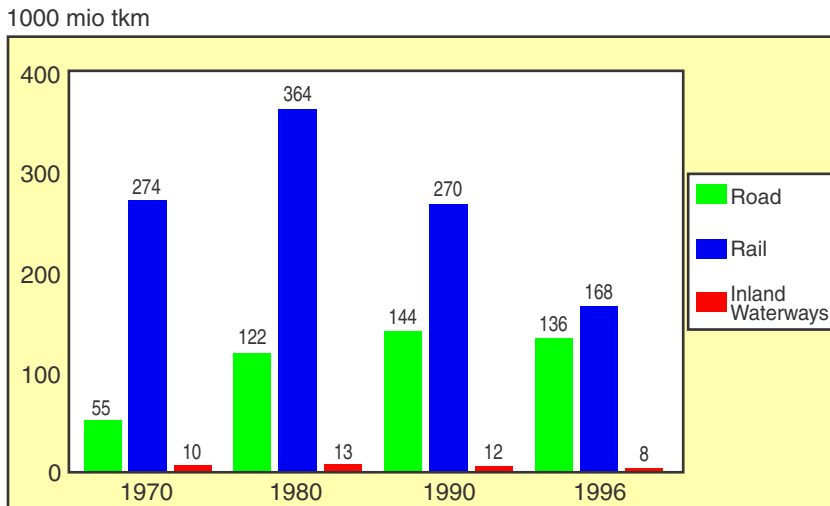
Goods transport within ECMT
1980 - 2010
Performance by mode of transport



Source: Eurostat >2000
"-": VTAB 2000-2010

CEC - Transport volumes 1970 - 1996 3.3

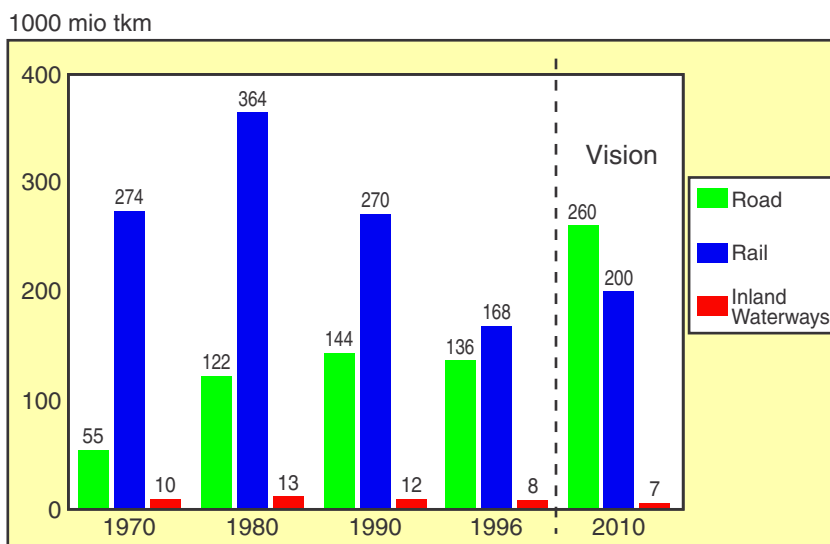
Goods transport within CEC
1970 - 1996
Performance by mode of transport



Source: Eurostat

CEC - Transport volumes 1970 - 2010 3.4

Goods transport within CEC
1970 - 2010
Performance by mode of transport



Source: Eurostat 1970-1996
"-": VTAB 1996-2010

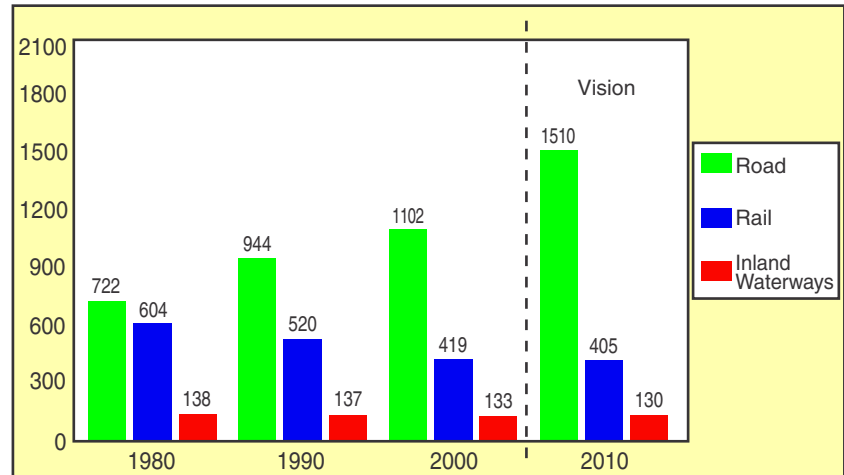
3.5 EC/CEC - Transport volumes 1980 - 2010

Growth forecast per mode in ECMT/CEC countries

1980 - 2010

Performance by mode of transport

Billion tkm



Source: Eurostat 1970-1996

“-” : VTAB 1996-2010

Background to standardisation _____ 4.1

The main key to reach a successful development of these proposals and solutions is a higher degree of STANDARDISATION. With standardisation we include technical standardisation of units and handling equipment as well as system standardisation of signals, security control, communication etc.

