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INTEROPERABILITY BEYOND THE EU

Discussion paper

Extending a model for rail interoperability beyond the EU for those countries that have a heritage system based on the UIC 1435 mm gauge is an objective which must be pursued for three main reasons:

- to facilitate the creation of Euro-Asian rail corridors and regional substructures that will be forming the backbone of an efficient international transport network;
- to align technical developments in the construction of railway material within a single legal framework to facilitate investment and enable economies of scale;
- to promote a systematically shared and modern vision of rail transport.

All of which will lead to an improvement of the competitive position of rail.

At present, the EU is a prime example of a regional area that has defined legal provisions to transform a patchwork of largely incompatible railway systems into a consistent and modern model. The model is consistent because it enables the railway system to become genuinely interoperable, with a series of texts for the development of homogeneous technical solutions, taking into account the operational aspects as well (e.g. a European licence for drivers). It is also modern as it promotes innovation. On the one hand, technical developments are encouraged as the regulations rely mainly on functional requirements and go into prescriptive detail only when necessary for technical compatibility or safety. On the other hand, safety management through common safety methods allows members of the sector to define transparent and non-discriminatory voluntary harmonisation. These underpinning principles make the EU provisions interesting for consideration in a wider geographical context.

After presenting the interest in defining a technical target system for interoperability beyond the EU (1) and the value of COTIF as a legal basis (2), this document proposes an implementing approach (3).

A technical annex then explains in more detail what the main feature of the target system might be.

1. ASSUMPTIONS FOR DEFINING A TARGET SYSTEM

The patchwork of fully developed heritage national rail systems within the EU is still complex. In order to extend the scope of common technical regulations outside the EU for mutually agreed international traffic, it will be necessary to adapt and simplify the EU's fully developed regulations.

First of all, EU rail legislation covers the entire rail system, including main lines as well as branch lines. In the framework of developing interoperability within COTIF, provisions will only cover international traffic. This may allow for more harmonised access rules.

Furthermore, from a practical point of view many non-EU OTIF Member States are in the process of developing their railway systems and thus have a better chance of harmonised development.

Finally, the concept of interoperability in the EU is linked to the opening of the markets within a competitive model. However, within their own borders, or in regional areas such as the GCC project in the Gulf, States can also organise their railway system around an organisational model that aims at cooperation and reciprocity rather than competition. COTIF is and should remain compatible with any organisational model of railways.

The desire to make railways more efficient and business-oriented is not exclusive to Member States of the EU. In order to use railways to their full potential for international traffic, it would be advisable to allow international train access to be coordinated and agreed upon with neighbouring States without imposing a common market model for train operation.

COTIF could provide a platform to define a target system for interoperability beyond the EU, relying on the following assumptions:

- ⇒ compared with the EU, the definition of a target system within OTIF may be more specific and focussed on international transport only.
- ⇒ the concept of interoperability within COTIF needs to be compatible with the competitive model being pursued by the EU, but also with other models applied in the OTIF Member States.

2. THE NEED FOR A MULTILATERAL LEGAL BASIS:

It is a matter of debate as to whether it is necessary to rely on a specific international law to implement a target system for interoperability. Indeed, some countries or groups of countries already use the interoperability concept as defined in the EU, and in particular the TSI as a basis for the development of new networks. This is to a certain extent the case in China, with the local version of ERTMS, and this is also the intention of the GCC for the future Gulf network.

The Secretariat of OTIF has regular contacts with non-EU Member States that are concerned with implementing interoperable systems. We are convinced that the best way forward is to use a multilateral instrument, since:

- the interoperability provisions in the EU take far-reaching legal integration, such as a single European market between EU Member States, as a basis. Even if a neighbouring State of the EU wished to have international rail traffic with the EU, it would not only have to make its own legal provisions compatible with the EU railway regulations, it would also need a bilateral agreement with the EU for it to interact correctly (examples are CH and NO);
- Every State outside the EU that wished to establish rail interoperability with its neighbouring States would have to conclude bilateral or multilateral agreements. In order to avoid multiple and potentially incompatible agreements, international harmonisation of rules in the scope of COTIF seems more efficient.
- the regulations will be managed at intergovernmental level in order to ensure that all Member States and their respective stakeholders can participate in defining the regulations.

From a conceptual point of view, four layers or levels can be distinguished in the process of achieving international railway harmonisation of rules (see figure 1), starting from the international contractual regulation of the transport of goods and passengers (level 1) to a unified railway market (level 4).

