China:
Managing the economic interfaces in multi-operator railway environments

Review of international approaches prepared for the Ministry of Railways China

June 2006
Abstract: A seminar held by the Chinese Ministry of Railways in September 2005 examined the policy environment that would need to be in place to attract private investment into China’s medium and long-term railway development plan. Since then the Ministry has set up several joint ventures with provincial governments and other, non-governmental partners to finance specific new lines. This innovative approach creates a need to manage the economic interfaces when the activities of one railway enterprise have a direct economic impact on another. This paper summarizes, for the benefit of the Ministry of Railways, the approaches that have been adopted elsewhere in the world to address this need. It considers three main interfaces: track access, when the train services of one railway entity use the infrastructure owned by another such entity; vehicle interchange, when the train services of one entity use the vehicles owned by another; and revenue division, when commercial income must be divided because a freight consignment or passenger journey carried by one railway company is interchanged to the trains of another railway company for onward transport, but with a single customer paying for the whole journey.

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SUMMARY

Background

1. An important seminar on railway investment and financing reform was held by the Ministry of Railways (MOR) in Beijing in September 2005. It highlighted the necessity for external finance in the implementation of the Medium and Long-term Development Plan, including the construction of high-speed dedicated passenger lines. Increasing attention is now being given to how China’s joint-venture railway model might contribute to the achievement of the Plan.

2. By 2004 the joint-venture model had been used for some 27, mainly branch-line, projects. During 2005, 19 new joint-venture railways were created. There are plans for a further thirty. A process of restructuring and consolidation is also under way to strengthen the operational and financial capacity of the existing joint-venture railways. There are various types of joint-venture railway but the future cases are likely to be jointly-owned ventures between MOR, Provincial Governments, industrial enterprises and other investors.

3. Over the next few years a more extensive multi-operator railway environment will therefore emerge in China. As was identified at the 2005 Conference, fair and transparent rules for managing the economic relationships (or interfaces) between operators are critical to giving investors confidence in participating in China’s rail industry, whether in joint-ventures or in other ways.

Objective of paper

4. The objective of this paper is to summarise the approaches that have been adopted elsewhere in the world to manage the economic interfaces that are created when the activities of one railway entity have a direct economic impact on another railway entity. Three main interfaces are considered:

- **Track access**: when the train services of one railway entity use the infrastructure owned by another railway entity;
- **Vehicle interchange**: when the train services of one railway entity use the vehicles owned by another railway entity;
- **Revenue Division**: when commercial income must be divided because a freight consignment or passenger journey carried by one railway company is interchanged to the trains of another railway company for onward transport, but with a single customer payment for the whole journey.

Multi-operator case-studies

5. There are many countries in the world where each of these interfaces occurs because there are many railway entities (the Report defines these cases as ‘multi-operator railway environments’). The Report draws upon examples from:

- rail freight services in the USA, where there are over 550 railway entities;
- rail freight services in Mexico which has 4 main railways (plus some smaller railways);
- rail freight services in Canada which has 2 major rail freight companies (and a number of other railway entities);
- inter-state rail freight services in Australia which involves 5-6 railway entities.
• domestic freight and passenger rail services in the United Kingdom (UK) which has over 30 railway entities;

• domestic freight and passenger rail services in Germany, which has around 260 railway entities licensed to use the public network;

• international passenger and freight rail services in the European Union (EU) between which some 120 different operating entities run international trains;

• international passenger and freight services between European countries as a whole (including EU and non-EU states, and some adjacent countries in North Africa and Middle-East).

**Track Access**

6. Since the invention of railways there have been many situations in which the trains of one railway entity operated over the tracks of another railway entity and paid for that use of tracks. Today there are many examples where track access occurs. It generally occurs in one of three main institutional frameworks:

• countries in which negotiated rights of track access occur at specific locations through private agreement between different railway entities (e.g. USA, Canada);

• countries in which, in addition to some private agreements, there are some mandated rights of access defined in national laws, but where these rights are confined to narrowly defined locations and/or circumstances (e.g. in Canada, Mexico);

• countries where there are mandated rights of access which are much more widely defined, based on a precept of the general desirability of broadening access to public infrastructure (e.g. in the European Union and its member states and in Australia).

7. In Section 2, the Report summarizes the methods used in the different cases to establish train timetables, track access charges, procedures for when traffic is disrupted, and the allocation of liability for accidents.

8. Policy initiatives to encourage external investment in railways in China suggest that in the future there may be various new organization forms in the railway sector. They are likely to be established under a range of ownership structures. Such diversity will inevitably require policies, procedures, charging mechanisms and regulatory recourse for issues of track access. These will be required even if the scope of access is more narrowly delineated in terms of specific geographic or business areas. New entities may include, for example:

• vertically integrated joint venture railways having responsibility for both rail infrastructure and train operations in their region but which may nevertheless need to use the tracks of other railway companies in border areas in order to reach convenient handover or terminating stations;

• specialized Train Operating Companies such as container train companies or tourist passenger train companies, who would need to pay track access fees to the 14 regional railway administrations and any joint-venture railways over which they run;

• concession companies for providing new railway infrastructure, over which China Rail and others may operate train services in return for track access fees.
9. The circumstances in China are not appropriate for a system in which track access arrangements are all separately and privately negotiated, with minimal regulation, (as for example in the predominantly privately-owned and freight dominated network in the United States). This is because:

- the railway network in China is legally a public asset and many of the services that use it, such as passenger transport, are considered public services. The Government of China therefore has both a custodial role and a direct public policy interest in the terms and conditions of network use that can only be pursued through a fair and transparent articulation of the rights and obligations of the parties that use it;
- the financial strength and negotiating power of the 14 existing regional railways is likely to greatly eclipse that of any new railway entity contemplating establishing itself within their current territory or wishing to use their tracks. This inequality needs to be counter-balanced by legal rights and agreement frameworks that require compliance by the regional railways;
- MOR’s policy objective is to encourage new sources of investment financing into the railway sector: investors will want to know the ‘rules of the game’ in advance and not face the high risk and uncertainty of what they may be able to negotiate once they enter the industry.

10. This implies that whatever scope of track access is selected by China’s rail policy makers (that is, whether access rights are narrowly or broadly specified) China should adopt a harmonized and regulated system of track access, based on defined procedures, standard forms of documentation, developed tariff structures and independent regulatory safeguards. The Report identifies eight key elements of a track access regime:

- laws and regulations setting out scope and conditions of access rights;
- a fair and economically rational basis for establishing track access charges;
- a framework for licensing rail entities;
- a system of safety accreditation for rail entities, as a condition of licensing;
- a procedure for applying for capacity and incorporation into working timetables;
- standard documentation for track access agreement (and agreements covering other facilities such as shunting yards, stations, depots etc);
- rules for sorting out priorities between trains when traffic is disrupted;
- institutions and procedures for regulatory review and enforcement of rules.

11. The case studies from three continents give confidence that these track access ‘tools’ have been successfully developed elsewhere and such experience may be useful in developing a China-specific approach.

12. The regulations covering access would need to be applied neutrally, irrespective of the ownership of any particular railway entity (whether Government, provincial government, city authority, private sector or joint-venture). They would also need to be transparent, so that external investors would be aware of their rights and obligations prior to industry entry. Similarly, there needs to be a strong independent regulatory role to oversee these rules and to ensure equal treatment of all parties. MOR is currently custodian of the 14 regional rail administrations, and therefore accountable for their economic results. It would have a conflict of interest in performing this role.
Vehicle Interchange

13. Section 3 of the Report describes approaches to rollingstock interchange in the countries examined. Vehicles can and often are interchanged between neighboring railways by mutual arrangement. But interchange in larger multi-operator railway environments, such as in Europe, North America or Australia, is almost always controlled by an Association of operators. The Association sets minimum technical standards for interchanged rollingstock and it develops and maintains the Association’s technical and commercial rules.

14. The Report notes that North American and Australian institutional frameworks for vehicle interchange are similar. In North America the key role is performed by the Association of American Railroads (AAR). The major Mexican and Canadian Railways are also members. AAR’s main role is the setting of interchange standards relating to operations, safety, track and infrastructure, rolling stock and data systems. It also has a Quality Assurance certification role. It is responsible for all aspects of interline freight operation and accounting. In Australia the organization ‘Railways of Australia’ performed some of these roles though it has now been superseded by the Australian Railway Association.

15. In Europe, the main industry association, the International Union of Railways (UIC), is the dominant standards setter. But it has a weaker role in managing the interfaces than AAR in North America. This is due to a combination of the international nature of European operations (vehicle interchange is mainly at international borders), the growing influence of European Union legislation on arrangements in member states, and the dominant role of Government-owned rail operators. European arrangements are underpinned or influenced by many international conventions and (in its member states) by European Union directives.

