



UIC FREIGHT DEPARTMENT
Guidelines for Combined Transport

October 2023



INTERNATIONAL UNION
OF RAILWAYS

ISBN ? 978-2-7461-3317-4

Warning

No part of this publication may be copied, reproduced or distributed by any means whatsoever, including electronic, except for private and individual use, without the express permission of the International Union of Railways (UIC). The same applies for translation, adaptation or transformation, arrangement or reproduction by any method or procedure whatsoever. The sole exceptions - noting the author's name and the source - are "analyses and brief quotations justified by the critical, argumentative, educational, scientific or informative nature of the publication into which they are incorporated" (Articles L 122-4 and L 122-5 of the French Intellectual Property Code).

EXECUTIVE SUMMARY

Efficient logistics has been a driver for societal wealth for many centuries, with recent research by The World Bank¹ even demonstrating that high performance in logistics allows a country to outperform its counterparts in terms of economic growth and development.

On the other hand, logistics and transportation can also have an adverse effect which can be calculated in the external costs on society. With global warming posing a major threat to the world, initiatives need to be developed to reduce the negative impact of transportation, while maintaining its beneficial aspects.

Within this balancing act, multimodal, intermodal and combined transport are playing an ever-increasing role, with road-rail combined transport already representing approximately 50% of all current rail freight volume². Combined transport is considered to be an important element of the new logistics paradigm, as no single mode of transport will be able to win the race to a climate neutral logistics system on its own. Only by combining different modes of transport smartly and efficiently, will a green transport system be viable.

Combined transport has continued to grow in recent decades and will continue to do so, especially with the commitment from the combined transport operators and stakeholders who play an important role in this setting. It is therefore crucial that all parties know how combined transport operates, what the rules of the game are, and which processes need to be followed.

These guidelines, jointly developed with the members of the UIC Combined Transport Special Group, have been written to assist parties willing to get involved in combined transport operations. This manual describes:

1. Combined transport terminology
2. Why it is called combined transport and its differences to other modes of (rail) transport
3. The different stakeholders in combined transport
4. The roles and responsibilities of different actors
5. Standardisation landscape in Europe
6. A step-by-step approach when starting combined transport operations
7. How UIC's Combined Transport Group helps its members in realising safe and efficient combined transport operations

Each section of these guidelines begin with an explanatory diagram, giving the reader a general overview, and follows with a more in-depth examination of the topic. Finally, each chapter ends with a reference section to relevant material on the specific subject.

¹ (The World Bank, 2023)

² (UIC, 2023)

TABLE OF CONTENTS

Executive Summary	1
Chapter 1: Combined transport terminology	5
1.1. Diagram.....	5
1.2. Definitions.....	5
1.3. References.....	8
Chapter 2: Why is it called combined transport and what differentiates it from other modes of (rail) transport?	9
2.1. Diagram showing combined transport in the wider context of multimodal transport solutions.....	9
2.2. Forms of combined transport	10
2.3. Combined transport techniques	11
2.3.1. Rail-Road.....	11
2.3.2. Rail- Maritime.....	12
2.3.3. Rail-inland waterways.....	13
Chapter 3: The different stakeholders in combined transport.....	14
Chapter 4: The roles and responsibilities of different actors	15
4.1. The Diagram.....	15
4.2. Roles & Responsibilities on the legal, safety, insurance, different business models:.....	15
4.2.1. Traditional CT business model:	16
4.2.2. Evolution of continental TC:.....	17
4.2.3. Evolution of maritime CT:.....	18
4.2.4. Evolution of logistics services:.....	19
4.2.5. Legal and commercial links between railway undertakings.....	20
Chapter 5: Standardisation landscape in Europe	21
5.1. Diagram.....	21
5.2. Standardisation at UIC	21
Chapter 6: A step-by-step approach when starting combined transport operations.....	23
6.1. Step 1: Do we possess the right wagons?Application to place into service according to Directive 2016/797/CE.....	23
6.2. Step 2: Do we agree on the commercial conditions?	24
6.3. Step 3: Do we have the right hand-over procedures?.....	24
6.4. Step 4: Have we applied the right loading guidelines?.....	27
Chapter 7: How UIC's Combined Transport Group helps its members in realising safe and efficient combined transport operations	28
7.1. A general introduction of UIC	28
7.2. The freight department and The Combined Transport Special Group.....	28
Conclusion	30

TABLE OF FIGURES

Figure 2: Combined transport as a subset of multimodal and Intermodal transport..... 9

Figure 3: Different forms of combined transport..... 10

Figure 4: Overview of the roles & responsibilities of the different combined transport stakeholders 15

Figure 5: Overview of the traditional business model in combined transport 16

Figure 6: Overview of the continental business modal in combined transport 17

Figure 7: Overview of the maritime business modal in combined transport..... 18

Figure 8: Overview of the LSP leading business model in combined transport 19

Figure 9: Overview of the standardisation bodies in Europe21

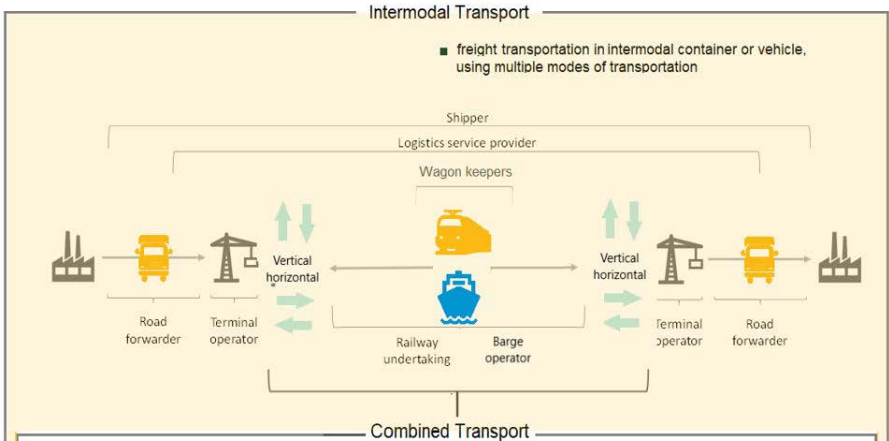
Figure 11: procedure for approval of wagons22

Figure 12: Reference document and bodies competent to authorise placing into service 23

Figure 11: procedure for approval of wagons23

CHAPTER 1: COMBINED TRANSPORT TERMINOLOGY

1.1. Diagram



1.2. Definitions

Axis: set of connections linking two economic zones, e.g., Denmark/Pô plain, Italy.

Capacity: freight transport service provided either for an entire train or operating scheme, or for part of a train or operating scheme, expressed in gross tonnes towed and in metres. Example: capacity of a train (1,100 gross tons towed across 700 meters).

Combined transport: a European concept defined by EU Directive 92/106/EEC as "intermodal transport", where a major part of the European journey is by rail, inland waterway, or sea, with the (as short as possible) initial and/or final legs being carried out by road transport.