Many people feel that standardisation leads to bureaucracy, monopoly and prevents flexibility with a threat towards innovation and development. This is unfortunately a misunderstanding if we work with standards in the right way. We have presently a number of standards in the transportation world and have to accept rules, regulations and traffic laws, especially when it comes to measurements and weights.

Besides standards of transport equipment, the influence of the packing material will be strong but no doubt reduce costs and increase efficiency in the handling process. The current situation shows, based on a research by Fortune among 500 companies, that because of the lack of guidelines several departments within the company were applying/developing their "own" standard. The result was not one standard but several. So, although a lot of effort was put into standardisation, it made the frictions between departments worse. The matter becomes even more complicated if several companies are involved in the supply chain.

A transport standard unit will also set a standard of the handling and packing material like pallets, slip-sheet etc.

In an earlier report from the European Freight & Logistics Leaders Club we have worked out some ideas, and the intention with the working group Standardisation is to follow part of these recommendations. To achieve the necessary intermodal concept for Europe we need to reduce the number of odd units, which still exists between specific cargoes and in specific modes of transportation. With an intermodal concept, however, we probably have to base the standards on mainly the road and air units as both rail and shipping will have the capacity of handling such units without problems.

4. Intermodal Standardisation

However, aiming at a complete door-to-door intermodal operation, the existing weight and measurement for road transport has to be a base for such a concept. We also have to take into consideration that all presently existing equipment like trailers, swap bodies, flat beds, containers, flexivans, container flats etc can be handled and used and that the units can be used in all rail, road and shipping systems. There is also a need to avoid heavy investments for the transportation companies as well as cost for the industrial and ultimately for the European and international consumers.

Moving towards a better standard, the interoperability between the modes of transport can be improved. This means a better utilisation, better possibility of fast and efficient transfer at different points and also into the future possible combinations between the different standards.

The existing units like the swapbodies of 7,15 m, 7,42 m, 7,82 m and 13,61 m as well as the trailer unit of 13,61 m and of course the container units 6,10 m and 12,20 m (20' and 40') will be the basic units for an intermodal standardisation concept. Besides the basic units above specific combination can of course be used in special trades as long as these are within the present rules and regulations of weight and dimensions. An example is the Short Sea Container mainly used in the UK-Continent trade.

Within the airfreight concepts modules from the 7,82 m can be a solution, which means a multiple of 3,91 m. A recommendation is to have these standards valid for a good number of years ahead to avoid new heavy investments in the transportation systems.

Co-operation and co-ordination between the modes of transport will be absolutely necessary and we have to avoid the present sub optimisation, which exists in many areas. In spite of the trailer unit being an excellent unit for parts of the road network, the combinations have reached strange situations. To move 5 tons of cargo packed into a container which is placed on a flat trailer and then moved on a rail car, results in transport equipment weighing 32 tons for carrying 5 tons of cargo. If the

same rail car is moved on a ferry between Scandinavia and Europe we have a number of hundred tons to add in transport equipment.

Finding new ways of moving traffic towards the earlier mentioned volume increases seems to be a must and the working group established within the European Freight & Logistics Leaders Club with regard to standardisation will try to present some recommendations, ideas and maybe solutions for further discussions. Proposals, suggestions and ideas are presently being collected and the overheads used during our first presentation are enclosed. The keywords for the future intermodal success in Europe are:

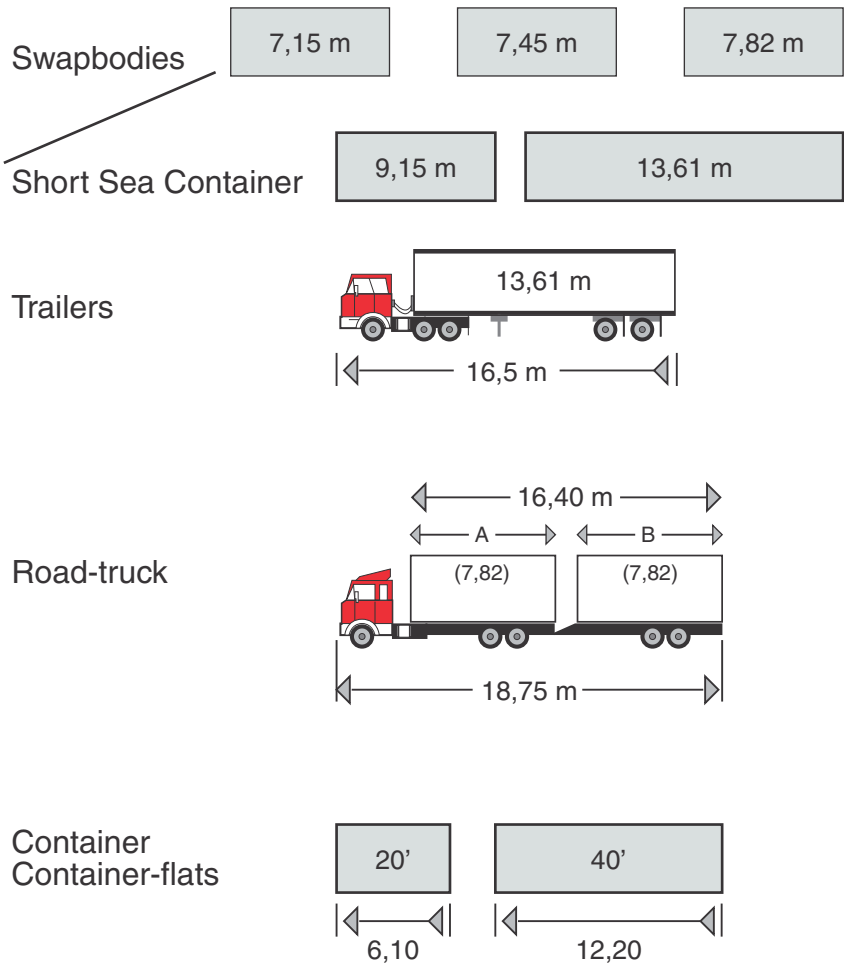
- Standardisation
- Harmonisation
- Stabilisation
- Combination
- Integration
- Communication

All present transport modes have segment to fill. It is important that all resources are used in an optimal, competitive and cost-efficient combination.

Fair competition within and between transport modes as well as between countries is needed.

4.2 Intermodal units

Recommendation of standard measurements of units in an intermodal concept



In Rail and Shipping longer units can be handled as well as a number of special solutions.

Shorter units can always be handled within the gauge of longer basic frames up to 13,61 m.

Harmonisation of rules and regulations _____

Another important step to be taken in order to have an intermodal development in Europe besides standardisation is harmonisation of rules and regulations within and between modes of transport.

Areas like traffic signals, coding, security controls, communication systems and similar items would be set up on a European basis as soon as possible.

The basis idea and need to develop the intermodal and the overall transportation efficiency in Europe is to adapt the national rules to a common European network. This is also important when preparing the integration of new members into the EU. The Working Group has just briefly focused areas where a further study must be done.

With regards to weight and measurements we refer to the EU council directive 96/53 which has been implemented within the national transport legislation of all EU member states.

The directive supersedes all previous exemptions and is the basic frame for a longer term fixed standard of weights and measurements in Europe.

Reference is also made to the earlier report of F&L's Working Group "Weights and Measurements".

Railway _____

Within the railway sector there are a number of areas to be studied in order to set up a European recommendation or directive to be followed by rules.

1) Political level

In general, competition is essential for the change from a traditionally national oriented railway company to an active player in the European logistic market. Unfortunately several legal obstacles are created by a not harmonised national and EU-legislation and we have to accept the fact that the influence of the railways with regards to a fundamental change here is extremely lim-

5.1 *5. Harmonisation and Standardisation within different modes of transportation*

5.2

ited. But it must be secured that all railways have to follow an equivalent framework within the EU.

Therefore, we recommend establishing the directive 91/440 without delay as a regulation 91/440 forcing all European states to offer existing and new railway enterprises the same legal base for business.

2) Technical level

a) Coding of equipment

Although a harmonised coding as been already implemented within Europe (for rolling stock: by the Union International des Chemins de fer - UIC, for the containers by the Bureau International des Containeurs - BIC, for the swapbodies a PACT project is under way) today's trade requires a global control of movement as well as complete data for inventory purposes and further investment.

We recommend a (world-wide) harmonised coding for that equipment which is utilised in the global trade enabling all parties concerned to track their equipment independently from the mode of transport of the carrier.

b) Axle load

In the future the number of small but heavy consignments will increase considerably due to an optimisation process in the logistic sector. On some central European railways infrastructures axle loads up to 25 t are in general no problem but often transports have to be limited to 22,5 t and less.