16. The Report highlights a clear difference in approach between North America, with its single industry association setting clear and unambiguous standards, compared to Europe with several standard-setting authorities. There is no doubt that the former is simpler, more flexible and adaptable to the market, and has provided better incentives for efficient use and development of the wagon fleet.

17. The situation in China is not complicated by the multiplicity of national jurisdictions (plus the supra-national jurisdiction of the European Union) as occurs in Europe. It is possible to envisage the creation of a body, which for convenience is referred to as an Association of Chinese Railways (ACR), which should bring together all railway entities that may wish to interchange rollingstock, or which are obliged to exchange rollingstock by law or regulation in the interests of customers. Such an Association would determine:

- which vehicles are eligible for interchange;
- the operational procedures to accept and maintain ‘guest’ vehicles; and
- the way that revenue division is to be organized (dealt with in Section 4).

To fulfill these functions it would be necessary for the Association to procure or develop (probably through a special-purpose subsidiary company) the information and communications technology necessary for efficient implementation.

18. **Vehicle eligibility** requires a set of standards that define which wagons will be acceptable for interchange and the condition that they should be in to be accepted for interchange. This is conceptually different to what is allowed for operation by the national MOR vehicle design or condition standards. Standards for local operation on industrial railways and local railways...
(which are conceptually equivalent to the North American short lines) may not need to be as high as those for mainline running on the main-line network.

19. Vehicles that are to be interchanged then need to be identified to show that they are eligible for interchange (e.g. by having a mark or identifier painted on their side). At the same time, a master list of vehicles eligible for interchange will need to be created. This will need to cover not only the vehicles belonging to the 14 regional administrations of MOR but also those belonging to the other operators. Such file would be held centrally by the Association but would need to be accessible by computer by all the member railways.

20. **Operational procedures** begin with a check that the vehicles arriving are eligible for interchange; this can be done by either physically checking the vehicle identification or by computerized checking of the train consist. The next step is to check that the vehicle is in acceptable physical condition. This can be done at an agreed location at, or near, the handover point. The AAR protocol described in the Report appears sufficient and could be simplified for, say, a regular consist of passenger vehicles moving over the same route. Any vehicle that is identified as having defects, either at handover or subsequently en-route, will require assessment as to whether it is safe to complete its journey. Vehicles that require immediate maintenance will then need to be repaired; a schedule of agreed charges will need to be developed so that the cost can be recovered without dispute. Such a schedule will also need to be maintained and developed by ACR.

21. Vehicle locations will also need to be reported so that charging for vehicles can be carried out automatically and efficiently. The major interchanging railways will thus need computerized vehicle location databases and on-line links to a central database administered by ACR.

22. **Payments mechanisms** in other regions suggest that standardized charging systems have some inherent weaknesses in a more commercial environment. Systems in which each railway entity sets a price on its wagons will better reflect the value of the wagon to it and the cost it incurs when it is being used. The Report also emphasizes the need for a settlements mechanism to handle both interchange charges and any rollingstock maintenance charges incurred by the ‘host’ railway entity. In China’s unitary railway market, with its good wagon tracking systems, there appears to be a clear case for a single Association which calculates the charges from a nationwide database (as in North America) and then distributes the settlements for checking and payment.

**Revenue Division**

23. Section 4 of the Report deals with revenue sharing and settlement. Conventional practice in passenger operations is for the allocation of passenger fare revenue to the railway companies which should receive them to be made by the railway company that sells the ticket. By contrast, freight revenue is often allocated by the destination railway as total charges may not be known until delivery. The freight revenue allocation process involves an analysis of the charges on the consignment note. In most cases centralised charging makes these allocations automatically on the basis of splits agreed when the rates were negotiated between the railway entities concerned.

24. In order to do this efficiently, a clearing house is normally established – the first for railways being set up in 1842 in United Kingdom, modeled on the clearing house operated by the commercial banks. They also exist in other transport modes, one of the most well-known being the clearing house of the International Air Transport Association and the Universal Postal Union.
25. This Report gives examples of such railway ‘clearing houses’ or collectively owned institutions which carry out some clearing house functions, including:

- in North America: RAILINC, a wholly owned subsidiary of AAR, handles about 4 million transactions per day, including settlements, bills of lading, ship notices, equipment tracing and rates, and other business transactions between the AAR members;
- in Europe: the exchange of funds between most national railway administrations is handled by the Bureau Centrale de Compensation (BCC), the European railways’ in-house clearing bank, hosted by Belgium Railways (but with financial oversight by UIC);
- in the United Kingdom: the arrangements for domestic passenger ticket sales are set out in the Ticketing and Settlement Agreement designed to preserve the commercial benefits of being able to offer network-wide products for passengers and also to ensure the retention of important “network benefits” for passengers. This enables the customer to buy a ticket at any station to travel anywhere on the network with any operator, regardless if the journey involves more than one operator. The UK’s Association of Train Operating Companies established a company called Rail Settlement Plan Ltd. It is responsible for administering and managing (among other things) the ticket issuing systems, revenue allocation and revenue settlement procedures that make such an integrated ticketing system possible.

26. **Passenger revenue division:** European networks are more passenger-intensive than North American railways and provide more relevant experience on passenger revenue division. Railway entities selling tickets for international journeys aggregate the revenues according to a breakdown of the countries where the journey takes place. A compensation scheme negotiated within the framework of the UIC determines the exact amounts to be paid, per member, and this information is sent to the BCC (see above). The latter collects the information from all its members and settles the claims accordingly.

27. In the UK domestic market more than 25 different passenger train franchises operate many connecting and overlapping routes, as well as alternative routes and services between cities operated by different companies. The passenger ticketing co-ordination and revenue allocation requirements are formidable. The Report therefore summarizes the key elements of co-ordination and revenue allocation. The United Kingdom has developed perhaps the most sophisticated responses to the challenge of ticketing, revenue allocation and settlement co-ordination in a multi-operator environment. Though it is more complex than likely to be required in China, it is illustrative of the fact that even the most complex situations have given rise to workable solutions.

28. The need for revenue settlement in China depends to what extent China attempts to maximize the network benefits, particularly the extent to which through ticketing is possible across operators. This would maximize the benefits both to the public and to the sector as a whole. It could be promoted by:

- regulatory action by the government (either through MOR or through a specialist regulator) to require all railway entities (including both the 14 regional rail administrations and the joint venture railways) to sell each others tickets and to provide information on each others services
- Action by the operators (preferably through ACR) to establish protocols, agreed operating and commercial procedures (such as commission rates), a settlements scheme and a clearing house.
29. There are a limited number of alternative routes between any two points in China, so a settlement scheme with the computational complexity of the United Kingdom ORCATS procedure is unlikely to be required; but some arrangement would be required where more than one operator runs on the same route (as already happens between major cities).

30. **Freight revenue division: North America:** North American railways who are pricing a joint-line movement typically negotiate a tariff between themselves. It is understood that almost all traffic for major customers moves this way. Normally the contract is between the shipper and the railway with whom they negotiated. This railway to whom payment is made then shares the revenue with other railways, in accordance with the agreed apportionment, through the Interline Settlement Scheme administered by RAILINC.

31. The Interline Settlement System divides interline revenues via Electronic Data Interchange between the participating carriers. The system distributes revenue waybills, including rates and divisions; and provides a mechanism for concurrence prior to settlement, thereby eliminating most post-settlement disputes. The system then facilitates the monthly exchange of funds from debtors to creditors.

32. **Freight revenue division: Europe:** European railways traditionally used and published fixed domestic freight tariffs, and most continue to do so. However, prices offered to customers are now more generally market-based and negotiated directly with customers. Private European train operators in United Kingdom and over much of Europe adopt this approach and some government-owned European railways (such as Germany) also no longer publish domestic freight tariffs.

33. However international freight tariffs have been maintained in Europe over the years by national railways to make it easier for customers to obtain international rates instead of approaching each railway in turn for tariffs on their particular section of the route. These tariffs are negotiated between participating railways; the conditions and tariff levels are reviewed at annual tariff conferences. Rates are generally below the sum of the relevant domestic tariffs, in order to be competitive in the market. Negotiations between railway entities are often required to set a competitive rate and agree revenue divisions.

34. Agreed revenue shares tend to be mainly distance-based, but are sometimes disproportionate to the distance involved, as they can be affected both by terrain (e.g. mountainous sections) and also by the relative cost bases of the rail operators participating. As in North America, revenue is collected by the railway with which the customer has the agreement. Unlike North America, however, the division of revenue is made by the railways themselves rather than by a central settlements body; only the transfer of funds between debtor and creditor railways is handled through the BCC.

35. The type of revenue settlement schemes that may be favoured in China depends on the likely commercial relationships between the various operators. The need for revenue settlement for freight services depends on the extent to which inter-operator traffic is billed on a through consignment note or is billed separately by each of the participating railways. Single billing is usually preferred by customers and helps make the railway more competitive. Single billing will require a settlements procedure which provides for the rapid resolution of any disagreements between the railways involved.