For the purposes of Directive 92/106/EEC, CT means the transport of goods between Member States where the lorry, trailer, semi-trailer, with or without tractor unit, swap body or container of 20 feet or more uses the road on the initial or final leg of the journey and, on the other leg, rail or inland waterway or maritime services where this section exceeds 100 km as the crow flies and make the initial or final road transport leg of the journey: - between the point where the goods are loaded and the nearest suitable rail loading station for the initial leg, and between the nearest suitable rail unloading station and the point where the goods are unloaded for the final leg, or, - within a radius not exceeding 150 km as the crow flies from the inland waterway port or seaport of loading or unloading.

Combined transport company (or combined transport operator/purchaser-dealer): a company which organises and markets combined transport services, including the transport of goods by rail, provided by a railway undertaking from and/or to a site, as well as other services subcontracted to other service providers, e.g., supplying wagons and ILUs, organising site operations and temporary terminal storage.

A railway undertaking may intervene directly as a combined transport company, whether it supplies traction itself for the operation in question or not.

Combined transport site: see Terminal.

Conditioned vehicle: any vehicle whose fixed or movable superstructures are specially equipped for the carriage of goods at controlled temperatures and whose side walls, inclusive of insulation, are at least 45mm thick.

Connection: a set of routes connecting the terminals of two localities. Example: Antwerp/Milan.

Customer: buyer of rail transport services for international combined transport, either the buyer-dealer (a combined transport company) or buyer-user (a loader) of these services. **Entire train:** train transport purchased in full by a single customer.

Handover time limit (HTL): the latest time at which the operator must have handed over his train and the related documents to the RU.

Intermodal loading unit (ILU): containers, swap bodies, semi-trailers, or other loading units suitable for intermodal transport.

Intermodal transport: the movement of goods in the same loading unit or road vehicle, which uses two or more modes of transport successively without the goods themselves being handled during the hand over from one mode to another.

International production cooperation: a coordinated routing system between railway undertakings allowing the international transport of single wagons by means other than the use of specialised direct trains, for all traffic including CT, and comprising of several yards along the way.

Loader (purchaser-user): a company which buys rail transport services for the combined transport of goods from a railway undertaking for its own use.

Loading unit: container or swap body.

Low floor wagon: a rail wagon with low loading platform specially built to carry intermodal loading units.

Minimum operating capacity (MOC): the minimum capacity of a train or operating scheme (see below), below which the costs or margin are not covered, expressed by the railway undertaking in gross tons towed and in meters. It is brought to the attention of customers and applied without discrimination.

Multimodal Transport: the carriage of goods by two or more modes of transport, but the goods may need to be unloaded and reloaded.

Operating scheme: a set of connecting trains which makes it possible to multiply the connections offered to the customer(s) thanks to traffic from different origins and/or destinations being grouped.

This matching can happen in two ways:

- By grouping trains from various branches, in order to form a complete train on a common trunk, which are then again splitting into several batches or branches where necessary.
- By exchanging wagons between trains at a nodal point where the trains are broken up and reformed after a shunting operation.

Path: plotted on a graph for the circulation of a train on a route, defined by the timetable and the progress of the train.

Part of a train: freight transport service provided to a customer not using the entire capacity of a train or operating scheme for themselves, defined in gross tons towed and in metres, or as a percentage of the total capacity. In this case, a train is formed of several of these parts.

Rail transport service for CT: empty or loaded ILUs or road vehicles loaded on wagons, in principle provided by customers and moved by the railway company through the provision of traction, as well as:

- Dispatch, circulation, transmission at the border, as well as administrative operations and transmission of relevant information
- Responsibility for the assembly of parts of a train
- Safety-related services: verification of the ability of wagons to follow the determined route, loading in gauge, the assembly of wagons and finally technical checks.
- Liability for any damage to the wagons, ILUs and goods transported, under the conditions provided for by the “The Uniform Rules concerning the Contract of International Carriage of Goods by Rail”.

Railway Undertaking (RU):

1. Any company with a private or public status, which has obtained a license in accordance with the applicable “Community legislation”, whose main activity is the supply of services for the transport of goods and/or passengers by rail, front traction must be ensured by this company; this term also covers companies that only provide traction.
2. An RU that has committed to providing transport to a customer is called a contractual RU. A substitute RU has not concluded the transport contract with the customer, but has been entrusted the carrying out of the rail transport, in whole or in part, by the contractual RU.

Any rail transport company established outside the European Union in accordance with the rules applicable in the state it was established in. References to “the railway undertaking” refer either to a railway undertaking acting alone, or to two or more railway undertakings acting through subcontracting or co-contracting.

Residual capacity: the share of a train or operating scheme that has not been allocated for the provision of freight transport services at a given time.

Road-rail transport: combined transport by rail and road.

Rolling road: the transport of complete road vehicles, using roll-on roll-off techniques, on trains comprising entirely of low-floor wagons.

Route: rail route used from and/or to a terminal, as well as close variants of this route on the territory of the same state. Example: Noisy (Paris)/Novara (Italy).

Semi-trailer: any vehicle intended to be coupled to and resting on a motor vehicle in such a way that a substantial part of its weight and that of its load is borne by the motor vehicle. It is built and equipped for the carriage of goods.

Swap body: a freight carrying unit optimised to road vehicle dimensions and fitted with handling mechanisms for transfer between modes, usually rail-road.

Tariff structure: a set of principles forming a frame of reference, from which the RUs individually work out the price of their services for each contract.

Terminal (combined transport site): a facility where ILUs are transferred from one mode of transport to another, where technical operations and unit maintenance can also be carried out.

Time of Availability (TOA): the moment when the train is ready under the gantry crane and the first container can be unloaded.

Trailer: any vehicle intended to be coupled to a motor vehicle, excluding semi-trailers. It is built and equipped for the carriage of goods.

Train: a freight transport service having a terminal as its point of departure and/or arrival, which is defined by: a numbered train path on a route, the frequency of circulation, a timetable, a capacity expressed in mass (gross tons towed) and in length (meters), and by certain technical data (speed, load, size, etc.). The train can be formed on-demand or on a regular scheduled basis.

Transshipment: moving ILUs from one means of transport to another.

1.3. References

Appendix 1 of the CIT “Checklist rail-road”

EU directive

CHAPTER 2: WHY IS IT CALLED COMBINED TRANSPORT AND WHAT DIFFERENTIATES IT FROM OTHER MODES OF (RAIL) TRANSPORT?

2.1. Diagram showing combined transport in the wider context of multimodal transport solutions

There are individual modes of transport like road, rail, sea or air. **Multimodal transport** is used for the carriage of goods by two or more modes of transport, and **intermodal transport** is the movement of goods on one and the same loading unit or road vehicle, via two or more modes of transport without the goods themselves being handled during the changeover. Combined transport is a subset of the latter two transport types.



Figure 2: Combined transport as a subset of multimodal and Intermodal transport

Combined transport is principally a European concept and has been defined as intermodal transport by EU Directive 92/106/EC, where a major part of the European journey is by rail, inland waterway, or sea, and any initial and/or final legs by road are as short as possible. The definition of combined transport applied by the EU is very specific and is:

“The transport of goods between Member States where the lorry, trailer, semi-trailer, with or without tractor unit, swap body or container of 20 feet or more uses the road on the initial or final leg of the journey and, on the other leg, rail or inland waterway or maritime services where this section exceeds 100km as the crow flies and make the initial or final road transport leg of the journey.