It is important to note that for each level, several types of legislation are required, such as contractual liability, technical regulations, safety responsibilities and operational provisions

For example, in order for level 2 to be implemented (international exchange of wagons or passenger coaches, which is fully covered by the present scope of COTIF), sufficient legal certainty needs to be established for vehicle keepers to have their vehicles used abroad. The COTIF CUV (contracts of use of vehicles) sets out provisions that regulate contractual liability between the keeper and the railway undertakings using the vehicles. The CUV is considered as private or contractual law, defining the relations between the contracting parties. These contractual law provisions are also used for international traffic within the EU.

In this respect, COTIF provides the relevant legal structure since, from the end of the 19th century, it has provided the contractual tools and the corresponding technical tools for implementing international traffic.

A more detailed description of the different levels is included at annex.

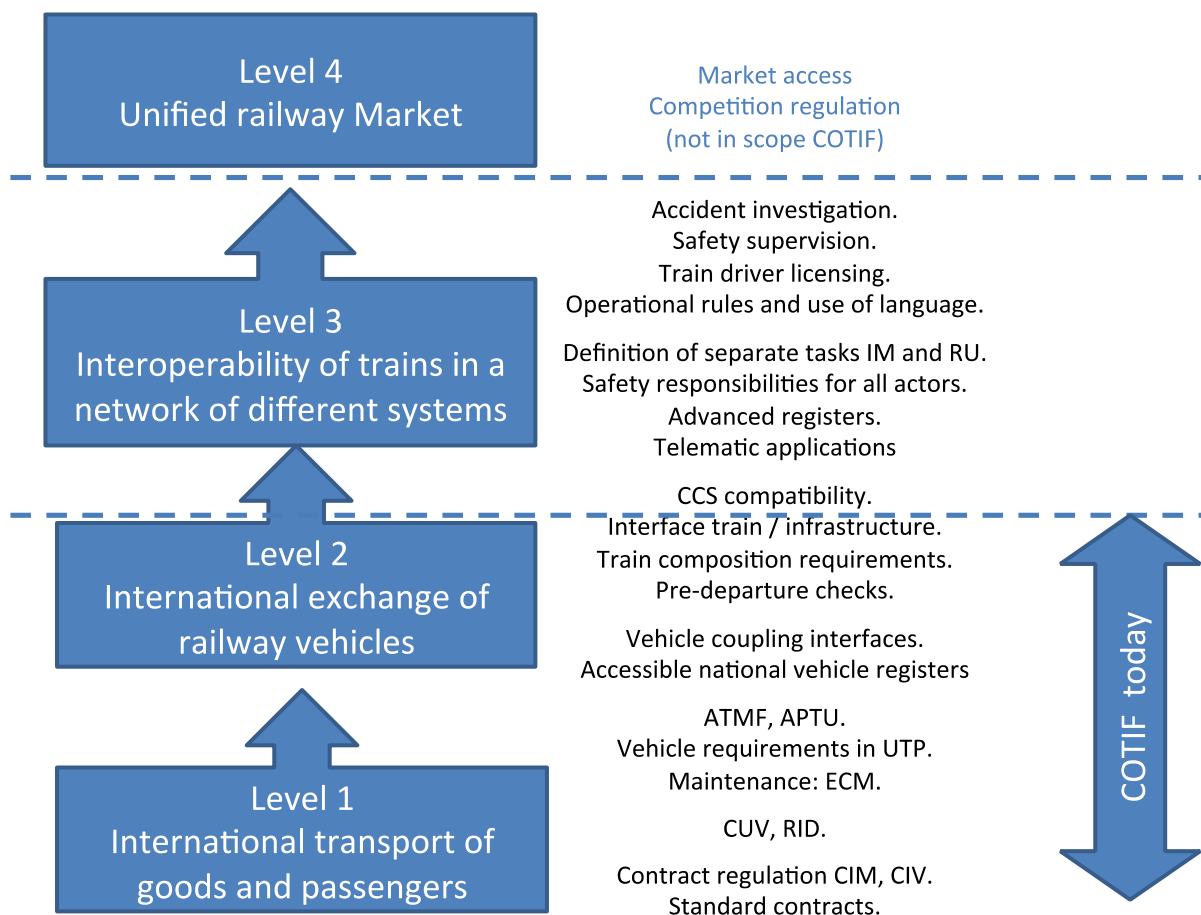


Figure 1: The 4 levels for achieving a unified railway market

In the process of defining the best implementation path for a target system for interoperability (level 3), the question of safety principles is particularly sensitive. It would be necessary to concentrate on what needs to be arranged at international level in order to harmonise operational and safety provisions and deal with incidents and accidents. As a preliminary analysis, the Secretariat believes that operational safety provisions should remain largely a national competence, only requiring States to be transparent with their rules if they wish to have interoperability.