36. If commercial relationships for an individual joint-venture railways are overwhelmingly with a particular one of China Rail’s 14 regional administrations, then there may be little need for
specialist clearing. But if new railway entities begin to deal with each other, or with separate regional administrations, then there may be advantages in having a central clearing house to avoid complex multiple financial transactions.

37. If either single billing or complex transaction patterns develop, international experience in both North America and Europe suggests this would be best done through a railway association structure, which could beneficially be the same organization as that managing vehicle interchange rules and transactions.
### Glossary of Terms

<table>
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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>AAR</td>
<td>American Association of Railroads</td>
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<tr>
<td>ACCC</td>
<td>Australian Competition and Consumer Commission</td>
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<td>AEIF</td>
<td>European Association for Railway Interoperability</td>
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<tr>
<td>AEIF</td>
<td>European Association for Railway Interoperability</td>
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<td>APTU</td>
<td>COTIF procedures for technical standards for railway vehicles in international use</td>
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<td>ARTC</td>
<td>Australian Rail Track Corporation – manages the main interstate rail infrastructure</td>
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<tr>
<td>ATMF</td>
<td>COTIF procedures for approval for railway vehicles in international use</td>
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<td>ATOC</td>
<td>UK Association of Train Operating Companies</td>
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<tr>
<td>BCC</td>
<td>European Railways Clearing House, based in Brussels</td>
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<tr>
<td>CTA</td>
<td>Canadian Transportation Agency</td>
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<tr>
<td>CIM</td>
<td>COTIF: Uniform rules for contract for international carriage of freight by rail</td>
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<tr>
<td>CIV</td>
<td>COTIF: Uniform rules for contracts for international carriage of passengers by rail</td>
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<tr>
<td>COTIF</td>
<td>Convention on International Carriage by Rail</td>
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<td>CUU</td>
<td>COTIF Standard contract for the interchange of freight wagons</td>
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<tr>
<td>DB AG</td>
<td>Holding Company of Germany’s national railway entities</td>
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<tr>
<td>DB Netz</td>
<td>Subsidiary of DB AG and manager of Germany’s public rail network</td>
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<tr>
<td>DB Railion</td>
<td>Subsidiary of DB Ag and manager of DB’s rail freight company</td>
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<td>EBA</td>
<td>German office of railway regulation</td>
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<tr>
<td>EC</td>
<td>European Commission – the executive branch of the European Union</td>
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<td>EEA</td>
<td>European Economic Area</td>
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<td>EIBV</td>
<td>Regulations governing use of railway infrastructure in Germany</td>
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<tr>
<td>EICIS</td>
<td>European (railway) Infrastructure Charging Information System</td>
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<tr>
<td>ISS</td>
<td>Interline Settlement System, used by RAILINC to settle interchange charges etc</td>
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<tr>
<td>MOR</td>
<td>Ministry of Railways of the Peoples’ Republic of China</td>
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<tr>
<td>MSRP</td>
<td>AAR’s Manual of Standards and recommended Practices for wagon interchange</td>
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<td>ORCATS</td>
<td>Computer model used in UK to allocate joint revenue between railway entities</td>
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<tr>
<td>OTIF</td>
<td>Intergovernmental Organization for International Carriage by Rail</td>
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<td>ORR</td>
<td>UK Office of Rail Regulation</td>
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<tr>
<td>RAILINC</td>
<td>Subsidiary of AAR responsible for data processing and interline settlements etc.</td>
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<tr>
<td>RIC</td>
<td>System used by railways in Europe to interchange and charge for passenger vehicles</td>
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<tr>
<td>RIV</td>
<td>System used by railways in Europe to interchange and charge for freight wagons</td>
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<tr>
<td>ROC</td>
<td>Rail Operational Code – operating instructions used on UK rail network</td>
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<td>RNE</td>
<td>RailNetEurope – an Association of European rail infrastructure managers</td>
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<td>STB</td>
<td>United States Surface Transportation Board</td>
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<tr>
<td>TRAIN II</td>
<td>AAR’s Tele-Rail Automated Information System (tracks rail vehicle locations)</td>
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<td>TTCI</td>
<td>Transport Technology Centre Inc – subsidiary of AAR</td>
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<td>UIC</td>
<td>International Union of Railways</td>
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<td>UITP</td>
<td>International Union for Passenger Transport</td>
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<tr>
<td>UMLER</td>
<td>Database of all rail vehicles and other equipment in North America</td>
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<td>UNIFE</td>
<td>Union of European Railway Industries</td>
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1 Introduction

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3.2.1 North America

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3.4 Possible applications in China
1 Introduction

1.1 The emerging multi-operator environment in China

Joint-venture railways were first established in China in the mid-1980’s. The early railways were typically local railways mainly carrying freight. But their role has progressively expanded and by end-2004 there were 27 joint-venture railways of which 24 were operating and the remainder under construction. Their route length was over 7,000 km (out of the national total of 74,000 km) and they carried about 5 percent of the freight traffic and 4 percent of the passenger traffic. Most, but not all, are majority-owned by Ministry of Railways (MOR). In many cases they operate their own train services but in others MOR is contracted to operate the services. Some own their own rollingstock – others lease it from MOR. Joint-venture trains and MOR trains operate over each other’s lines, and wagons are interchanged on a routine basis. A national wagon-tracking system covers the entire main-line network, including both local railways and joint-venture railways.

In the last two-three years, however, the need for major investment in the Chinese rail network has led to a much greater emphasis on the potential of joint-venture railways to mobilise non-MOR finance for the core main-line network as well as for secondary lines. A major seminar on railway finance was held in Beijing in 2005 which highlighted the necessity for external finance and its key role in the implementation of the Medium and Long-term Development Plan, including the construction of the high-speed network. During 2005, 19 new joint-venture railways were created and there are plans for a further thirty. A process of restructuring and consolidation is also under way to strengthen the operational and financial capacity of the existing joint-venture railways.

In particular, MOR plans to develop and operate a dedicated high-speed passenger network through a series of joint-venture railways. Shareholders will include MOR, Provincial Governments and also other investors. Another development involves the specialist coal line between Datong and Qinhuangdao, which is to be converted into a joint-venture railway to fund its planned upgrading and capacity expansion.

While the early operating and commercial agreements between MOR and the joint-venture railways were largely negotiated on an ad hoc basis, the rapid growth in the importance of joint-venture railways led MOR to issue formal guidelines on inter-railway transactions and settlements in 2005. These will inevitably be modified and extended in the light of experience, and it is against this background that the current paper has been prepared.

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1 In total, they carried 91 billion net tonne-km and 20 billion passenger-km; for comparison, the freight handled is rather greater than Germany and the passenger traffic is greater than Spain.
3 The first major passenger joint venture railway, the Shitai company constructing the first part of the network south of Beijing, currently has eleven shareholders.
During the September 2005 Seminar, key Chinese speakers emphasised the need for financial clarity to promote an investor-friendly environment. The new generation of joint ventures is likely to begin operating within two-three years. MOR now intends to hold a workshop on interface issues that are likely to arise and the way they have been addressed internationally.

The objective of this paper is to identify the key issues, and the approaches that have been adopted elsewhere in the world to managing the economic boundaries (or interfaces) that exist when the activities of one railway entity have a direct economic impact on another railway entity. In this context the term ‘entity’ is used generically to refer to any kind of organisational form, whether it is a State-owned railway authority, a State-owned railway company, a railway company owned by a provincial government authority, or a privately-owned railway company. The technical issues of managing the interface are the same, regardless of ownership. However, the nature of ownership can affect how the management of interfaces is regulated.

1.2 The main economic interfaces included in the Report

Three main interfaces are analysed in this Report:

- When the train services of one railway entity use the infrastructure owned by another railway entity – the report refers to this generically as ‘track access’ (though it can also include use of other sorts of infrastructure such as stations, yards, power supply, servicing depots etc);
- When the train services of one railway company uses the vehicles owned by another railway entity – the report refers to this as ‘vehicle interchange’;
- When a freight consignment or passenger journey carried by one railway company is interchanged to the trains of another railway company for onward transport in accordance with a single ‘consignment note’ (freight) or ticket (passenger) that covers the total journey – this requires what the report refers to as ‘revenue division’ between two or more railway entities.

The paper explores the economic transactions that occur at these interfaces, how they are planned and administered in different countries, and how the impact on the costs and revenues of each of the railways is resolved. These interfaces (particularly track access and vehicle interchange) also have important engineering, operational and safety dimensions. These dimensions are not covered in detail in this report, though institutional responsibilities for them are identified and they are summarised where they are relevant to the discussion of economic matters.