- ❑ *between the point where the goods are loaded and the nearest suitable rail loading station for the initial leg, and between the nearest suitable rail unloading station and the point where the goods are unloaded for the final leg, or*
- ❑ *within a radius not exceeding 150km as the crow flies from the inland waterway port or seaport of loading or unloading.”*

Certain elements in the definition merit further discussion. Here, combined transport only concerns international transport between states as otherwise it would violate the principles of subsidiarity, it should cover at least 100km, and is not exclusively applicable to rail.³

2.2. Forms of combined transport

There are different types combined transport depending on the modes of transport used, the geographical scope of the service, and the focus of the transport chain.

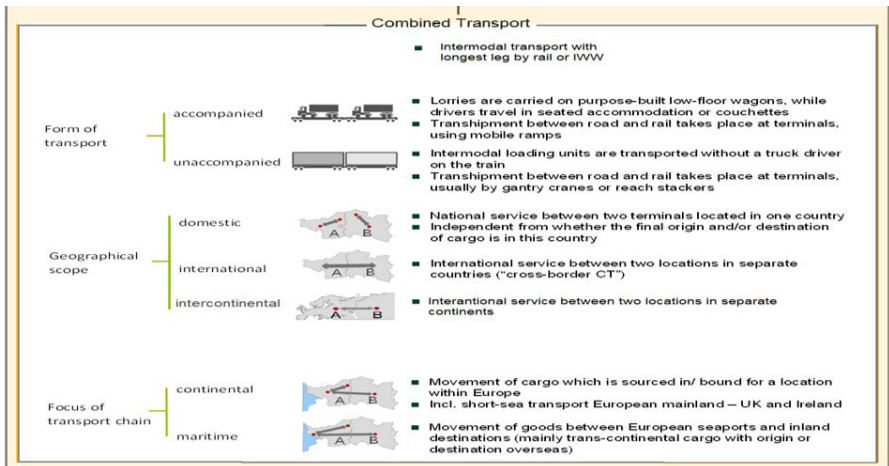


Figure 3: Different forms of combined transport

Based on these aspects, six different market segments can be determined:

■ Form of transport:

1. **Accompanied** - lorries are carried on purpose-built low-floor wagons while drivers travel in seated accommodation or couchettes. The transhipment between road and rail occurs in terminals equipped with ramps. The best example of this is the Eurotunnel, or the trains running through the Alps.
2. **Unaccompanied** - intermodal transport units (ILU) are transported without a truck driver on the train. Transhipment occurs in terminals, which are usually equipped with gantry cranes, or reach stackers, or for semi-trailers, this could also take place in terminals equipped with horizontal technologies, such as Lohr, Cargo Beamer or Hellrom.

³ Recent research focuses a lot on **sychromodal transport**. Although often used in debates surrounding logistics and in communication efforts, this term is still open to interpretation and is often wrongly used. In academic literature, the consensus seems to exist that sychromodality can only be applied when real-time is brought into the equation, which means that a logistics chain is organised in such a way that shifts between modes can be done in real-time. Given the complexity of this, and the level of collaboration and data integration needed, real sychromodality is still to be put into practice.

Geographical scope:

1. **Domestic** - a national service between two terminals located in the same country, independent of whether the cargo's origin/destination is also located within the country.
2. **International** - a service between 2 locations in separate countries (cross-border CT).
3. **Intercontinental** - a service between 2 locations in separate continents.

Focus of the transport chain:

1. **Continental** – the movement of cargo which is sourced in/bound for a location within Europe, incl. short-sea transport from the European mainland or from the UK and Ireland.
2. **Maritime** - the movement of cargo between European seaports and inland destinations (mainly trans-continental cargo with oversea origins or destinations).

Combined transport involves the conveyance of Intermodal Loading Units (ILUs) using multiple modes of transport (rail, road, maritime; short-sea-shipping, or internal waterways). When transported by rail, ILUs are carried on dedicated wagons, which may exceed the gauge of the lines.

To allow ILUs to be transported safely, a codification system of lines, ILUs, and wagons has been established by UIC in collaboration with UIRR. This codification ensures compatibility between the loaded wagon's profile and the gauge of the line, and therefore the operation of combined transport trains without constraints. This codification also allows combined transport operators to execute activities outside of exceptional consignment regulations (as beforehand they would have had to be transported according to these). As long as the applied operational processes, rolling stock and packaging comply with this codification, no special permits are needed. Therefore, this *modus operandi* simplifies operations significantly, making them more cost efficient.

2.3. Combined transport techniques

2.3.1. Rail-Road



Lorries make it possible to provide a door-to-door service, as they cover the short distances separating factories and terminals. They tap into the major advantages of road haulage, i.e., a network that reaches further and is denser.

Containers lead to the better logistical management of the areas used for loading and unloading goods, since their rigid structure allows six of them to be stacked. Container lengths have been also standardised to between 20 and 53 feet.

Swap bodies are standardised loading units equally suitable for carriage on both road vehicles and railway wagons. As they can be used in a broad range of situations, and have a simple, inexpensive design, this form of conveyance has been highly successful and is currently one of the most widely used transport systems on the market.



While **semi-trailers** are more costly and heavier, their advantage is that they can be coupled directly to a traction unit and do not require a road chassis, unlike containers and swap bodies.

Terminals are interchange hubs between rail and road traffic. They are fitted with all the equipment required to handle and tranship loading units from one transport mode to the next in a rapid and efficient manner, including gantries and mobile cranes, modern computer systems integrating tracks, storage areas, transshipment areas, and connections to roads and motorways.

Terminals on European Union territory that manage or supply one or more services to railway undertakings, are operators of service facilities in accordance with Article 13, Annex II No. 2b) of Directive 2012/34/EU and therefore all relevant provisions must be respected.

A free interactive map of the intermodal terminals in Europe is available on the website of the the German Promotion Centre for Intermodal Transport (Studiengesellschaft für den Kombinierten Verkehr (SGKV e.V.)) at <https://www.intermodal-map.com/>.

There are a plethora of **different wagons** available for combined transport purposes. Those most used for rail-road combined transport are flat wagons, fitted with scotching systems for swap bodies and containers, as well as base plates for swap bodies. Wagons used to carry semi-trailers have very low floors and recesses to accommodate the wheels.

The rolling road concept is the only option available to shippers and freight forwarders to run combined transport services without committing to specific investment. Lorries are carried on purpose-built low-floor wagons, while drivers travel in seated accommodation or couchettes. Transshipment between road and rail takes place at terminals, using mobile ramps, with the lorries being subject to specific requirements, as they must conform to the category and clearance gauge of the train line . Rolling road services are limited to set routes. Owing to the requirements of the purpose-built wagons used, there are no plans to introduce this option for wagonload traffic.

2.3.2. Rail- Maritime



There are two main types of sea shipping:

Short sea: This is transport by sea over short distances, for example between Great Britain and the continental ports of the English Channel and the North Sea.