We recommend that during the next 5 years the axle load should be lifted to 25 t.

c) Automatic coupling

We understood that an automatic coupling system is ready for implementation but is blocked both by national interests and financial problems.

We recommend that all necessary support should be given by European organisations for an immediate implementation.

d) Electrical power systems, signalling and control systems

Here a standardisation is almost unlikely owing to the immense cost. But certain measures could overcome the problem.

We recommend an increased investment in multi-system locos with adapting technology achieving thus compatibility for the different systems. The realisation of ECTS needs strong support.

e) Information systems

This essential component for today's business must be based on standardised EDP interfaces for communication and consignment/train tracking in real time. Of course, we are aware that this field is strongly related to the effort of a company to create an unmistakable profile towards the customer and is therefore subject to competition.

We recommend here a standard on bilateral levels.

f) Mutual recognition of technical examinations of rolling stock

Uniform European standards for a mutual recognition procedure will help to speed up the traffic.

We recommend them despite the fact that probably a conflict with safety issues will have to be solved first.

3) Other issues

a) Unit/Block trains

For the efficient utilisation of equipment trains should not be limited to one type of load. In many cases a train with a mixed load will be more sensible from an economic point of view.

We recommend the increased running of mixed load trains.

b) Timetable

It is a fact that on the one hand passenger train has absolutely priority on most networks ("Freight does

not vote”). On the other hand everybody complains about traffic jams on the roads caused by the freight transportation. In addition, international and national freight train timetables lack in co-ordination.

We recommend strongly the equivalent treatment of passenger and freight trains and emphasise on an early co-ordinated national and international timetable.

c) Examination of rolling equipment

- Uniform European regulations on the mutual recognition of examinations of rolling equipment (GONG trains)
- Establishment of clearing office (“ombudsman”) to decide in case of an allegedly discriminatory treatment.

No doubt we can foresee a great number of “stumbling block” to move the railway sector from today’s traditional operation of cargo traffic based on a national strategy and policy into the next century of logistics.

5.3 Road

The road sector is facing a heavy congestion, as the road network will in no way have the capacity to handle the increasing volumes. Better utilisation and planning to avoid unbalances and empty traffic legs is necessary.

- ❖ *Modular system* based on today’s weight and measurement rules is recommended as a base for a better inter-modal development. To freeze existing length regulations until the infrastructure or individual countries accept new combinations seems to be a good solution. Common rules exist with regard to the width and height but a recommendation is to plan for a 4,25 m height in the near future. Such a height permits as an example swapbodies to be handled on most roads by regular train units.
- ❖ *Weight* regulations has for many years been a topic issue in the road network to increase the 40 tons limit up

to 44 tons. New infrastructure investments should plan for a future increase of the weight limitation but we do not see that a change will take place within a 5-year plan.

- ❖ *Combined traffic* where trailers and trucks will be handled together with rail or ship seems to increase. A better standardisation of fixed points for lashing and securing the unit on the carrying mode is an area for studies and recommendations.
- ❖ *Coding* of equipment should be harmonised in the same way as in the railway sector.
- ❖ *Stabilisation* to avoid short term investments with the flexibility on national basis to open the infrastructure to longer vehicles based on a combination system as per recommendation in the F&L Working Group Report "Weights & Measurements" from 1997.

Shipping 5.4

Like the rail traffic the waterborne intermodal systems are able to handle all units but in most cases depend on road or rail as a partner in combined traffic.

Nearly every intermodal transport needs a road move in the beginning or at the end of the transport chain in order to pick up or deliver the load to the ramp.

Containers have been one of the most successful units in transport and the 20' and 40' units are a base for an intermodal standard. Other lengths have been developed in the US like 45' or 53' but these are not international world-wide standards.

In land waterways and Short Sea shipping will be further used in the European transportation.

For the transportation on short sea as well as the rivers 2 systems are used Lo-Lo-Transportation of containers loaded by cranes into barges/short sea vessels and Ro-Ro-Transportation of the trailers on ferries/inland barges. A special



mode is Ro-Ro-Transportation of containers, which are stacked on MAFI-trailers (two high) and then are rolled on this trailer onto the short sea ferries and are rolled from board on the other side of the channel.

To have an efficient combination with the shipping including the barge operations port and terminals will have an important part to play. The heavy investments will no doubt benefit from a higher degree of standardisation. Coding and information systems as mentioned within the rail and road sectors will be of use as well in the shipping systems.