COTIF has the relevant characteristics to provide the supporting legal framework to achieve interoperability beyond the EU, because:

- it is compatible with the general technical requirements in the EU;
- its scope provides for the development of the private and public law instruments that would be necessary for interoperability;
- the multilateral nature of COTIF allows for a well-structured development and management of the regulations.

3. A PARTNERSHIP APPROACH IS NECESSARY

OTIF alone cannot support such a project, mainly because it only covers high-level provisions and it does not cover the operational regulations and procedures that would be needed. Furthermore, from a political point of view, most of the railway ecosystems outside the EU are still integrated.

Two questions are then to be distinguished in the process towards interoperability beyond the EU:

- the technical path, which is mainly how, at CTE level in OTIF and in close partnership with ERA, we extract from the safety directive and the TSI corpus what is necessary to obtain comprehensive regulations;
- the promotion of the concept in OTIF Member States or interested countries (China, GCC, etc.) that do not share the same philosophy on how to regulate the rail sector.

3.1 Develop interoperability within COTIF

COTIF is well suited to the development of an interoperability concept, since it can provide binding law that will ensure that the provisions are actually implemented and followed. It also provides a neutral approach as far as the organisation of the rail market is concerned.

In the annex to this document, a detailed note describes how we see the future work. Briefly, a new appendix to COTIF will have to be developed to allow OTIF MS that already apply (or are willing to apply) ATMF and APTU to go one step ahead and allow the seamless circulation of trains.

The European Commission and ERA should of course be convinced of the interest of the project in order to develop a common vision of the target system and provide the necessary technical support.

The annex develops in more depth the possible developments that the Secretariat is considering. In terms of a plan of action, we propose the following provisional planning:

- first half of 2016: definition of a shared road map between COM, ERA and OTIF based on this paper;
- second half 2016: start work in CTE on a new Appendix to COTIF. This work will also involve the legal department of OTIF, in order to preserve the consistency of contract law and public law;
- second half of 2017: approval at Revision Committee;
- second half of 2018: approval at General Assembly.
- 2019 - 2020: development of the secondary regulations (UTP required).

3.2 The promotion of the EU interoperability concept

Outside the EU, the word interoperability is widely used, but does not have a universally accepted meaning. OSJD for instance has its own interpretation that is based on its own commonly designed technical and operational system.

The EU interoperability concept is most suited to form the basis of the COTIF developments. It relies on high level legally binding principles contained in directives, which are further detailed in secondary legislation, such as TSIs and Common Safety Methods, several of which already have been transposed into COTIF provisions such as UTP. The European model is nevertheless complemented by technical and operational harmonisation, which is agreed at sector level without interference from the authorities

and therefore not mandatory. This makes harmonisation business-driven and adaptable to new developments.

Detailed technical standardisation at the level of the industry is left to standardisation bodies such as CEN, CENELEC, ISO and ETSI.

Historically, UIC also played a role in technical harmonisation, but this role has migrated to operational and procedural harmonisation. The spread of responsibilities has changed with development in the TSI and the corresponding UTP- This can be summarised by the following diagram, which differentiates:

- The legislative level **setting rules** (aims and principles and corresponding TSI/UTP);
- **Standardisation** by standardisation bodies. Standards are in principle voluntary in their application. Compliance with standards is only mandatory when rules (such as TSI/UTP) require standards be complied with;
- **Harmonisation** at the level of the sector to implement the legislative requirements in a harmonised way.