Deep-sea: This is transport by sea over long distances, sometimes between continents, for example between Asia and Europe.

Ships carry transport units by sea between different ports. They can vary considerably in size depending on the distance to be covered and the volumes to be transported. Most of the time they sail on set routes arranged by the shipping companies and shippers. In the case of deep-sea shipping, they only carry «sea containers», complying with the technical features stipulated in the ISO standards in force. For short sea shipping, some companies also accept transport units such as swap bodies (with or without road chassis) and semi-trailers (accompanied or not).

Containers lead to the better logistical management of the areas used for loading and unloading goods, since their rigid structure enables three of them to be stacked. Container lengths have been standardised at 20 and 40 feet, making them the ideal transport unit for sea shipping.

The wagons used for rail-sea combined transport are flat wagons, fitted with scotching systems for containers.

Port terminals are, naturally enough, located in seaports. Their infrastructure generally enables them to handle both road-sea traffic and rail-sea traffic. They have one or more quays where ships can moor, with railway tracks running parallel to the quay so that loading units can be transferred directly from ships to wagons and vice versa.

2.3.3. Rail-inland waterways



Rail-barge transport is managed in a very similar manner to rail-sea transport. However, it serves different market segments.

Unlike sea shipping, transport by inland waterway is a way of linking industrial centres on a single land mass, which have a sea and/or waterway port. Where these inland waterway terminals are connected to the railways, goods carried in intermodal rail operations can also be carried by inland waterway and thereby collected from and distributed to the main industrial centres in Europe.

Barges are shallow-draught boats equipped with a platform on which intermodal transport units (containers and swap bodies) can be carried.

Containers lead to the better logistical management of the areas used for loading and unloading goods, since their rigid structure enables three of them to be stacked. Container lengths have been standardised at 20 and 40 feet, making them the ideal transport unit for sea shipping.

Swap bodies are standardised loading units equally suitable for carriage on both road vehicles and railway wagons. As they can be used in a broad range of situations, and have a simple, inexpensive design, this form of conveyance has been highly successful and is currently one of the most widely used transport systems on the market. Swap bodies cannot be used in combined rail-sea transport, but they are sometimes used in transport by inland waterway.

The wagons most used for rail-waterway combined transport are flat wagons, fitted with scotching systems for swap bodies and containers, as well as base plates for swap bodies. Wagons used to carry semi-trailers have very low floors and recesses to accommodate the wheels.

Inland waterway terminals are located at the heart of inland ports, which are linked by waterways such as rivers and canals. Their infrastructure generally enables them to handle both rail-road and rail-barge traffic, meaning that they are often called «trimodal terminals». They have one or more quays where barges can moor, with railway tracks running parallel to the quay so that transport units can be transferred directly from the barges to wagons and vice versa.

CHAPTER 3: THE DIFFERENT STAKEHOLDERS IN COMBINED TRANSPORT

In combined transport there are several different partners with specific roles & responsibilities, with the latter being explained in Chapter 4.

The shipper (also known as the sender) is the party named on the consignment note or waybill as the shipper and/or concludes a contract of carriage with a carrier (or has a contract of carriage concluded in their name or on their behalf). In many cases they own the goods, but this does not need to be the case. They are responsible for packing and preparing a shipment to be handed over to the carrier for transport.

The road hauler carries out the physical transport of the goods from the shipper's site to the combined transport operator's terminal. They are often referred to as the first or last mile operator and in most cases, trucks are used for this step.

The combined transport operator (CT operator) has a commercial contract with the shipper and is responsible for carrying out the physical shipment of the goods from the shipper to the end customer using different modes of transport, mostly road and rail or inland waterways. They will coordinate and ensure seamless communication between the different parts of the logistics chain and are responsible for completing the shipment of goods/cargo from the pick-up to delivery location. **The terminal operator** handles the physical transshipment of the goods from one mode of transport (mostly road) to another mode of transport (mostly rail). This operation is performed after first-mile road transport as well as before last mile transport, which is also often by road.

The RU or railway undertaking is a public or private railway company transporting goods by rail between terminals, normally by operating locomotives and wagons, either with full legal ownership, or through short or long term (financial) leasing arrangements.

The IM or infrastructure manager is responsible for developing, maintaining, and operating the rail track infrastructure. In many cases this is a public or a state-owned company.

The safety authorities oversee and certify safety on the railway system. They are independent authorities with a separate legal status and intervene regarding operational safety on the railway system as well as approve the rolling stock running on the tracks.

CHAPTER 4: THE ROLES AND RESPONSIBILITIES OF DIFFERENT ACTORS

4.1. The Diagram

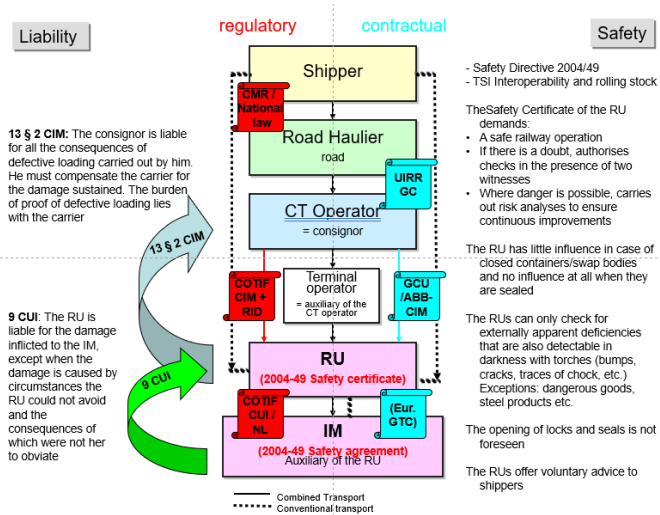


Figure 4: Overview of the roles & responsibilities of the different combined transport stakeholders

4.2. Roles & Responsibilities on the legal, safety, insurance, different business models:

Although ultimately the railway undertaking is always responsible for transport safety, each party involved in the chain is responsible for ensuring compliance with the legislation in force in its field, **as mentioned in Directive (EU) 2016/798**. The railway undertaking has the right (as well as the duty) to carry out safety audits on each of the parties.