1.3 International examples of multi-operator environments

There are many regions in the world where these interfaces exist due to the existence of multiple railway entities (referred to as ‘multi-operator railway environments’). The Report draws from international experience to illustrate and summarize how the interfaces described in 1.2 are managed in several of the most developed multi-operator
railway environments that already exist internationally: in North America, Europe (including but not restricted to the European Union) and Australia\(^4\). It draws examples from:

- rail freight services in the USA where there are over 550 railway entities;
- rail freight services in Mexico which has 4 main railways;
- rail freight services in Canada which has 2 major rail freight companies (and a number of other entities);
- inter-state rail freight services in Australia which involves 5-6 railway entities.
- domestic freight and passenger rail services in the United Kingdom (UK) which has over 30 railway entities;
- domestic freight and passenger rail services in Germany, which has around 260 railway entities licensed to use the public network;
- international passenger and freight rail services between member states of the European Union (EU) between which some 120 different operating entities run trains;
- international passenger and freight services between European countries as a whole (EU and non-EU states, and near neighbours in North Africa and Middle-East).

In the case of vehicle interchange systems and revenue division systems (but not track access systems) the conventional approaches in Europe pre-dated the establishment of the European Union and involve nearly all European countries (and some other neighboring countries in the Middle-East and North Africa). Care has been taken to use the term European when referring to the European continent as a whole, and European Union, when referring specifically to approaches adopted by the European Union and its member states.

Moreover, while United Kingdom and Germany are both members of the European Union, their approach to domestic rail services differs (while being consistent with European Union directives): each of these countries has interesting features in the management of interfaces in its domestic operations and these are separately described. But both countries (and other member states of the European Union) are subject to a set of common rules for international train operations between member states and these are also described.

The Report is, however, for the benefit of China. It seeks to find specific experiences from these countries that may be of interest to Chinese railway planners as they consider how to manage the emerging interfaces between different railway entities. The Report does not describe in fine detail all the features of each system. Instead it draws from those systems the features of interest and the different approaches. Some country’s systems are

\(^4\) Other significant multi-operator environments include Japan, Brazil, Kazakhstan and wagon movements (but not train) movements between CIS countries such as Russia, Kazakhstan and Ukraine. Due to time and resource limitations this report has selected examples that appear to illustrate the most useful contrasting experiences over a range of issues.
used to illustrate particular approaches to passenger rail interfaces, some to freight rail interfaces, and some to both (Table 1.1). Detailed internet site references are given so that our partners in the Ministry of Railways can access the more detailed resources on which this Report is based.

### Table 1.1: International case-studies cited in this Report

<table>
<thead>
<tr>
<th>Country</th>
<th>Examples used In this Report</th>
<th>Nature of multi-operator environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>Domestic passenger and freight services</td>
<td>About 25 mainly geographically-based private passenger train operating companies, and 3-4 freight train operating companies providing services on a separately (now ‘publicly’) provided railway network.</td>
</tr>
<tr>
<td>Germany</td>
<td>Domestic passenger and freight services</td>
<td>Three large public train operating companies and over 250 smaller private passenger and freight companies operating over a separate publicly-owned railway network. Also a number of small private vertically integrated industrial railway companies.</td>
</tr>
<tr>
<td>European Union</td>
<td>International freight and passenger services</td>
<td>Mixture of international freight and passenger trains operated by 25 (nearly all publicly-owned) national railways between or across national borders, plus a few ‘open access’ private train operating companies (mainly freight) operating across national borders. Some 120 separate transport entities involved.</td>
</tr>
<tr>
<td>United States</td>
<td>Freight services</td>
<td>Seven major freight railway companies and over 500 smaller freight railway companies, the majority providing both rail infrastructure and train services.</td>
</tr>
<tr>
<td>Mexico</td>
<td>Freight services</td>
<td>Four main geographically-based private rail freight concession companies with certain rights of access to key destinations (such as ports and Mexico City) using lines managed by other railways.</td>
</tr>
<tr>
<td>Canada</td>
<td>Freight services</td>
<td>Two major freight railway companies each providing both railway infrastructure and train services plus many regional operators.</td>
</tr>
<tr>
<td>Australia</td>
<td>Freight services</td>
<td>4-5 private freight train operating companies running over a government-provided interstate network, plus various public and private geographically-based companies operating both railway infrastructure and train services.</td>
</tr>
</tbody>
</table>
2 Track access

2.1 Institutional Frameworks

Since the invention of railways there have always been situations in which the trains of one railway entity have operated over the tracks of another railway entity and have paid for that use of tracks. The case-studies contained in this report one of three main institutional frameworks:

- countries in which negotiated rights of track access occur at specific locations through private agreement between different railway entities (e.g. USA, Canada);
- countries in which, in addition to some private agreements, there are some mandated rights of access defined in national laws, but they confined to narrowly defined locations and/or circumstances (e.g. in Canada, Mexico);
- countries where there are mandated rights of access which are much more widely defined, based on a precept of the general desirability of broadening access to public infrastructure (e.g. in the European Union and its member states and in Australia).

2.1.1 Negotiated rights of access: defined by private agreement

Privately negotiated track access agreements have a history as long as railways themselves. Early railway companies in most continents were regionally rather than nationally based. In the boundary areas in particular they had a strong incentive to come to agreement to use each other’s tracks to reach major business origins and destinations that lay over their own company’s boundaries.

Access by private contract is the predominant form in the world’s biggest single freight railway market, the USA. In 2004 for example there were 558 common carrier freight railways operating in the USA. They include seven major (Class 1) railways, 31 regional railways, 314 local railways, 204 switching (shunting) and terminal railways, plus 2 Canadian railways operating in the USA. All the Class 1 railways and around 90 percent of the rest are privately-owned. United States Law does not give any automatic rights of access of one freight railway company over the tracks of another freight railway company.6

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5 The first independent agency set up to settle these and other accounts between railway entities was Britain’s railway ‘Clearing House’ established in United Kingdom in the 1840’s. It was modeled on the existing banking clearing houses that were set up to settle or ‘clear’ debts between one bank and another.

6 However, Amtrak, the (state-owned) long-distance passenger train operator in the USA has a legal right of access to specific routes of the freight railways, at regulated track access charges.
However, under US Competition Law, railways have ‘common carrier’ obligations to freight customers. They must provide to customers routes and tariffs to move traffic from any origin to any destination on the railway network. If it is necessary for more than one railway to participate to complete the traffic movement the railways must interchange the traffic and establish a tariff for the total movement. However, as an alternative to interchanging the traffic, a railway can complete the movement with its own trains by entering into track access agreement with one or more other railway(s). Around 37,000 km of route operated by US railways is on track owned by another railway. That is equivalent to around a quarter of the total route-length of the network.7

Agreements that set out the conditions and prices for use of another railway’s infrastructure are known generically as ‘trackage agreements.’ They exist in many different forms. They can include agreements to use specifically defined sections of track, to use terminals, to use shunting yards, or to use ‘haulage’ (i.e. the locomotives and crews) of another railway entity. The agreements vary but will typically set out the services to be performed and the performance level agreed, (which will generally be an undertaking to provide the same level of service as the host railway provides to its own trains of the same type or volume - i.e. without discrimination). Any additional expenses borne by the host railway such as fueling costs, rollingstock repairs etc are charged back to the guest train operator at agreed rates.

For multi-year agreements there is often an indexation of tariffs based on cost indices maintained by the Association of American Railways (AAR). AAR’s critical role in managing a range of technical and economic interfaces in the US railway industry is discussed in more detail in Section 3.

Most trackage agreements are mutually agreed between private companies, and are not subject to any form of external oversight or regulation. However, the US Surface Transportation Board (STB) does have regulatory jurisdiction over railways mergers (and other railway matters). Some railway trackage agreements have been imposed by the STB as a condition of approval of mergers between railways; or they have been pre-agreed by merging railways to forestall regulatory opposition to merger. Even so, the agreements themselves are typically privately negotiated between the parties.

Such private track access contracts occur in several countries (e.g. Canada, Mexico, and Brazil) but in some, such as Canada and Mexico discussed below, there are also some mandated rights of access defined in law.

2.1.2 Mandated rights of access: narrowly defined

In some jurisdictions railways also have statutory rights of track access in specifically defined situations. Two important examples concern freight train operations in Canada and Mexico.

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7 A detailed description of US railway industry structure and traffic can be found at the Association of American Railways’ website at www.aar.org.
Canada-freight: As in the USA, Canada also has many examples of what are referred to as ‘voluntary running rights’. Like US trackage agreements these are simply commercial agreements between two railway companies (usually between Canadian National and Canadian Pacific companies) to allow one to run its trains on the track of the other. However, in Canada there are also some broader access provisions than exist in the USA. They are administered by the Canadian Transportation Agency (CTA)\(^8\). The Canadian Transportation Agency is an independent federal quasi-judicial tribunal. Amongst other transport regulatory responsibilities the Canadian Transportation Agency:

- administers interswitching rights (a form of limited-distance track access rights) and sets regulated interswitching tariffs;
- can also impose more general running rights, where one railway seeks to operate on the lines of another.