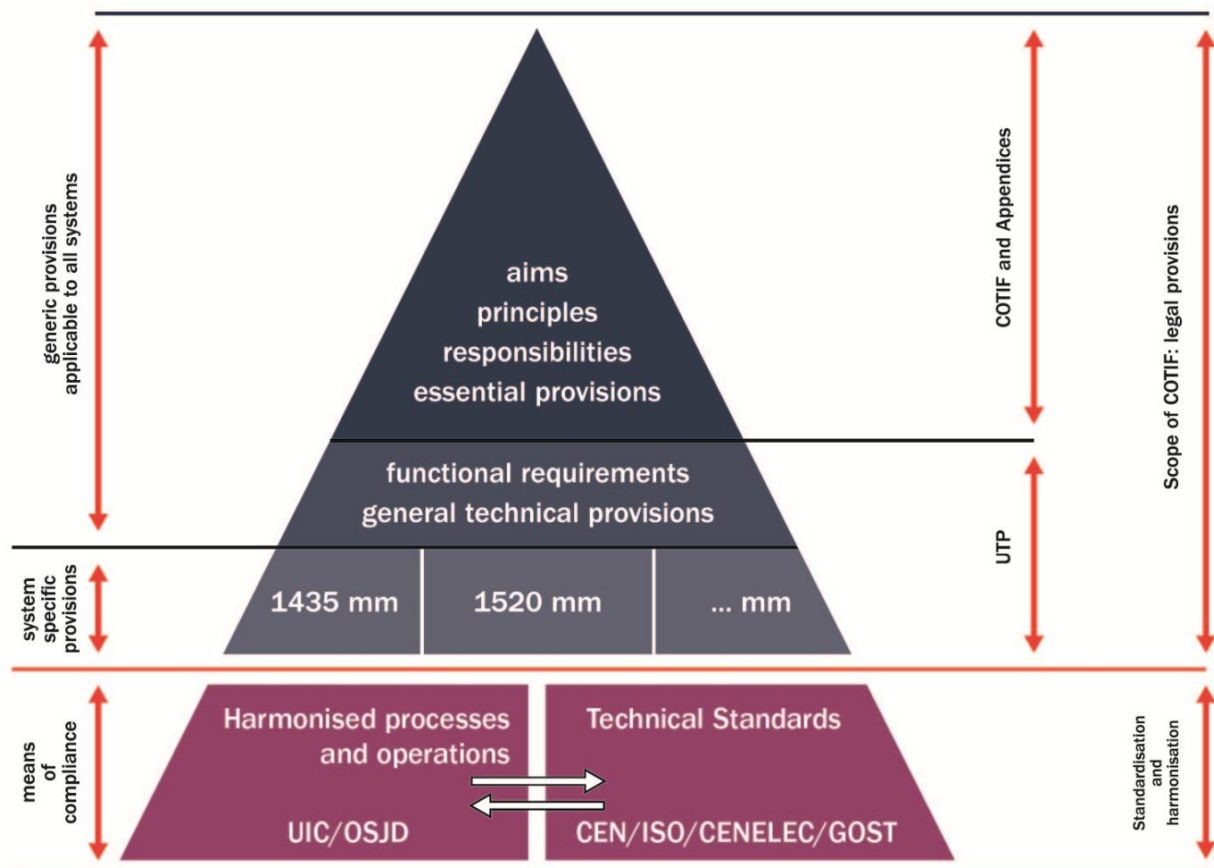


Figure 2: Hierarchy of the technical regulations

Most of the railway companies in and outside the EU are members of UIC. That is also true for developing ones, like those in the Gulf Cooperation Council core network. The OTIF Secretariat

therefore thinks it is important to work together with UIC to define the border between legal provisions and operational harmonisation to achieve interoperability.

Promoting the interoperability concept, so that it will be applied by States, will require a common vision that is shared by EU/OTIF, but equally by ERA and UIC. It will thus be crucial to develop a common understanding between the said organisations to allow efficient access to the sector and to States outside the EU.

ANNEX:

ANALYSYS OF THE DEVELOPMENT OF INTEROPERABILITY WITHIN COTIF

The aim of this analysis is to explore the conceptual differences and common features between COTIF on the one hand and the provisions of EU law relating to railways on the other.

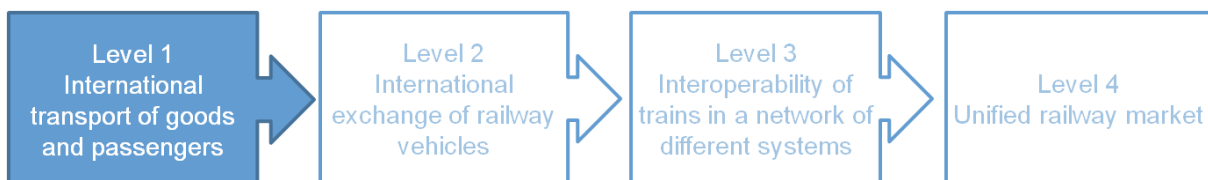
The document will be a basis for discussing the further development of an interoperability concept under COTIF.

1. COTIF: AN INTERFACE BETWEEN DIFFERENT SYSTEMS

The railway systems that rely on COTIF for their international relations could be seen as a network of connected but separate systems model, where passengers, goods, vehicles and/or trains are exchanged between the systems. The network could be modelled on the basis of virtual levels, where harmonising to a higher level will allow smoother and more harmonised international traffic, but also require more complex and harmonised regulations.