4.2.1. Traditional CT business model:

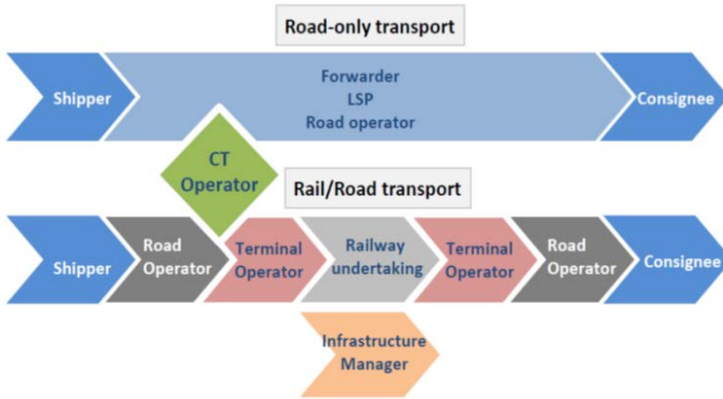


Figure 5: Overview of the traditional business model in combined transport

- Initially, a CT operator was a new type of specialised logistics service provider designed to link or arbitrate between the different demands of suppliers (= railways) and of the market.
- CT operators were then being asked to meet the needs of potential customers (shippers, freight forwarders, road carriers, shipping companies) towards the railways and to offer the capabilities of the rail TC service to the market.
- To further these objectives, TC operators were established as legally and economically independent companies, with shareholders from the shipping and road and/or rail transport sector.
- Over time, the CT operator role has expanded with increased involvement in transport services.
- CT operators provide services on behalf of third parties. They do not move their own consignments or provide their own CT loading units.
- CT operators are increasingly operating multi-user block trains while the market is also seeing the emergence of «company trains», dedicated to a single user who assumes the financial risk.
- CT operators generally do not aim to acquire assets. From an operational point of view, they buy rail traction from a railway undertaking which, in turn, buys train routes from the infrastructure manager, and they purchase terminal slots directly from the terminal operator or as a package from the railway undertaking.
- Many CT operators manage their own fleet of intermodal wagons, but they also rely on leases from railways and specialised companies.

4.2.2. Evolution of continental TC:

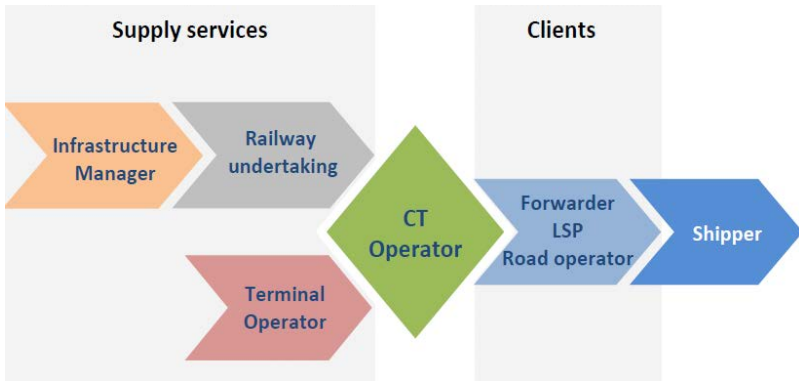


Figure 6: Overview of the continental business modal in combined transport

- The target customers of TC operators providing continental TC services are logistics service providers (freight forwarders and road operators) who offer door-to-door logistics concepts for shippers. (B-to-B and/or B-to-C).
- Development towards own use or leased TC equipment, the organisation of and eventual carrying out of the collection and delivery of intermodal loading units by trucks.
- CT operators therefore provide terminal-to-terminal transport services comprising of the following elements in the CT supply and value chain:
 1. Carriage by rail of their customers' loading units, including the provision of wagons
 2. Terminal handling (transshipment) of loading units at both ends of the rail journey
 3. Administrative clearance of collection and delivery trucks (check-in/check-out) and technical and security controls of loading units at both terminals (carried out by the terminal operator)

4.2.3. Evolution of maritime CT:

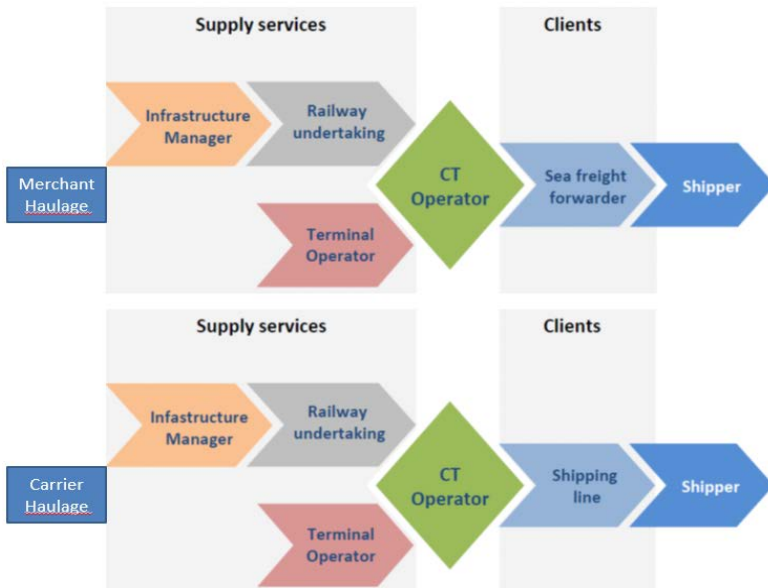


Figure 7: Overview of the maritime business modal in combined transport

In marine transport, TC operators provide complete door-to-door transport services which may include the following elements from the CT supply and value chain:

1. Transporting their customers' sea containers by rail, including providing the wagons
2. Handling (transshipment) of containers at the dry port terminal (hinterland)
3. Being aware of the fact that the responsibility for the transshipment of containers at the port terminal rests with the shipping company, and that the cost of transshipment between the marine port terminal and any hinterland mode of transport is included in the "terminal handling cost" (THC)
4. Handling the administrative clearance of delivery trucks (check-in/check-out) and loading unit technical and security checks at both terminals (carried out by the terminal operator)
5. Pre or post-routing containers by road to the inland terminal, including collecting or delivering empty containers to depots
6. Customs clearance

4.2.4. Evolution of logistics services:

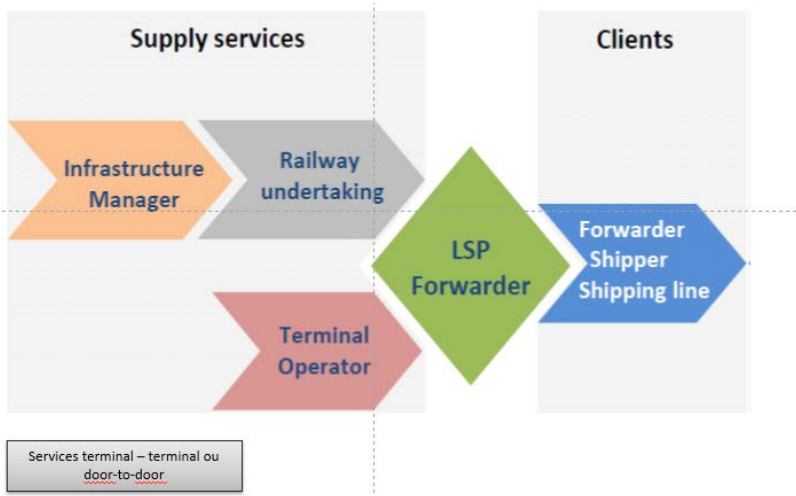


Figure 8: Overview of the LSP leading business model in combined transport

For a long time, the demand for and supply of CT services could be clearly distinguished, and the stakeholders attributed to one category or another. However, since the early 2000s, more and more logistics service providers (LSPs) have entered the CT market and have developed a new business model where they also occupy the role of CT operator.

There has been an evolution of the LSPs over time, first in managing shipments, next in offering transport capacity to other users (optimisation of resources) and finally in offering CT services to third parties.