5.5 Airfreight

Airfreight will have limited development of big unit like the 20' and 40' containers or swapbodies and continue with the existing container units. These will, if handled in an inter-modal system, have no difficulty to use any road and rail combination.

The airlines have reached a good level of standardisation both with regards to equipment and administration.

Within the airfreight sector an initiative is taken together with a number of forwarders to agree upon a common data management platform (CDMP) under the project Cargo 2000.

Foreword _____ 6.1

This chapter is the summary Report of the Working Group “Weights and Measurements” presented in occasion of the ANNUAL General Meeting of 15/16 November 1996 in Brussels and it is included in this booklet as integration of this report.

6. “Weights and Measurements”

Development of new systems _____ 6.2

In spite of certain investments in the existing infrastructure a heavy congestion is foreseen in all modes of transport.

It is necessary to develop new systems and better utilization to meet the demands from a more globalized industry which needs more highly efficient and effective logistics.

Also taken into consideration is the impact on environment from the transport sector.

Intermodalization is a key factor and to develop better systems on an international level we have to harmonize weights and measurements as well as stabilize these rules and regulations in a longer time period.

A successful development of intermodalism in Europe is a great deal depending on the possibilities to take further steps in standardization of the equipment used in transportation.

Within the measurements and weight rules recently established by the European Commission the Working Group tried to find a system without drastical changes and extreme investments in equipment and infrastructure.

The basics are:

- ❖ All presently existing equipment (trailers, swapbodies, flatbeds, containers, flexivans, container-flats, etc.) can be handled and used.
- ❖ The units can be used in all rail-, road- and shipping systems.



- ❖ New heavy investments can be avoided for the transportation companies and costs for the industry.
- ❖ The need for the industry to develop efficient logistics solutions.
- ❖ A better optimization can be reached.
- ❖ The inter-oprability between the modes of tranport can be improved.
- ❖ A good protection of the environment can be promoted.
- ❖ A basis for the next step in length and weight can be created when the infrastructure permits such new combinations.

With a long terms view on rules and regulations this is also a base for a modular system of units.

As the roads are the limiting factor in the intermodal systems these regulate the dimensions of the units. A combination of units in a modular system will be an interesting possibility.

Such combinations in different configurations may not only make a better utilization but also have a positive effect to reduce empty movements and the unbalance of units.

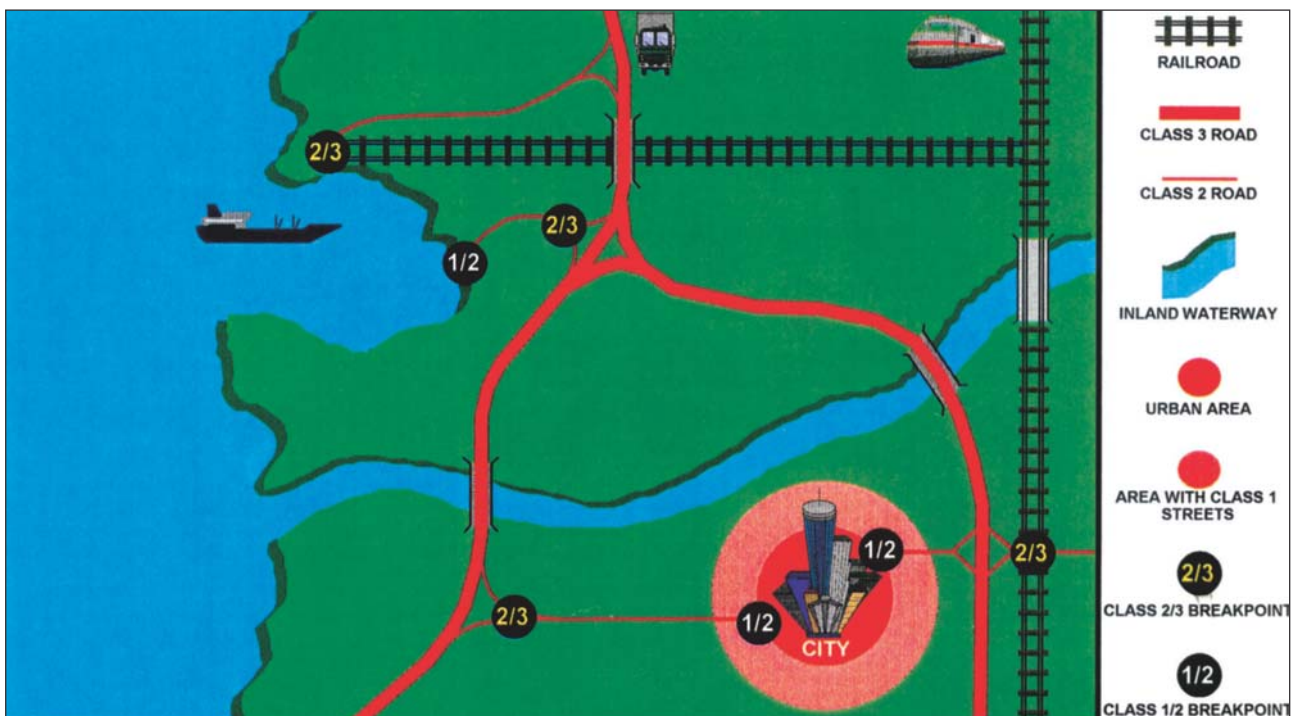
The city centres are today the most complicated areas to handle and the congestion will increase further. Therefore it will be necessary to avoid that long heavy vehicles move into the centres at the same time as all public traffic is moving.