At the first level of this network model is COTIF contract law as set out in CIM and CIV, facilitating the transport of goods and passengers across borders by means of harmonised contractual provisions. These provisions have been developed under COTIF since the first Convention at the end of the 19th century. These are business-driven provisions, in order to establish enough legal certainty for consignors and passengers to use the railways as a mode of international transport. These provisions do not regulate the railway system itself but provide an interface between the railways and its customers. They are considered private or contractual law, defining the relations between the contracting parties. These provisions are also used for international traffic within the EU.

RID is applied across the different levels of this model as it applies whenever dangerous goods are concerned. The interaction between RID and the other railway regulations is not further discussed in this paper, since the scope and principle of RID do not interfere with an interoperability model.



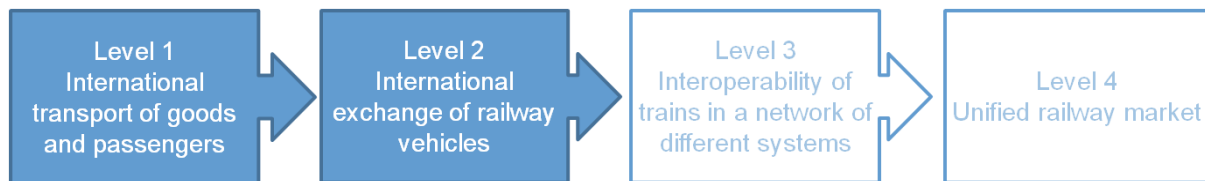
A second level of COTIF provisions does set out requirements to be applied in the railway system itself by facilitating the use of freight wagons or passenger coaches in international traffic. In order for vehicles to be used in different railway systems, harmonised technical provisions need to be applied for the interfaces between the vehicle and the infrastructure and also between the vehicles themselves. These provisions were previously set out by the Technical Unity¹, and the RIC and RIV agreements. RIC and RIV were agreed, updated and applied by railway companies, whereas COTIF provisions are agreed between States. Technical Unity, RIV and the technical parts of RIC are no longer in use.

¹ Technical Unity was an intergovernmental agreement that came into force on 1 April 1887. These rules were prepared at two international conferences on the Technical Unity of Railways in October 1882 and July 1886. The participating countries explored and found solutions to facilitate cross-border operations from the technical point of view. Technical Unity was applied from the beginning in Austro-Hungary, France, Germany, Italy and Switzerland and later, other countries also joined: Belgium, Bulgaria, Denmark, Greece, Luxembourg, Turkey and Yugoslavia. Article 10 of APTU regulates the abrogation of Technical Unity by the entry into force of the UTP.

Today, superseding provisions have been set out in the UTPs and the approval processes are set out in ATMF. In addition ATMF makes reference to the EU provisions in its Article 3a, which sets out the conditions under which vehicles authorised in the EU can be used in non-EU OTIF Contracting States and vice versa. By means of transposing all vehicle related TSIs into UTPs under COTIF, all vehicle rules (also those necessary for interoperability and safe design) are fully covered in level 2.

Railway undertakings that operate foreign vehicles in their trains should be in a position to trust that the vehicle is well maintained. For this purpose, the entity in charge of maintenance (ECM) has been defined, which must ensure that each vehicle is in a good state of maintenance. All these provisions are considered public law, describing obligations for any person or entity

In order to establish sufficient legal certainty for vehicle keepers to have them used abroad, the CUV sets out provisions that regulate the contractual liability between the keeper and the railway undertakings using the vehicles. The CUV is considered private or contractual law, defining the relations between the contracting parties. The CUV provisions are also used for contracts between keepers and carriers within the EU. To implement the provisions of CUV, but also elements from public law, such as the ECM regulation, the railway sector has developed standard multilateral contracts in the form of the General Conditions of Use (GCU) which set out the detailed contractual provisions between the signatories.



A third level of the network model facilitates the operation of complete trains across borders, referred to as interoperability. COTIF does not comprehensively cover this level at present; however, it does provide elements relating to interoperability, such as train preparation. Also the CUI, which sets out the contractual relations between railway undertakings and infrastructure managers, is applied in an interoperable model.

Although COTIF and EU provisions have been developed for different aims, there are no conflicting objectives. This is confirmed by the fact that the EU acceded to COTIF in 2011, whereby the EU became a party to the Convention and legally bound itself in accordance with the accession agreement. Moreover, all EU Member States with a railway network are also members of OTIF. The provisions of CIM, CUV, RID and CIV are applicable to international transport within the EU through COTIF in all these states. CIV provisions are complemented by EU passenger rights regulations and the RID regulation is also made mandatory for domestic traffic through an EU Directive.