Some of these new operators have even pushed the integration further, by:

- Applying for a railway undertaking license
- Taking over terminal handling facilities

In doing so, LSPs have increased their added value by providing a more integrated supply chain and eliminating the CT operator's broker function. Depending on the CT sector covered (continental/maritime) and the requirements of their clients, they may provide door-to-door or terminal-to-terminal services. Their service offer therefore covers a series of additional services:

- Transport of goods by road for themselves and on behalf of third parties
- Handling operations in terminals, including the administrative clearance of delivery trucks (check-in/check-out) and the container technical/security checks at the dry port terminal
- Any other additional logistical operations (customs declarations, container storage, etc.)

4.2.5. Legal and commercial links between railway undertakings

The rail transport market was liberalised in several phases by European regulation (EU)2001/440.

As a result, competition between the incumbent railway companies has increased, allowing the new private undertakings to emerge.

Therefore, the new commercial relationships between these RUs needed to be redefined.

This is where the International Rail Transport Committee (CIT) comes into play, as it has produced template documents for each possible business relationship:

- Uniform Rules concerning the Contract of International Carriage of Goods by Rail (CIM)
- Customer Agreement Checklist
- Hiring locomotives
- Joint contracting
- Provision of services
- Sub-contracting between RUs
- Provision of traction
- Guidelines for the consignment note

All these documents are available on the CIT Website: www.cit-rail.org

CHAPTER 5: STANDARDISATION LANDSCAPE IN EUROPE

The stakeholders involved in combined transport have to comply with different regulations and standards (TSI, EN, IRS, ISO) that define the design/testing requirements for ILUs and their components, as well as establish the conditions for ILU compatibility, and the means used for their conveyance in the different transport modes (trucks, wagons, and ships) and in the terminals for their transshipment.

5.1. Diagram

The following diagram summarises standardisation for combined transport with a focus on road-rail conveyance.

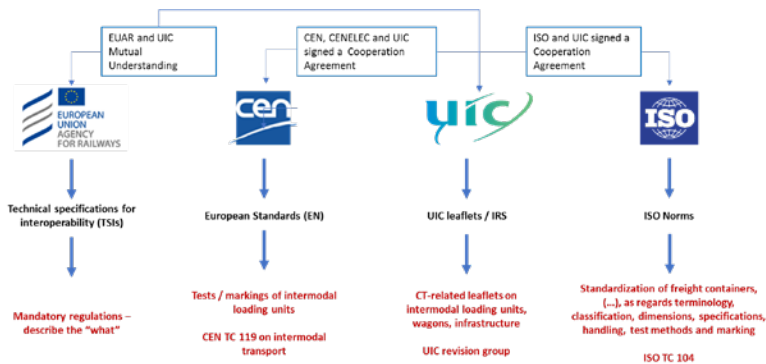


Figure 9: Overview of the standardisation bodies in Europe

5.2. Standardisation at UIC

International Rail Solutions (IRS) are documents for the railway sector, published and maintained by UIC, which contain technical specifications for the various domains of rail transport (e.g. infrastructure and rolling stock).

They constitute the very basis of standards and practices in international rail transport and thus facilitate cooperation between all stakeholders in the rail logistics chain, while fundamentally ensuring transport safety.

Specific working groups (such as the Sector Expert Teams (SET)) and the Combined Transport Special Group (made up of experts seconded by UIC members) are working to define and update these IRSs before their final approval and editing.

The specificities of freight transport, and particularly of combined transport, are dealt with by SET03 and the Combined Transport Special Group.

The legal basis for these standardisation activities is given by the European Union Agency for Railways (ERA), which was established by Regulation (EU) 2016/796. The agency's purpose is to support the development of a single European railway area, without frontiers, guaranteeing a high level of safety⁴.

Interoperability of the European railway system is defined in Directive 2016/797, with Articles 30 and 31 being the most relevant.

IRS 50596-7 gives the skills and knowledge necessary for entities carrying out the coding certifications, as well as the standards and benchmarks essential for these tasks. IRS 50596-6, in its appendices, repeats the coding procedures for transport units, lines and combined transport wagons.

Below is an overview of the relevant IRSs, given together with some figures explaining their applications.

- IRS 50591
- IRS 50596-6
- IRS 50592
- IRS 50571-4
- IRS 50571-5
- IRS 50571-6

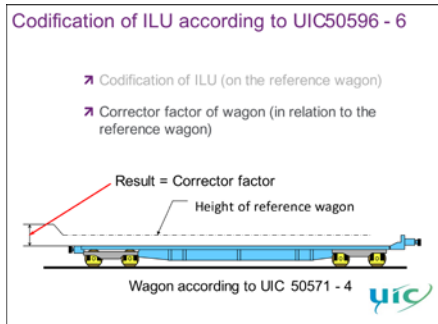
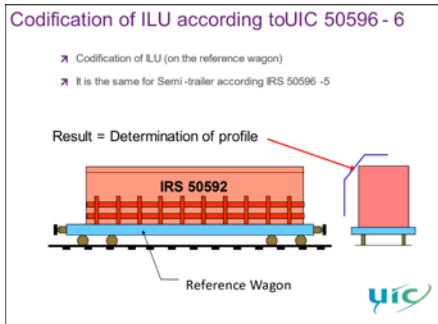
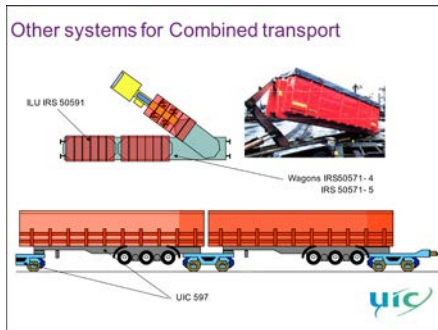
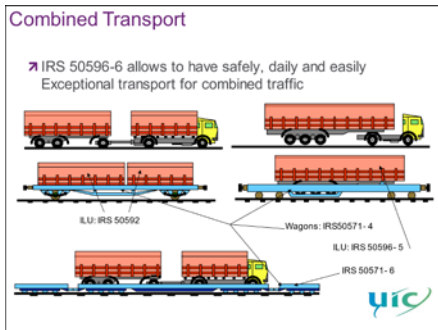


Figure 11: procedure for approval of wagons

⁴ (European Agency for Railways)

CHAPTER 6: A STEP-BY-STEP APPROACH WHEN STARTING COMBINED TRANSPORT OPERATIONS

6.1. Step 1: Do we possess the right wagons? Application to place into service according to Directive 2016/797/CE.

The application procedure is as follows:

- The applicant (often the manufacturer of the wagon or ILU) drafts a technical file relating to the unit to be put into circulation. This can also concern a type of unit destined for large-scale production, without each individual unit requiring a separate file.



Figure 11: procedure for approval of wagons

- In accordance with Article 30 of Directive 2016/797, this file is sent to a recognised conformity assessment body, listed in the appendix of IRS 50596-6, to receive a technical compatibility certificate (Article 21 of Directive 2016/797).

- For a wagon to be placed on the market, the applicant sends an application for authorisation accompanied by the technical compatibility certificate to ERA, in accordance with Regulation 796/2016.