Many intermodal and logistics systems have a start and/or an end without direct access to a rail or a shipping facility.

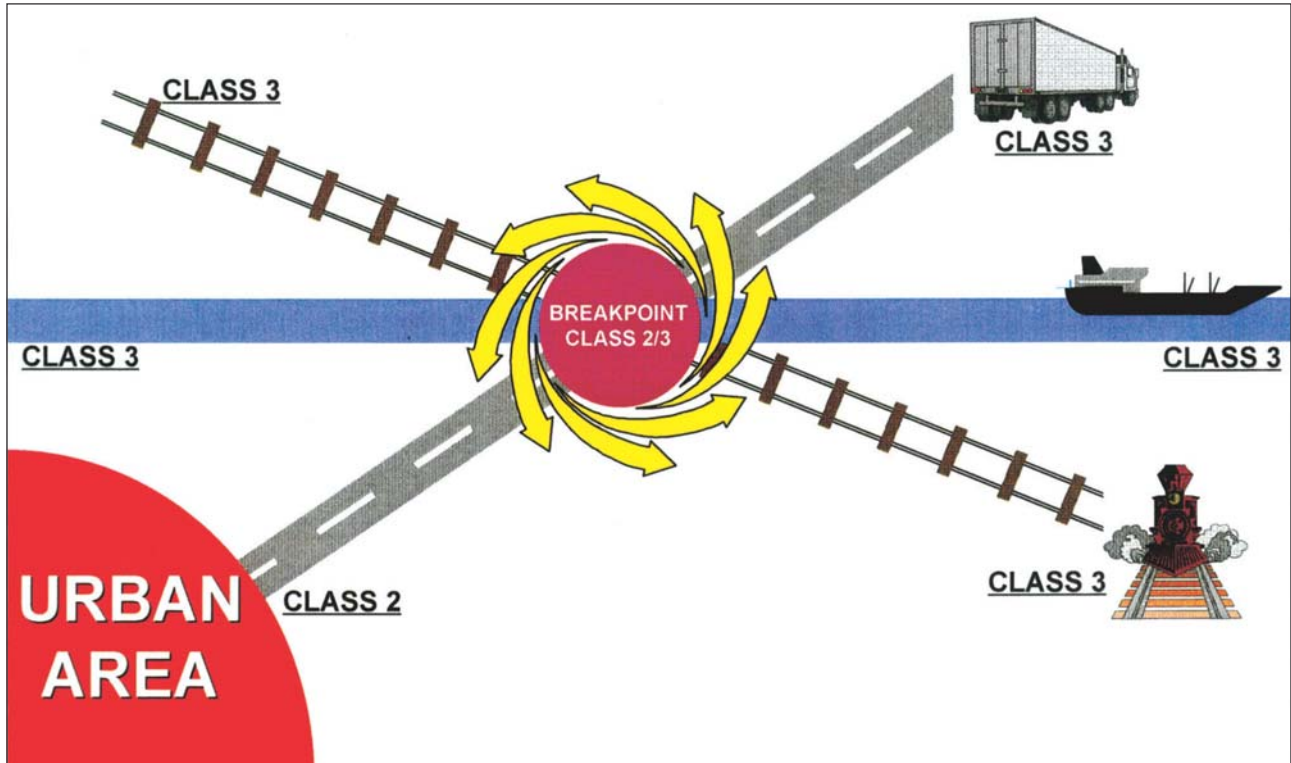
Classification of Roads 6.3

- ❖ The Transport Class System (TCS) is based on a module combination between various units and gives the individual European country the possibility to make decisions about classification of their road and infrastructure network.
- ❖ General classification of roads and transport corridors will be:
 - Class 1 City areas
 - Class 2 Suburban areas and normal road network
 - Class 3 Sea, rail and classified roads outside of built-up areas
- ❖ Goods will be handled at breakpoints between class 1 and 2 legs, and between class 2 and 3 legs. The breakpoints would serve as terminals where load units would be moved between ships, trains or trucks. This operation would be greatly facilitated by the use of containers or swapbodies of standard dimensions.