**Interswitching rights** allow freight customers with access to a federal (inter-province) railway (basically Canadian National or Canadian Pacific) to have cars transferred (interswitched) onto another federal railway if the point of origin or destination is within 30km of the interchange point. This provision basically avoids the need to transfer wagons from one train to another for short distances at the beginning and/or end of journeys. The tariffs for this form of track access are set by the Canadian Transportation Agency because it is not convinced that market forces could otherwise protect shippers from the market dominance of one railway service provider.

**Imposed running rights** can be mandated by the Canadian Transportation Agency on a federal railway, if it decides this in the public interest. These imposed running rights, made under section 138 of the Canada Transportation Act (1996), would allow a railway company to apply to the Canadian Transportation Agency for the right to:

- take possession of, use or occupy any land belonging to any other railway company;
- use the whole or any portion of the right-of-way, tracks, terminals, stations or station grounds of any other railway company; and
- run and operate its trains over and on any portion of the railway of any other railway company.

In practice, the Canadian Transportation Agency’s power to approve such applications (and so confer wider track access rights) has rarely been used. Most examples of running rights in Canada have been by private agreement (voluntary running rights). One of the reasons that few applications for imposed access have been approved is that regulators have been concerned to protect the commercial interests of the host railway. In 1905, the Board of Railway Commissioners (a predecessor of the Canadian Transportation Agency) ruled that although it could grant running rights, even to the detriment of the railway owning the line, ‘care should be taken to avoid commercial injury, unless the public interest imperatively demands it’.

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\(^8\) Details can be found at the Canadian Transportation Agency’s website at www.cta-otc.gc.ca.
The idea of creating wider running rights has lately become the focus of much attention from freight shippers who see it as a means of increasing competition. Applications made in 2001 included the unprecedented request by an applicant for the right to solicit traffic as well as to run trains on another railway’s railway lines. The Canadian Transportation Agency determined that the applications for running rights which included traffic solicitation - in effect making them applications for open access - were legally beyond the powers of the Canadian Transportation Agency. In 2002 it decided that granting a legal right of access is ‘an exceptional remedy’ that ‘requires actual evidence of market abuse or failure’.

**Mexico- freight:** The industry consists of several companies but is dominated by three large private freight railway concessions, each with a regionally-based network which also serves Mexico City, operating their own trains over their own infrastructure. The three concessions were designed so that most major ports and cities were served by two railways, with some mandated track access rights on specific routes at a fixed tariff to make this effective. These access rights will be reviewed 20 years into the concession period.

Each of these three railways has access to a jointly-operated 20 station terminal network in Mexico City, which is a major destination and source for both domestic and international traffic. The Mexico City railway is owned 25 percent by each of the three main user railways, and 25 percent by the Government on behalf of a planned suburban passenger services operator. The Company operating the Mexico City network itself acts as a fully commercial entity, and is profitable.

### 2.1.3 Mandated rights of access: widely defined

The third structural form involves much wider access rights. Train operating entities that have been licensed by proper authorities have legally defined rights to use the railway network, subject to regulatory policy. Table 2.1 illustrates the institutional frameworks that govern the examples referred to in this section.
### Table 2.1: Summary of Institutional Frameworks for track access\(^9\)

<table>
<thead>
<tr>
<th>Example</th>
<th>Nature of track access rights</th>
<th>Track access administration and charging</th>
<th>Track access regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>United Kingdom domestic trains</strong></td>
<td>rights of access to licensed entities* (rights for passenger services are restricted if trains would compete with private concessions)</td>
<td>Network Rail (State-guaranteed railway infrastructure company)</td>
<td>Office of Rail Regulation (ORR), which also establishes track access charges</td>
</tr>
<tr>
<td><strong>Germany domestic trains</strong></td>
<td>rights of access to licensed passenger and freight entities*</td>
<td>DB Netz (State-owned railway infrastructure company)</td>
<td>The Federal Rail Agency (EBA) which approves but does not set track access charges</td>
</tr>
<tr>
<td><strong>European Union international trains</strong></td>
<td>rights of access to licensed entities* operating international trains between European Union member states</td>
<td>the Designated Infrastructure Managers in each State (usually the national rail infrastructure company)</td>
<td>International rail regulators in each country (usually the domestic regulator)</td>
</tr>
<tr>
<td><strong>Australia interstate freight</strong></td>
<td>rights of access to train operators accredited under Rail Safety Laws</td>
<td>Australian Rail Track Corporation (ARTC) (a federally-owned infrastructure company)</td>
<td>Australian Competition and Consumer Commission (ACCC)</td>
</tr>
</tbody>
</table>

* an entity licensed in any member State of the European Union is deemed to be licensed in any other member State whether for domestic or international services.

**United Kingdom-domestic:** the railway network is run by Network Rail, a quasi-government entity. Under the Railways Act (1993), each Train Operating Company properly licensed by the Office of Rail Regulation (ORR) must enter into a Track Access Agreement with Network Rail to cover the full scope of the intended operations. Separate station access agreements and depot access agreements may also be necessary. All such agreements are subject to the approval of the Office of Rail Regulation. The Office of Rail Regulation has a legal obligation to ensure that capacity is allocated fairly and efficiently and whether it is in the overall public interest. The Office of Rail Regulation may decide that, despite Network Rail and a Train Operating Company having agreed access on particular terms, those terms should be altered or there should be no access at all.

Passenger train services have been privatized in the form of geographically defined concessions with service specifications for particular routes within each region. There is some competition between the passenger concessions where they overlap or where their routes compete between particular cities. The concessions are time-limited (generally between 7-15 years) and re-tendered at the end of the concession period. Most (though not all) of the concessions receive public operating subsidies. Office of Rail Regulation enforces strict conditions for allowing any access for new passenger services which

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\(^9\) Detailed descriptions of the structures in United Kingdom, Germany, Canada and USA were provided to MOR in a previous World Bank discussion paper: ‘Financing rail Sector development in China’ July 2005, (Annex A)
would compete with the concessioned services. Where a passenger train operator is seeking to introduce a new service that competes with existing services, the Office of Rail Regulation considers whether the new service would benefit passengers and not simply abstract (transfer) revenue from existing services.\(^\text{10}\)

By contrast, all freight train operating companies in United Kingdom are fully privately owned (and not concessioned). They have general rights of access to the railway network to compete with existing freight train companies, where capacity exists.

**Germany-domestic:** the public railway network in Germany is run by DB Netz, a subsidiary company of DB AG, which also owns the main passenger and freight train operating companies. DB AG and its subsidiaries are all government-owned at present. (There is some early discussion about the possibility of privatizing DB’s Cargo company called Railion (the main German freight Train Operating Company)). The right to apply for and use train paths derives from the General Railways Act (1993)\(^\text{11}\) and the Regulations governing the use of railway infrastructure (known as the EIBV).

There are over 280 non-DB companies now operating on the German network.\(^\text{12}\) These are mainly specialist or industrial freight train operating companies. Private freight companies collectively carry around 10 percent of freight on the public network. There are also several private regional passenger train companies who have won passenger service contracts from regional government authorities. There are some concerns that the Infrastructure Company, DB Netz, is not sufficiently independent of other DB entities. As a result the regulatory role of the EBA is being strengthened with the possible establishment within it (but with independent authority) of a Train Path Agency which will supervise capacity allocation.

**European Union – International Trains:** Licensed operators of international freight train services between member states of the European Union have had a general right of access to the rail networks of all member states since January 2006.\(^\text{13}\) Regulation of International access is by an International Regulator appointed in each country with jurisdiction over international train operations. Most countries have appointed their domestic rail regulator to be International Rail Regulator as well.

Under European Union directives\(^\text{14}\), applicants for international train paths can include:

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\(^{10}\) More details of the ‘Criteria and Procedures for the Approval of Passenger Track Access Contracts may be found on the website of the Office of rail regulation at www.rail-reg.gov.uk

\(^{11}\) Allgemeines Eisenbahngesetz ,December 1993 and subsequent ordinances.

\(^{12}\) A list of the railway companies on the Network can be found each year in DB Netz’ Annual Report on Competition.

\(^{13}\) The full right of access to all licensed freight train services, domestic and international (as is already the case in United Kingdom and Germany) will begin in January 2007, creating a single rail freight market within the European Union. A similar, general right of access for international passenger services is under discussion for implementation in 2010.

\(^{14}\) For a full list of European Union rail legislation see http://europa.eu.int/comm/transport/rail
railway entities licensed in any member state, or groups of railway entities (such as two national railways partnering to provide a service between two countries); or

any other entity seeking to procure rail infrastructure capacity for the operation of a railway service such as public authorities, shippers, freight forwarders or combined transport operators.