Whereas the harmonised EU railway system relies on COTIF provisions of CIM, CUV, CIV and RID, the COTIF provisions developed under APTU and ATMF owe much of their content to secondary EU legislation, such as TSIs.

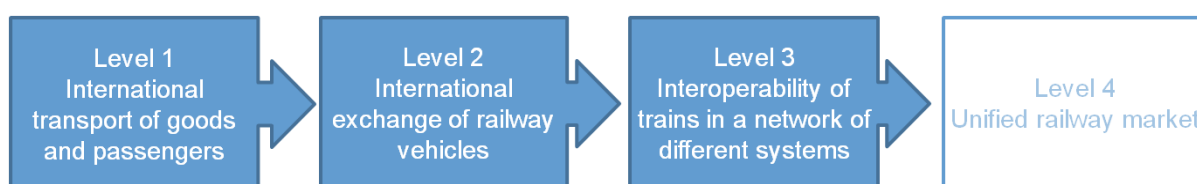
2. EU: A UNIFIED APPROACH FOR A SINGLE RAIL MARKET

In the early 1990s, faced with a legacy of incompatible national railway systems, the EU (then the European Communities) started a process of revitalising the railways with the vision of bringing the different national systems into one interoperable European railway system. A vision of interoperability was set out, based on a system approach and moving the railway sector further from self-regulation to public regulation. In addition, the EU introduced market principles, financing rules, and the gradual opening of rail transport to competition. The underlying aims were to make the European railway system more efficient.

The chosen policy aimed to make railways interoperable across State borders, the principles of which were set out in the consecutive Interoperability Directives, starting in 1996 with the trans-European high speed rail network, followed in 2001 by the trans-European conventional network and finally merged in 2008 into Directive 2008/57/EC on the *interoperability of the rail system within the Community*. In this concept, the interoperability of the railway system relies on compatible subsystems, in structural areas such as rolling stock, infrastructure, energy and signalling and in functional areas such as operation and traffic management.

The model relied on a separation of functions of previously integrated railway companies; most noticeably the creation of functionally independent railway undertakings (RUs) and infrastructure managers (IMs) working together in a shared system. This required an operational interface definition between the activities of the RU and the IM, which has been set out in the Technical Specification for Interoperability concerning the subsystem operations and traffic management (TSI OPE).

In the diagram this corresponds to level 3.

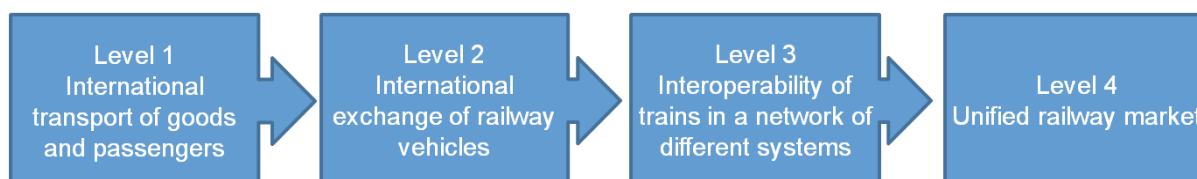


The EU requires railway safety to be at least maintained and even further improved, when reasonably practicable and taking into account the competitiveness of the rail transport mode. The basis for these principles was established in a common regulatory framework for railway safety in the shape of the Safety Directive 2004/49/EC. The Safety Directive is based on the principle of a shared system, where the IMs and RUs together have responsibility for the safe operation of the railway system. These safety responsibilities must be managed in a systematic way and in order to achieve this, each IM and RU must establish their safety management system. The safety regulation is based on the principle that the sector itself is best placed to decide which detailed measures are required. In order to monitor the level of safety and its development over time, common safety indicators were developed.

The role of the government authorities with respect to safety lies mainly in issuing high level safety rules, supervision through independent National Safety Authorities and accident investigation.

The European interoperability and safety Directives are being implemented gradually for the railway system as a whole and for the separate elements comprising it (components, subsystems). By implementing the Directives, each state has allocated clear responsibilities to all actors (manufacturers, infrastructure managers, railway undertakings, notified bodies and authorities), thus making possible fair, transparent and non-discriminatory access to the railway system.

The EU adopted a single system vision, by harmonising the tasks and responsibilities of all railway actors active in the EU. The provisions applied in the EU in the framework of the Interoperability, Safety and Access Directives (in addition to the provisions of COTIF for contract law and the dangerous goods regulation) describe a unified railway market which is referred to in the diagram as level 4.



3. COTIF'S FUTURE: A NETWORK OF CONNECTED SYSTEMS?

Harmonised EU provisions support the aim of making the railway system more efficient by market opening and competition, whilst COTIF aims at using vehicles and transporting passengers and goods in international traffic based on common contracts, processes and requirements.