TRANSPORT CLASS SYSTEM



TRANSPORT CLASS SYSTEM



Such a classification of roads must be developed in close co-operation with the individual countries, communities and planning organisations.

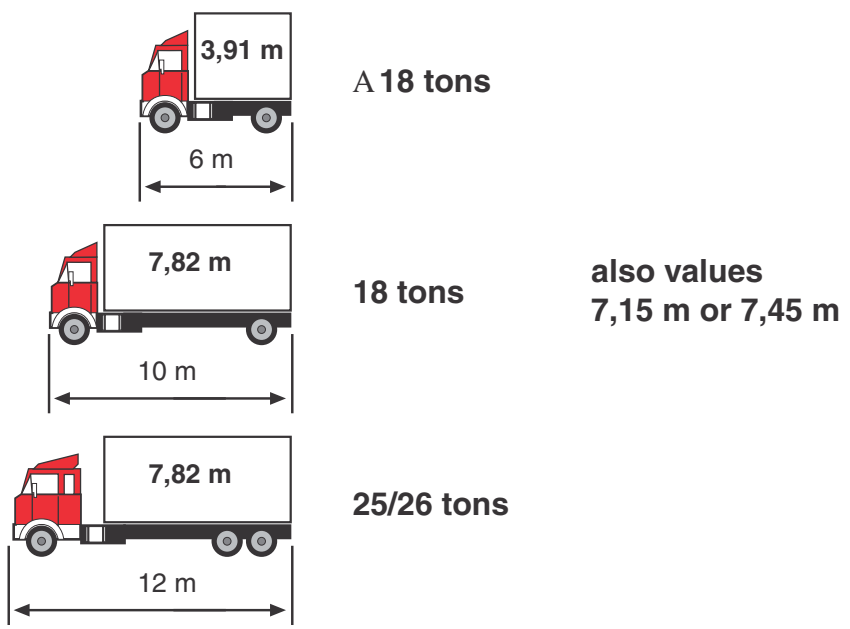
Each individual country can classify the road network but the system will not limit the competition between the European transport operators regardless of country of domicile.

Such classifications of roads can open highways and motorways in specific countries for longer vehicles in the future like in Sweden and Finland up to 25,25 metres (Truck + 20' + 40' combinations).

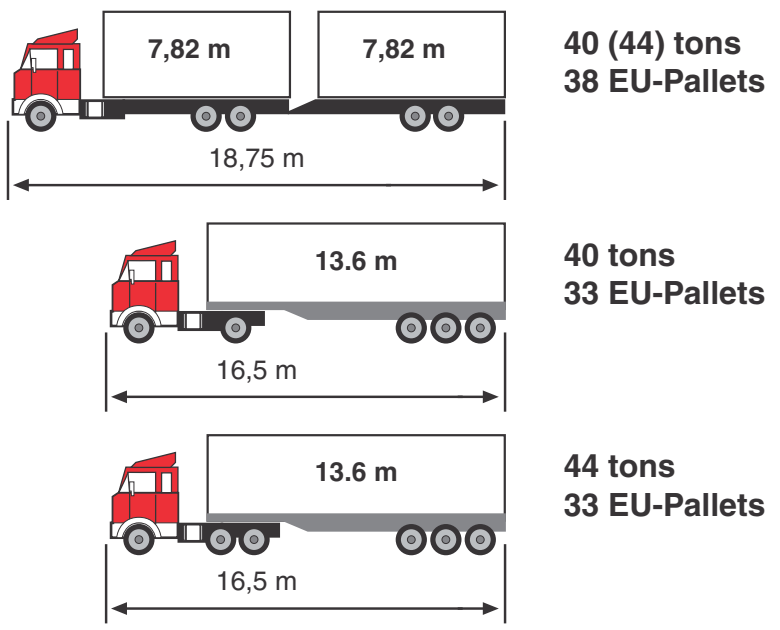
6.4 Intermodal units

Recommendation of standard measurements of units in an intermodal concept within the proposed Transport Class System (TCS)