A joint association of many railway infrastructure entities in Europe, known as RailNetEurope (RNE), has been set up to take responsibility for co-ordinating the total path request from origin to destination. It has established ‘one-stop-shops’ in each country whose job is to:

- facilitate the process of entry to the rail transport industry;
- handle requests for international train paths within RailNetEurope and provide offers of train paths for the full journey;
- assist with the certification required for operation on each network;
- offer customer support and assist with organizing timetabling requests.

More details of this process are given at the RailNetEurope website.\(^\text{15}\) There are currently around 120 different train operating entities involved in international passenger or freight operations in the European Union.

**Australia – Interstate freight:** freight train operators have since 1995 had a general right of access to the entire public railway network in Australia under National Competition Policy.\(^\text{16}\)

The specific case of interest in this report is the management of a substantial part of the interstate railway network by the Australian Rail Track Corporation (ARTC), established in 1997, which sells train paths to a number of private train operating companies who work these routes.\(^\text{17}\) Because of heavy road competition, ARTC is not expected to achieve full recovery of the economic costs of infrastructure in the short to medium-term but it does recover its recurrent costs and a proportion of its periodic renewals.

Infrastructure management, train path allocation and track charges are all set by ARTC\(^\text{18}\). ARTC does not run any trains itself (though separation of infrastructure from operations is not a legal requirement of the Competition Principles Agreement). Regulatory oversight of track access on this network (and in other parts of Australia) is provided by the Australian Competition and Consumer Commission. The terms and conditions of access to railway infrastructure can be formalized by rail infrastructure owners (including

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\(^{15}\) www.railneteurope.com

\(^{16}\) Competition policy is set out in the Trade Practices Act (1974). Access to the rail network was adopted as an integral part of competition policy in the 1995 Competition Principles Agreement between the Commonwealth (federal) and State Governments.

\(^{17}\) The ARTC network comprises standard gauge tracks linking Wondonga (Victoria), Melbourne (Victoria), Adelaide (South Australia), Broken Hill (New South Wales), Tarcoola and Kalgoorlie (Western Australia).

\(^{18}\) ARTC’s Standard Track Access Agreement template is provided at its website at www.artc.com.au
ARTC) by a voluntary undertaking to the regulator, Australian Competition and Consumer Commission.

2.2 Track access tariff setting

This section summarizes the track access tariff principles and/or formulae used in each of the cases referred to above.

2.2.1 USA-freight trackage agreements

Because these private agreements are undertaken by negotiation and for a wide variety of reasons, the terms and conditions vary widely. In most cases, access rights are reciprocal (Railway A gets access to B’s tracks, B gets access to A’s tracks). The access fees to be paid by each of the two railways involved then tend to be offsetting. As a result, relatively straightforward formulae are typically used which are easy to administer (for example, a fixed price per wagon-km traveled on the ‘host’ network). Although there are many different approaches used and no standard formula, an underlying principle in nearly all cases is that the tariff should include not only the incremental cost caused by the ‘guest' trains because of their use of infrastructure, but also a share of the fixed costs, including a recovery of capital cost and a return on that capital.

2.2.2 Canada-freight interswitching rights

Interswitching tariffs: Interswitching rights up to 30km are priced according to standard tariffs set by the Canadian Transportation Agency. The Canadian Transportation Agency’s Regulations establish four distance zones within the 30-kilometre radius and prescribe rates per car for interswitching traffic to or from each zone. The rates are based on the estimated costs of interswitching traffic borne by the Canadian National Railway Company and the Canadian Pacific Railway Company. Lower per-car rates are prescribed for the interswitching of blocks of 60 or more cars as a unit. The Canadian Transportation Act requires that the Canadian Transportation Agency examine railway costs in its determination of the rates and stipulates that the resulting rates shall not be less than the average variable cost of moving the traffic. The interswitching rates are also subject to section 112 of the Act, which requires that rates established by the Agency be "commercially fair and reasonable to all parties".

Historically, the Canadian Transportation Agency has reviewed the railway interswitching costs annually and revised the rates accordingly to reflect any changes in the costs. The Agency last amended the Regulations and the interswitching rate structure in 1997. At that time, the Agency indicated that it would continue to develop interswitching costs on an annual basis, but would only revise the corresponding rate structure contained in the Regulations when the circumstances warrant.
The current rates are based on an estimation by the Canadian Transportation Agency of railway variable costs plus a percentage of contribution towards fixed costs. Railway variable costs include operating expenses that vary with the amount of traffic. In making costing determinations for the interswitching traffic, other factors such as the cost of capital and depreciation are considered. More details of the costing approach and methodology are given in Annex A. Table 2.3 summarizes the current interswitching tariffs for 2004.

**Table 2.3: Canadian Interswitching (track access) tariffs for distances up to 30km**

<table>
<thead>
<tr>
<th>Inter-switching distance zone</th>
<th>Rate for inter-switching traffic to or from a siding ($CAD/wagon)</th>
<th>Rate for inter-switching a car block* ($CAD/wagon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1</td>
<td>185</td>
<td>50</td>
</tr>
<tr>
<td>Zone 2</td>
<td>200</td>
<td>60</td>
</tr>
<tr>
<td>Zone 3</td>
<td>240</td>
<td>75</td>
</tr>
<tr>
<td>Zone 4</td>
<td>315</td>
<td>90</td>
</tr>
</tbody>
</table>

* a wagon block is defined as 60+ wagons

**Imposed running rights:** As noted earlier, the right to impose running rights (track access) on a railway outside the 30km interswitching limit is rarely used in Canada. If the Canadian Transportation Agency does grant an application for running rights, the two railways have the opportunity to negotiate the tariff for track access. If the negotiations fail, the Agency may determine the financial compensation to be paid. If the Canadian Transportation Agency were to reach this situation it is presumed that they would apply the same principles as for interswitching track access; that is they would establish a tariff that is not less than variable costs plus a contribution to the capital costs.

### 2.2.3 Mexico–freight

As described, there are a number of Mexican lines where one railway concessionaire is permitted to operate over another’s lines as set out in each Concession Agreement. Under the privatization policy, the tariffs for such track access were to be fixed by negotiation of the companies involved. The Mexican Competition Agency is empowered to determine the charges if agreement could not be reached by the companies. We understand that such tariffs were voluntarily agreed. So far as we know the details of the tariffs are not publicly available.

### 2.2.4 United Kingdom–domestic passenger and freight services

The United Kingdom track access charging structure is one of the more complex systems, containing a number of components. The description below is a summary. It should be noted that the tariffs are effectively set by the Office of Rail Regulation (now with input from Government on total funding need) though administered and collected by Network Rail.
**Passenger trains:** Track access charges for passenger train concessions in the United Kingdom are intended to recover the full operating, maintenance and renewal costs of track infrastructure incurred by Network Rail, the Infrastructure Company. (By contrast, many major upgrades or new strategic rail infrastructure are financed by loans raised commercially by Network Rail for which the Government makes direct grants to Network Rail for loan repayment).

Charges for track access for franchised passenger train operators contain the following main elements:

- **a fixed track charge:** these are set for each passenger concession by periodic review; when added together the charges for each passenger concession equal the difference between Network Rail’s total revenue requirement less income from the variable track usage charge and other charges;
- **a variable track usage charge:** this is designed to enable Network Rail to recover the incremental maintenance and renewal costs caused by rail vehicles using the network. It is calculated by multiplying the number of vehicle-miles of each type of rollingstock by unit tariffs published by the Office of Rail Regulation. The tariffs have been calculated to take account of cost variability with vehicle weight, unsprung mass, maximum speed, maximum operating speed and number of axles (i.e. impact of average axle load);
- **a variable capacity charge:** this is applied to all passenger train operating companies to cover any expected increase in congestion costs incurred by Network Rail from additional traffic: a published tariff list was introduced in 2002 to increase the proportion of income from variable charges and the fixed charge was reduced accordingly;
- **a charge for use of traction electricity:** this is charged only to train operators who use electric power. The published tariff list for traction electricity has been calibrated by a train energy performance computer model, and differs by train type;
- **an incremental output statement charge:** this is a special form of fixed charge that is levied in circumstances when there has been capital investment to enhance infrastructure performance between one review of charges and the next.

Concession contracts also include financial incentives and penalties for performance by both passenger train operating companies and Network Rail (for example, in relation to closing lines for engineering possessions). These ‘performance regimes’ are very complex, can differ for each concession and are not considered further here.

Other passenger train operations (that is, services not provided as part of concession agreements) are charged on a different basis, paying only the variable track usage charge, the variable capacity charge and (if electrically operated) the charge for use of electric energy. These charges typically apply to charter train operators.

**Freight trains:** The track access tariffs for freight trains are based on a policy assumption that the United Kingdom railway system is primarily provided and designed
for passenger services. Under this ‘prime user’ concept, the passenger services cover the
great majority of fixed costs of the railway system through the fixed charge described
above. Freight train operators do not generally pay the fixed charge that recovers
Network Rail’s joint and common costs. The freight train operating companies pay only
the variable elements of cost (for the specific rollingstock features of freight trains); plus
only those fixed costs that can be directly attributed to the specific freight train operator
(e.g. the fixed costs of freight-only branchlines).