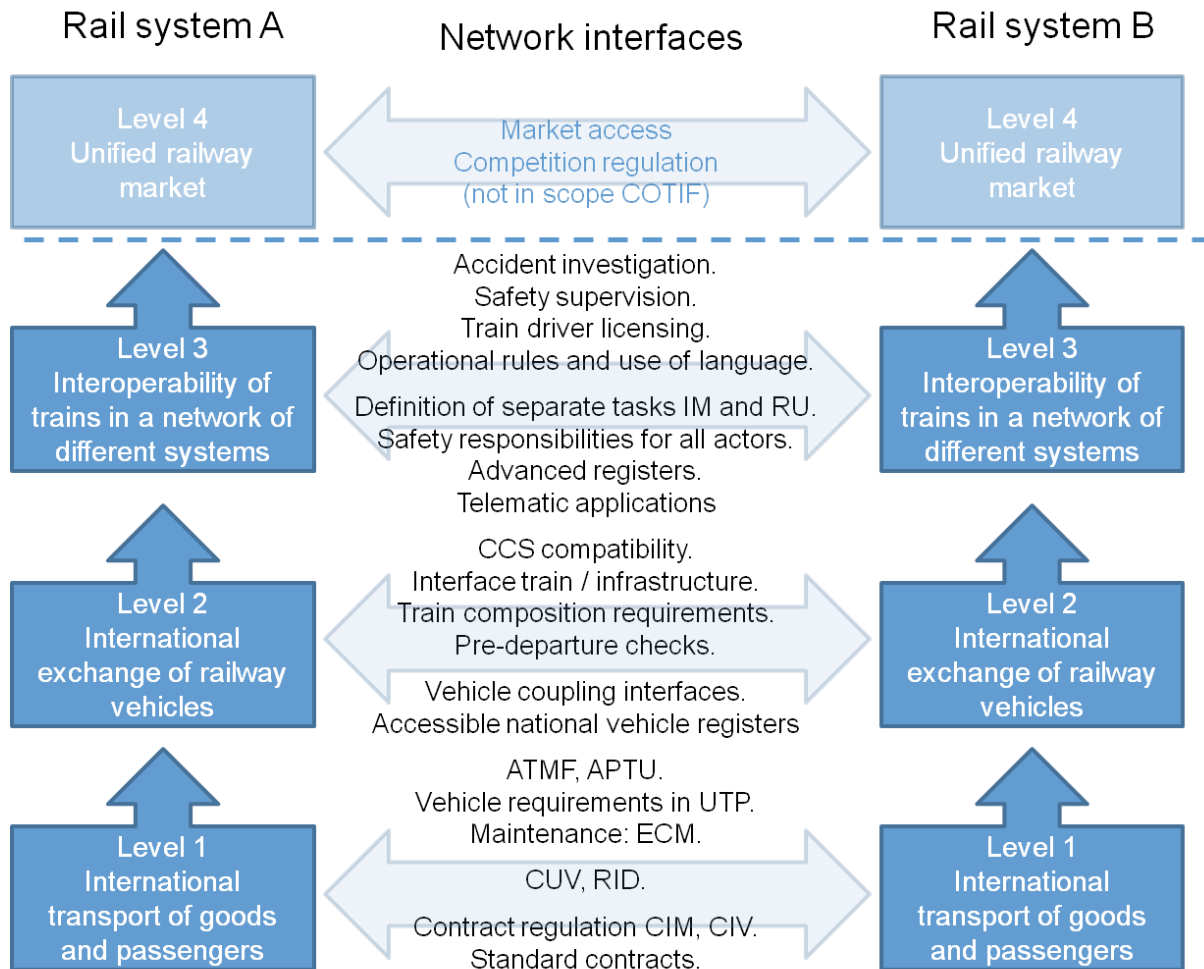
The EU provisions take far-reaching legal integration as a basis and as such are not suitable for use outside the EU. Even if a neighbouring state of the EU wished to adopt (part of) the EU railway regulations, it would still need a bilateral agreement with the EU for it to interact correctly with EU law. COTIF is a convention between sovereign states and not an instrument for economic integration. For these reason it is not feasible to consider developments in COTIF leading to the systematic integration of national railway systems or to the introduction of a unified railway market. Therefore, the further development of COTIF should focus on level 3 of the diagram.