CLASS 1

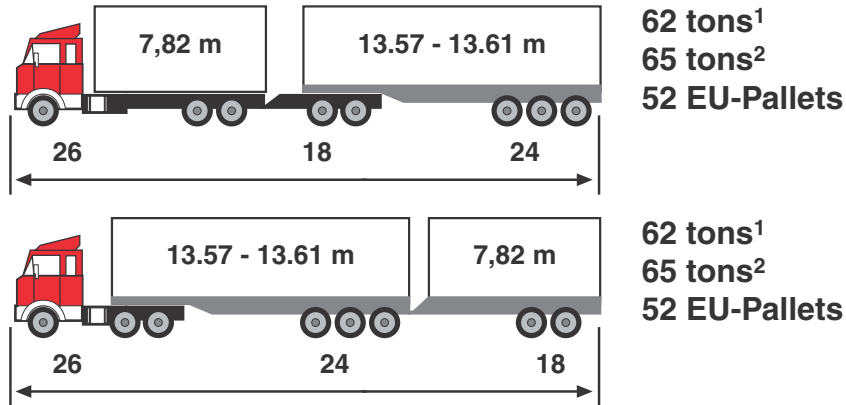


CLASS 2



or any other combinations within these limits

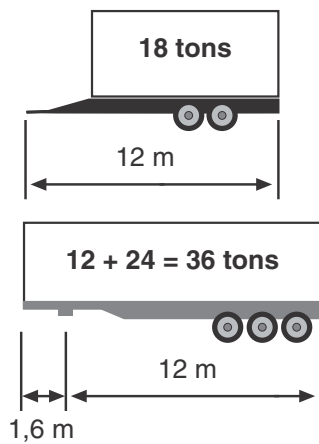
CLASS 3 Future Primary Road Network (To be defined by nationale authorities)



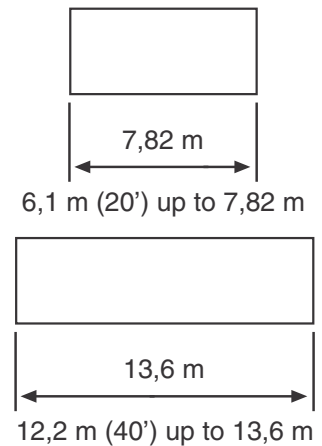
¹ EEC - 40 tons ² EEC - 44 tons

or any other combinations within these limits

Standard trailer / Semitrailer / Dolly



Standard Load



In Rail and shipping longer units can be handled as well as a number of special solutions.

Shorter units can always be handled within the gauge of longer basic frames up to 13,61m.

In the city areas new types of "city trucks" can also be developed:

gas-, electric or hybride-units also more quite to deliver during night-time.

The Key Words

To establish a limited number of units as basic standard in the international transport will be necessary to further develop the intermodal concept.

Based on the existing rules and regulations as well as the most common units today in operation the need to better integrate the transport units between the modes will be most important.

The heavy increase of transport volumes, the limited resources for investment in the infrastructure and the development of logistics systems with shorter lead-times and delivery precision will force the transport operators to find new solutions.

Besides the standards of units and technical equipment the fast development of purchasing and supply management through the use of internet and EDI will be another area of standardisation.

Combining the links in the transport chains will be more necessary in the future. Standardisation is the most important tool in such a development.

- ❖ Harmonisation & Standardisation +
- ❖ Stabilisation +
- ❖ Combination +
- ❖ Integration =

**GLOBALISATION,
UTILISATION AND
ENVIRONMENT**

Working towards an intermodal standard and active harmonization of rules and regulations and a road-class system will have many positive effects:

- A better utilization of existing equipment

7.1 7. Conclusions and Recommendations



- A possibility to handle the increasing transport volumes without extremely high investments in the infrastructure
- One of the best impacts to reduce environmental pressure from transportation
- A possibility to meet the necessary development of logistics and supply management optimization from industry.

7.2 Executive Summary

Investment in too many different units and transport equipment to handle this have a negative effect on the transport costs.

Also the applications which are regularly presented to the legal authorities to change rules and regulations to be able to move such new special units have often a higher cost effect than the expected rationalisation.

This proposal of a basic intermodal standard valid during a longer time period will therefore give the international and also the national industries as well as most actors involved in the trade more efficient and rational transport systems.

We recommend harmonising the different types of equipment, technical rules and regulations and systems of infrastructure pricing in order to come to a more or less uniform standard.

This will also lead to a better possibility of developing the multimodal/intermodal concepts.

The document is also focusing on areas in the transport sector where a better standardisation will be beneficial to all parties concerned and increase the efficiency and effectiveness in Europe.

With the basic rules and regulations in Europe today the intention with this first report of standardisation from F&L we recommend further steps to be taken towards an international standard of basic units.

Such a basic concept will have a positive effect on devel-

opment towards better intermodal systems and investments in the infrastructure in most areas of the world.

There will always be possibilities to handle specific units, products and equipment based on the individual rules and regulations within each market.



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