2.2.5 Germany-domestic passenger and freight services

Unlike in United Kingdom, track access for passenger and freight trains in Germany is
subject to a common basic tariff framework, though the pricing factors in the framework
lead to different tariff rates. DB Netz’ terms and conditions for access to the network are
published in the German Federal gazette and on the internet. These include a detailed list
of tariffs for train paths and for the other facilities and installations.19

German track access charging policy is to recover a high proportion of railway
infrastructure costs from train operating companies. The train path tariff system has a
modular design in three parts:

a. **basic price depending on route category and its level of utilization:** there are
   12 route categories grouped by infrastructure performance standard and transport
   importance. The basic price is increased by a premium of 20 percent on routes
   with very high utilization.

b. **train path products (the product factor):** the basic price (i  above) may be
   multiplied by a number of factors which depend on whether the Train Operating
   Company is a freight or passenger train service or wishes to purchase particular
   features or levels of service: these factors differ for passenger and freight
   services.

c. **special factors:** these are a series of multiplicative, additive or regional factors,
   for example for steam trains, extra heavy freight trains, or tilting passenger train
   technology.

Table 2.4 (a) summarizes the basic charges as they were in January 2006. Table 2.4 (b)
summarizes the main product factors and Table 2.4(c) the special factors as they were in
January 2006.

Table 2.4 (a) Summary of basic track access prices: Germany

<table>
<thead>
<tr>
<th>Route category</th>
<th>Main features</th>
<th>Basic price (EUR/train path-km)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long distance:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fplus:</td>
<td>Premium lines (usually 280km/h plus) primarily used for high speed services</td>
<td>8.30</td>
</tr>
<tr>
<td>F1</td>
<td>200-280 km/h high speed traffic and mixed passenger and freight operations</td>
<td>3.79</td>
</tr>
<tr>
<td>F2</td>
<td>161-200 km/h high speed traffic and mixed passenger and freight operations</td>
<td>2.50</td>
</tr>
<tr>
<td>F3</td>
<td>101-160 km/h mixed passenger and freight operations</td>
<td>2.26</td>
</tr>
<tr>
<td>F4</td>
<td>101 -160 km/h use for handling fast inter-regional trains</td>
<td>2.17</td>
</tr>
<tr>
<td>F5</td>
<td>Up to 120 km/h used for handling slower inter-regional trains</td>
<td>1.76</td>
</tr>
<tr>
<td>F6</td>
<td>101-160 km/h Local passenger and regional lines</td>
<td>2.06</td>
</tr>
<tr>
<td>Feeder:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z1</td>
<td>Up to 100 km/h</td>
<td>2.14</td>
</tr>
<tr>
<td>Z2</td>
<td>Up to 50 km/h</td>
<td>2.21</td>
</tr>
<tr>
<td>Rapid transit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>Lines primarily or exclusively for rapid transit (passenger) services</td>
<td>1.46</td>
</tr>
<tr>
<td>S2</td>
<td>Direct rapid transit routes in Hamburg</td>
<td>2.09</td>
</tr>
<tr>
<td>S3</td>
<td>Direct rapid transit routes in Berlin</td>
<td>2.51</td>
</tr>
</tbody>
</table>

* an additional premium of 20 percent of basic price is paid on the most heavily utilized lines in each class.

Table 2.4 (b) Summary of track access product factors: Germany

<table>
<thead>
<tr>
<th>Product</th>
<th>Passenger trains</th>
<th>Freight trains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor*</td>
<td>Factor*</td>
</tr>
<tr>
<td>Express train path</td>
<td>1.80</td>
<td>1.65</td>
</tr>
<tr>
<td>Long-distance regular-interval train path</td>
<td>1.65</td>
<td>1.00</td>
</tr>
<tr>
<td>Local regular-interval train path</td>
<td>1.65</td>
<td>No load train path</td>
</tr>
<tr>
<td>Economy train path</td>
<td>1.00</td>
<td>Feeder train path</td>
</tr>
<tr>
<td>No-load train path</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

- basic price for route category is multiplied by product factor for track access charge

Table 2.4 (c) Summary of track access special factors: Germany

<table>
<thead>
<tr>
<th>Special supplements</th>
<th>Factor applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications for special trains</td>
<td>1.10 multiplicative</td>
</tr>
<tr>
<td>Steam trains</td>
<td>1.20 multiplicative</td>
</tr>
<tr>
<td>Out-of gauge trains</td>
<td>1.50 multiplicative</td>
</tr>
<tr>
<td>Heavy haul freight trains</td>
<td>+ up to 0.93 EUR/train path-km</td>
</tr>
<tr>
<td>Tilting passenger trains</td>
<td>+ 0.51 EUR/train path-km</td>
</tr>
<tr>
<td>Regional supplements*</td>
<td>differs by region.</td>
</tr>
</tbody>
</table>

* To improve cost-recovery of low density lines

The tariff system imposed by DB Netz (and approved by regulatory authorities) is designed partly to reflect the costs of providing and maintaining infrastructure, partly the level of performance provided by different standards of train path, partly their degree of utilization, and partly differences in market ability to pay between passenger and freight trains. Using the tariff tables above, it is very straightforward to calculate the tariff any
Train Operating Company must pay for track access for a particular type of train service on a particular route. But the balance and precision with which the tariff reflects the various tariff principles cannot be known with any certainty.

2.2.6 European Union-International Trains

The tariffs for track access for international trains between European Union member states are obtained as the sum of tariffs for track access within each member state. There is thus no discrimination between tariffs for domestic trains and tariffs for international trains.

However, the structure and level of track access charges varies substantially between different member states of the European Union. RailNetEurope has therefore set up a European Infrastructure Charging Information System (EICIS) which can calculate the tariff for track access (train path fee, station fees and shunting fees) for any international train movement by customers rapidly (and without charge). The system currently covers 16 European railway networks and is being enhanced to include others.\(^{20}\)

2.2.7 Australia- Interstate freight

The Australian Rail Track Corporation (ARTC) publishes a list of Reference Tariffs for track access on each of its routes. The Reference Tariffs are based on a fixed component (referred to as a ‘flagfall’) per train for each route, plus a variable element that depends on the gross tonne-km of the train. The fixed element itself actually reflects the length of the different routes, so is basically distance-related rather than a true ‘flagfall’. This distance-based component, as in Germany and UK, is affected by the speed of train and whether the train path is peak or off-peak.

The different train types are listed in Table 2.5 (a). The Reference Tariffs as at January 2006 for the different train types on different routes are reproduced in Table 2.5(b) below, expressed in Australian dollars. The pricing formula is the same for each route and the tariffs for each route shown only for convenience of customers.

\(^{20}\) Details of EICIS can be found at www.eicis.com
Table 2.5(a) Train types used for fixed (flagfall) tariff components

<table>
<thead>
<tr>
<th>Flagfall</th>
<th>Train type and description</th>
<th>Trains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Premium</td>
<td>Max train speed 130 km/h</td>
<td>XPT (fast passenger train)</td>
</tr>
<tr>
<td></td>
<td>Max axleload up to 20 tonnes</td>
<td></td>
</tr>
<tr>
<td>Premium</td>
<td>Max train speed 115km</td>
<td>Passenger, Bi-modal</td>
</tr>
<tr>
<td></td>
<td>Max axleload up to 20 tonnes</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Max train speed 110km/h</td>
<td>Superfreighters</td>
</tr>
<tr>
<td></td>
<td>Max axleload up to 21 tonnes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length up to corridor standard max</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Max train speed 80km/h</td>
<td>Express goods</td>
</tr>
<tr>
<td></td>
<td>Max axle load up to 23T</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length up to corridor standard max</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Off peak train paths</td>
<td>Metro shunts/work trains</td>
</tr>
</tbody>
</table>

Table 2.5(b) ARTC Track Access Reference Tariffs, Jan 2005

<table>
<thead>
<tr>
<th>Adelaide Parkesron</th>
<th>Crystal Brook</th>
<th>Broken Hill</th>
<th>Tarcoola – Alice Springs</th>
<th>Port Augusta – Whyalla</th>
<th>Adelaide Pelican Point</th>
<th>Adelaide Melbourne</th>
<th>Melbourne Albury</th>
<th>Appleton Dock Jc – Footscray Rd</th>
<th>Footscray Rd – Appleton Dock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable price (A$/000GTK)</td>
<td>2.256</td>
<td>2.550</td>
<td>4.225</td>
<td>3.986</td>
<td>3.547</td>
<td>2.594</td>
<td>2.270</td>
<td>0.00</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flagfall/train (A$)</th>
<th>815.87</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Premium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premium</td>
<td>6,565.57</td>
<td>772.92</td>
</tr>
<tr>
<td>High</td>
<td>5,688.52</td>
<td>669.87</td>
</tr>
<tr>
<td>Standard</td>
<td>4,812.55</td>
<td>565.74</td>
</tr>
<tr>
<td>Low</td>
<td>4,376.70</td>
<td>514.22</td>
</tr>
</tbody>
</table>

| Indicative distance (kms) | 1992.5 | 372 | 6.35* | 73 | 19.3 | 847.5 | 307.1 | N/A | N/A |

*distance to changeover point to another company which now serves Alice Springs and Darwin

The Reference Tariffs relate to a particular (standard) service performance specification. There can be negotiation with individual customers for specific needs or service characteristics that vary from the reference assumptions; for example, with respect to axle loads, speed, train length, origin and destination, stops and operating timetable. However, ARTC has undertaken to the Australian Competition and Consumer Commission that it will not charge different prices to different clients where the characteristics of the service are alike; and where the applicants are operating within the same end market. ARTC also specifically undertakes not to discriminate pricing on the basis of whether the Train Operating Company is privately owned or owned by a state or federal government. All tariffs negotiated are published.