NOTE: it is important to include all of the Member States which the wagon will operate in. ERA will also extend temporary authorisations from national rail safety authorities.

Details on the authorisation for putting units into service are given in Figure 12.

Authorisation to put into Service			
What	Reference document	Marking	Who deliver
Wagon except corrector factor	TSI WAG	TEN xxx GE	Check by NOBO, deliver by NSA
Corrector factor of wagon	UIC50596 -6	Yellow triangle or (corrector factor and white triangle)	Competent Authority of each country
ILU	Relevant UIC IRS	Yellow plate	Competent Authority (only one)




Figure 12: Reference document and bodies competent to authorise placing into service

6.2. Step 2: Do we agree on the commercial conditions?

As shown in Figure 12 above (see also Chapter 4: **The roles and responsibilities of different stakeholders**), there are many different factors to consider within the CT chain, which makes the commercial rules a little more complex than those of conventional transport.

The two additional and central elements are HTL and TOA (see Definitions), which constitute a CT rail transport contract and correspond to crucial moments in the CT chain, and rail transport. HLR defines the final moment when a train, and its related documents, must be handed over to the RU, which then undertakes to respect train's planned departure time.

Similarly, MAD defines the moment when the train arrives, and the rail transport contract is considered terminated.

These 2 elements therefore serve as the basis for any quality agreements (KPIs).

Rail transport purchase contracts are governed by the Convention concerning International Carriage by Rail (COTIF), whose CIM rules (Uniform rules concerning the contract for the international carriage of goods by rail) are maintained by CIT (the International Transport Committee) . (cit-rail.org)

A quality agreement can take several forms:

- Co-contracting - when several RUs act together to carry out the transport contract
- Subcontracting - when an RU responsible for carrying out a transport contract entrusts the physical operations of all or part of it to another RU, known as a substitute

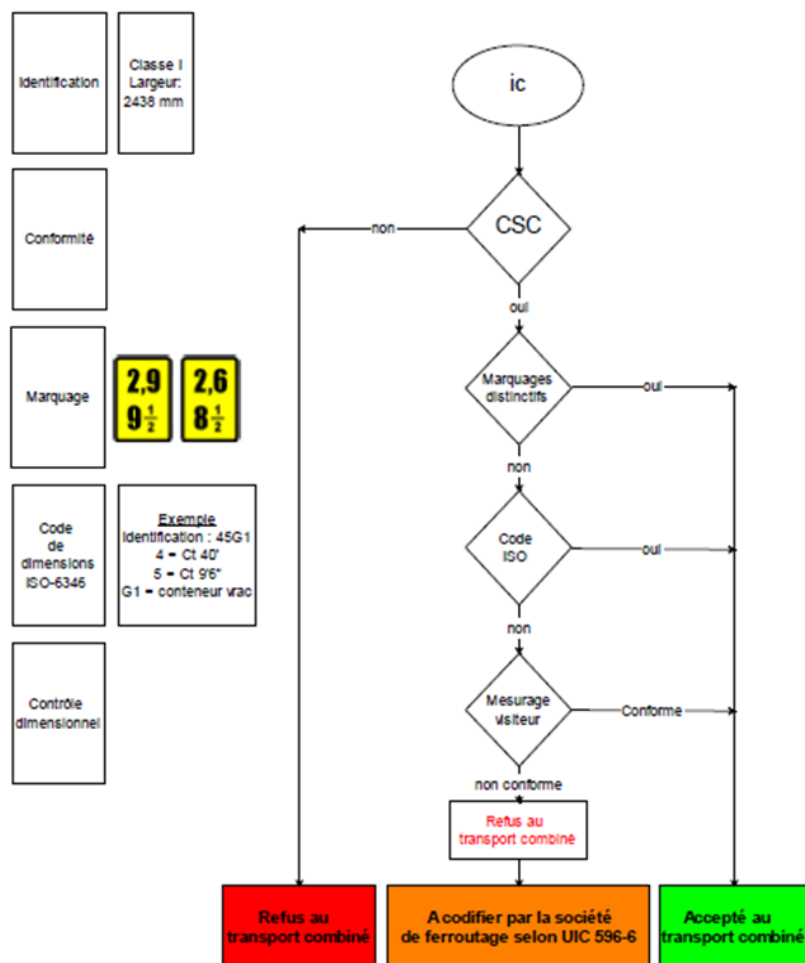
To help stakeholders, CIT has also published a checklist which includes the important points to be mentioned when drawing up a transport contract.

6.3. Step 3: Do we have the right hand-over procedures?

When a wagon is loaded with one (or more) ILUs, the railway undertaking ensures that the ILU complies with the regulations in force.

The following diagram shows this transport acceptance procedure:

Reconnaissance et acceptation des conteneurs standardisés ISO (ic)



Reconnaissance et acceptation des conteneurs terrestres (it)

Identification

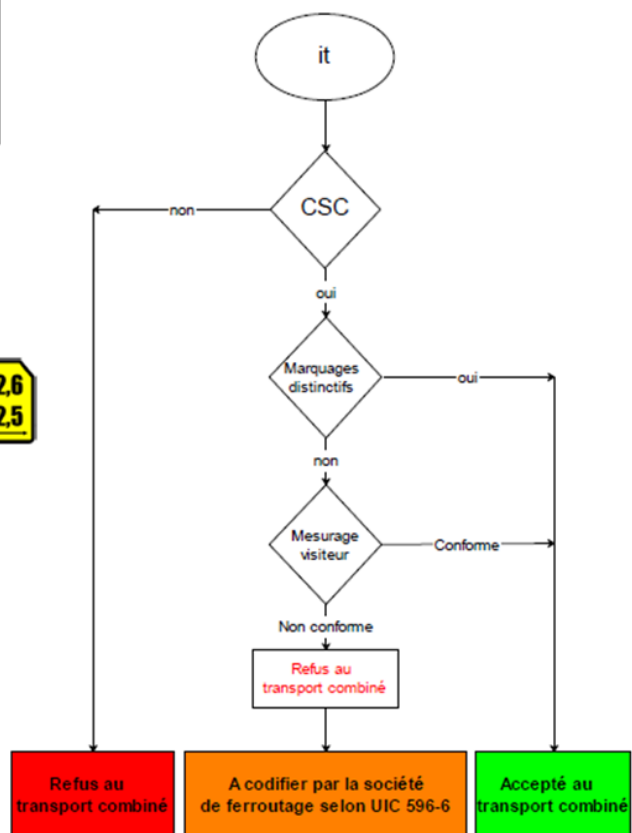
Classe II:
2500 x 2600
Classe III:
2600 x 2600