The concept of interoperability needs to be separated from the opening of the markets and from the particular model being pursued by the EU. Nevertheless, the desire to make railways more efficient and business-oriented is not exclusive to Member States of the EU. It is clear that within their own borders, States can organise their railway system in the way most efficient and beneficial to their situation. However, in order to use railways to their full potential, international traffic should also be coordinated and agreed upon with neighbouring states. This is where the scope of COTIF could provide a platform for further international harmonisation of railway regulations, by providing an interface between these different systems.

In addition to the fully developed COTIF provisions supporting the exchange of vehicles in international traffic, the next logical step for the development of COTIF is also to facilitate the operation of complete trains, rather than just vehicles, across borders. For two reasons, this would best be done under a new Appendix to COTIF:

- firstly, the existing Appendices do not fully cover interoperability and the associated safety provisions in their scope.
- secondly, not all Member States of OTIF may be interested in interoperability, which implies having foreign railway undertakings operating trains on their territory. A new Appendix to COTIF would allow each Member State to choose whether or not to apply the new Appendix.



Interoperability means that a train coming from one country will operate on the network of the neighbouring country. This means that the operating railway undertaking must be able to communicate and work together in a safe way with the infrastructure manager of the host state. It is therefore necessary that the mutual responsibilities between railway undertakings and infrastructure managers are clear and that they have the procedures and communication tools in place to take on these responsibilities.

The required provisions should allow several objectives to be met, some of which are already covered in COTIF today by ATMF, APTU or UTPs. The following list is not exact or exhaustive, but intends to provide a basis for discussion and to suggest that the interfaces between railway undertakings and infrastructure managers are, in addition to technical compatibility, at the core of interoperability.

1. A railway undertaking operating an international train should:
 - a) ensure that each vehicle in a train has an ECM assigned to it (covered already in ATMF Article 15 and Annex A to ATMF),
 - b) ensure that the train is composed correctly and all required functions are available at train level (the operational requirements are covered in UTP WAG and UTP LOC&PAS),
 - c) ensure that the train is compatible with the route it will be running on (provisions for vehicles are set out in ATMF Articles 6 and 9),

- d) operate the train and all its vehicles within their limits and conditions of use (train composition is covered by ATMF Article 15a),
 - e) be in a position to trust that the infrastructure is well maintained and safely managed,
 - f) be clear on its own responsibilities with respect to train operation and the management of safety and
 - g) have clear tasks vis-à-vis the infrastructure manager.
2. An infrastructure manager on whose network an international train is operated should
- a) provide all information necessary for the railway undertaking to ensure that the train it operates is compatible with the route it is running on (covered by ATMF Article 15a §4),
 - b) be in a position to trust that the railway undertaking ensures that vehicles and trains running on its network are compatible with the network, well maintained and operated within their limits and conditions of use,
 - c) be clear on its own responsibilities with respect to train operation and the management of safety,
 - d) have clear tasks vis-à-vis the railway undertaking.

From the above it should not be concluded that every listed element should be covered by international law.

For several elements it would be beneficial to agree harmonised provisions at international level, but other provisions might just as well be governed by national or regional provisions. For example the responsibilities of the railway undertaking under point 1 f) must be clear, whether they are set out in national provisions or in international provisions. Another example of a question is the licensing of railway undertakings. Even if it would be agreed that every interoperating railway undertaking must meet all the conditions under point 1, the confirmation of compliance could be made in accordance with national or international provisions.

The basic assumption should be that states that apply the possible future provisions under COTIF will be pleased to welcome new railway undertakings on their network (otherwise they would not apply the new Appendix) and will therefore create transparent rules. In this respect, the new provisions under COTIF could be limited to imposing transparent publication by the regulator (the competent authority in the OTIF legislation) of comprehensive high level safety rules, where the new provisions under COTIF would indicate the items to be addressed.

4. POSSIBLE NEXT STEPS

As facilitating the interoperability of trains fits fully within the aims of the Organisation as set out in Article 2 of COTIF, Article 2 § 2 and Article 6 § 1 h), the Convention in principle allows the creation of a new Appendix to COTIF relating to interoperability and safety. There is therefore a basis for discussing the subject.

It should be decided how and under which conditions a discussion on the principles could take place. A working group could be set up for this purpose.

None of the existing organs of OTIF explicitly cover the scope of interoperability and safety, although these issues are probably most closely associated with the Committee of Technical Experts. Nevertheless, a possible new Appendix does not fall within the scope of competences of any of the

existing organs and thus a new organ might have to be created or the competences of an existing organ might need to be extended.

Specifications could be developed at a conceptual level first, focussing on the principal safety responsibilities of the actors and between the actors, by setting them out in a new Appendix to COTIF. As a second step, more detailed provisions could be set out in secondary legislation developed under the new Appendix.