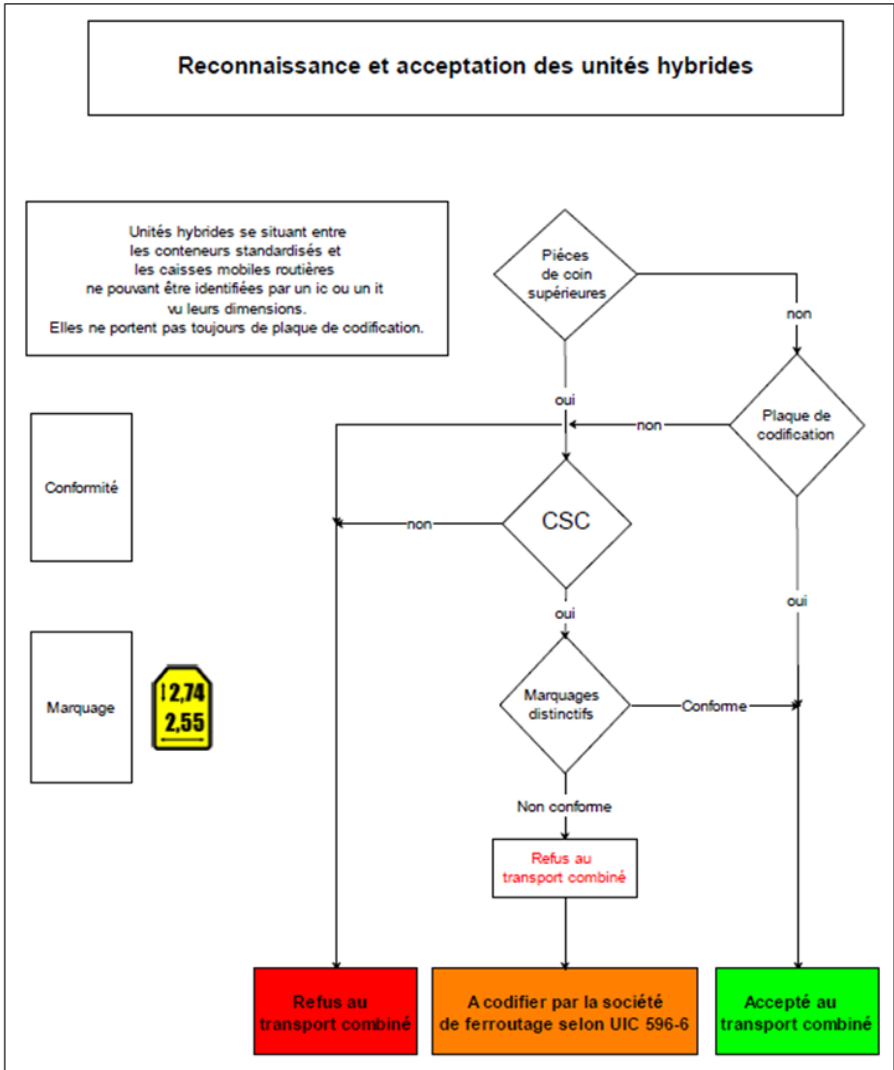
Conformité

Marquage



Contrôle dimensionnel





6.4. Step 4: Have we applied the right loading guidelines?

To help loaders when loading wagons, the UIC publishes and updates a user manual called the "Loading Guidelines". This manual provides all the necessary information regarding how to properly load and secure goods on a wagon, in order to ensure maximum safety during rail transport.

This document consists of two volumes, which are available free of charge on the UIC website at <https://shop.uic.org/en/loading-rules/14476-uic-loading-rules-volume-1.html>.

CHAPTER 7: HOW UIC'S COMBINED TRANSPORT GROUP HELPS ITS MEMBERS IN REALISING SAFE AND EFFICIENT COMBINED TRANSPORT OPERATIONS

7.1. A general introduction of UIC

UIC was founded in Paris on 17 October 1922, after a series of discussions that began at conferences held on 3 November 1921 in Portorosa (formerly in Italy, now in Slovenia) and on 3 May 1922 in Geneva.

More information about its activities can be found at www.uic.org.

UIC's primary aim is to harmonise and improve operations and the operational conditions of railways throughout the world, with their motto being "Unity, Solidarity and Universality".

When it was created, UIC had 51 members from 29 countries, including Japan and China, and these numbers quickly grew through the USSR, and countries from the Middle East and North Africa joining. Currently, UIC has 210 members across the 6 continents.

UIC recommendations are published in the form of "UIC IRSs", formerly known as "UIC Leaflets". Yet following the effects of globalisation and the establishment of intercontinental freight corridors, the latter were transformed into **International Railway Solutions (IRSs)**. IRSs cover all areas of the railway sector, from the technical definition of wagons, including the technical specifications of Intermodal Loading Units (ILU), such as craneable semi-trailers, to requirements on the use of sleepers. They are mandatory or recommended, depending on their application in the field.

7.2. The freight department and The Combined Transport Special Group

The Freight Forum is the organisational body for freight activities and determines its priorities and work programme based around 7 competence centres⁵. Within these competence centres, special groups focus on the specificities of the different domains (e.g., IT, wagons, standardisation, legislation, etc.).

For combined transport, this is the **Combined Transport Special Group (CTSG)**. It promotes and protects the interests of combined transport at a European level, especially as CT combines several modes of transport and is therefore subject to different legislation for each of these modes, in addition the specific European directive (92/106/EEC, see previous chapter) on the topic. It also serves TC interests through its close links with other European organisations.

The Combined Special Transport Group ensures all combined transport operations are compliant with railway specificities, so that goods transported in ILUs can be transhipped to the railway.

⁵ Combined transport, corridor development, dangerous goods, data exchange, load safety, train operations, wagon utilisation

They also promote common goals and interests for the development of combined transport in Europe and combined transport rail compliance.

By participating in this working group, it is possible to:

- Gain knowledge on the latest combined transport developments
- Further develop and shape combined transport to meet the railways' specificities
- Promote the railways' role in combined transport operations
- Level the playing field between modes of transport in terms of CT
- Work with leading combined transport railway operators in Europe, advancing the use of best practices
- Ensure that the technical aspects of combined transport align with the sector's interests

Therefore, the Combined Transport Special Group actively participates in addressing operational issues whenever legislative changes are in progress.

CONCLUSION

These Combined Transport Guidelines are a new UIC publication for a more in depth insight into its general expertise within the freight sector, and also more specifically in intermodal and combined transport operations. The guidelines bring together the essential elements for acquiring deeper knowledge of intermodal operations.

The document has shown all interested parties what it takes to start combined transport operations and where more detailed knowledge can be found, including within UIC. As such it sets UIC at the centre of technical knowledge on rail operations.

This technical knowledge can assist in centring the conversation more around rail (freight) operations. Knowing that rail freight is the most environmentally friendly transport method, the publication of these guidelines may indirectly help to achieve the aim of significantly increasing rail freight's market share in the near future.

The guidelines are an active document with more editions to follow. Therefore, all interested parties are invited to provide their input or work together on future updates.

INTERNATIONAL UNION OF RAILWAYS
16, rue Jean Rey - 75015 Paris - France
Tel. +33 (0)1 44 49 20 20
Fax +33 (0)1 44 49 20 29
E-mail: info@uic.org

Published by: UIC Freight Department
Director of publication: Philip Van Den Bosch
Cover and layout: Ludovic Wattignies
Photo credit: Adobe Stock
Printing: UIC

ISBN 978-2-7461-3317-4
Copyright deposit: October 2023

www.uic.org



#UICrail