The fixed component is paid for the right to reserve a train path and is payable by the customer whether they use the train path or not. The ARTC has also undertaken to the Australian Competition and Consumer Commission to limit the increase in the Reference Tariffs to a rate below the inflation rate, as an efficiency incentive.

21 Details of ARTC’s Standard Terms and Conditions, and prices can be found at www.artc.com.au
2.3 Timetable planning

This section describes how timetable planning is carried out in situations where there are mandated rights of access to use track: the examples are therefore United Kingdom-domestic, Germany-domestic, European Union-international and Australia-interstate freight. (In countries where access is by private contract, the train path arrangements are simply determined by negotiation and set out in the trackage rights agreement).

2.3.1 United Kingdom-domestic

In common with the network managers in all 25 European Union countries, Network Rail periodically publishes a Network Statement containing information required by Train Operating Companies wishing to operate train services on the railway network. Each Network Statement covers specific timetabling periods. By international agreement, all timetabling periods in the European Union commence on the Sunday following the second Saturday in December.

The timetabling process begins around two years ahead of the relevant timetable period commencement date which includes consultation with train operating companies and the development of a base timetable which takes account of major service and infrastructure changes that Network Rail wishes to introduce into the timetable. Using the base timetable as the starting template, the substantive timetabling process then has three stages:

**Preliminary period:** in this period (and after consultations with users) Network Rail develops the ‘Rules of the Road’ and ‘Rules of the Plan’ for the upcoming timetabling period. The Rules of the Road are prepared on a national basis and contain details of restrictions on use of the network due to maintenance, renewal and major capital works. They include details of dates, times, locations, temporary closures, temporary speed restrictions etc. The Rules of the Plan contain wide-ranging information for timetabling including standard timing points, section running times for different train types, headway limits, station working rules, route capability data etc. Preliminary Rules of the Road and Rules of the Plan are shared with train operating companies about 14 months before the timetable period. Following consultations with the operating companies Final versions are published 12 months ahead of the timetabling period.

**Preparation of Draft Timetables:** This period commences about 9-10 months ahead of the timetable period. It is based on the contractual rights (through track access agreements associated with concession agreements) and other timetable requests of the train operating companies that are submitted 4 weeks prior to a Timetable Conference. The Conference identifies potential problem areas and process and schedule for resolution and completion of the timetable. Network Rail then prepares the Draft timetable, adapting the base timetable to take account of previous operator timetables and

30
new requests. This is an iterative and consultative process, but the final deadline for capacity requests (the capacity request deadline) is set at a specific date around 7 months prior to the timetable deadline. Conflicts between train operators are resolved either by negotiation between the parties or a decision made by Network Rail in accordance with a number of published Decision Criteria\textsuperscript{22}: there are 14 such criteria including compliance with concession agreements and other economic, commercial, operational and other criteria.

**Finalization period:** During the finalization period, the train operating companies review the Draft Timetables and any errors or minor difficulties are sorted out. Train operators may introduce new or changed requests during the finalization period but they will be accepted only if they are practicable and can be accommodated without undue complexity or impact on other operators. About 5 months prior to the timetabling period, Network Rail prepares an ‘Offer’ of the first Working Timetable. Each train operator is advised of the train paths that they are being offered with a commentary as to why any modifications or rejections of requests have been made. Each train operator is also advised of paths being offered to other train operators on the same route. This enables train operators to see if there are any unused train paths for which the process allows a subsequent ‘spot bid’ to be made before the timetable is finalized. There is then an approximate 6 weeks period for appeals (to an Access Disputes Resolution Committee), and for dealing with spot bids, before the Final Working timetables are completed. The timetable is complete around 10 weeks before the timetable is put into operation.

2.3.2 Germany-domestic

About 40,000 regular trains are run each day for which DB Netz designs train paths and timetables. A yearly timetable for services is put in place beginning each year on the Sunday after the second Saturday in December. Application forms for train paths, differentiated by train type (passenger, freight etc) can be downloaded from the internet. The application requires:

- technical details needed for pathing purposes;
- details of requested period of use of train paths;
- name of person(s) authorized to negotiate in the event of pathing conflicts.

Deadlines for submitting applications are set out in a ‘Framework Schedule’ that is drawn up for each timetable development period. In general, applications need to be made by between 9-12 months prior to a new timetabling period. Potential applicants can also request a ‘train path feasibility study’ for a fee, to determine if the requested train path can be made available or what close alternatives might be possible. If the train paths identified in the train pathing study are taken up by the applicant the fee is later refunded.

\textsuperscript{22} The Decision Criteria are given as Condition D6 of Network Rail’s Network Code, available at its website, previously cited.
DB Netz gives priority in processing applications to those that are punctual, relate to an existing services, and that meet DB Netz technical specifications. If the train paths in an application should conflict with those of another Train Operating Company there is a conflict-resolution process established involving all the parties concerned. Where no mutually agreeable solution can be found by conflict resolution discussions, the path(s) that are the subject of conflicting demands are allocated to the Train Operating Company willing to pay the highest track access charge (according to a highest bidding procedure). Once usage contracts have been signed (either through direct allocation, conflict resolution talks or highest bidder procedure) the usage charge must be paid for the entire period of the application, whether used or not.

2.3.3 European Union-International

A yearly timetable for international services is put in place beginning each year on the Sunday after the second Saturday in December. There are three main steps for applicants for an international train path (normally many paths) in a particular timetable:

- dialogue with Infrastructure Manager and Corridor Manager
- a train path study request;
- a path order;
- a path allocation

**dialogue:** up to 4 years before the subject timetable begins, the applicant can enter into early discussions with either the Infrastructure Managers in each country along the route and/or with one Infrastructure Manager who will act as a ‘One Stop Shop’ for the dialogue, and/or with the Corridor Manager within RailNetEurope who is responsible for co-ordinating activities along a particular corridor. The intention is to give the applicant maximum possible information early about the capacity available and the opportunities and is facilitated by a simple questionnaire on service requirements. On the basis of all known requests for train paths, plus planned ‘track possession time’ for maintenance, the Corridor Managers develop a ‘strategic timetabling concept’ that defines capacity and timetabling policy. Potential customers can attend an official meeting to discuss the concept.

**train path study request:** the applicant can, at least 11 months (and exceptionally 9 months) in advance of the targeted timetable period, submit a request(s) for a train path study. A train path study is a more detailed feasibility study of a specific train path request or requests carried out by the Infrastructure Managers. The path study examines the feasibility of the specific timetable needs but also launches detailed discussions with the Infrastructure Managers of how they can best serve this request. There is a standard form for a path study request available on RailNetEurope’s website, previously referenced. The Infrastructure Managers of the countries involved are required to provide a joint answer by no later than 8 months before the start of the timetable period. RailNetEurope states that if the Infrastructure Managers’ train path study finds that the desired paths are feasible this is a strong indication that the Infrastructure Managers will
allocate that path if an order is made. If not found feasible, the Infrastructure Managers will probably offer an alternative path(s). According to European Union directives, the Infrastructure Managers must manage this process on the basis of efficient, transparent and non-discriminatory principles. 23

**path order:** an international train path order must be submitted by the applicant at least 8 months ahead of need and before the second Monday in April, in order for it to be included in the draft network timetable for the following timetabling period. Applications received after the deadline may be considered as a second order priority in the ‘allocation of remaining capacity’. RailNetEurope is encouraging applicants to use a computer system called ‘Pathfinder’ to submit path orders but they can also be submitted to the ‘one-stop-shops’.

**path allocation:** at least 5 months before start of the timetable period the Infrastructure Managers must produce the draft timetable which constitutes the ‘path offer’. There is a one month consultation process in which applicants can submit comments or requests. Applicants must then accept the final ‘path offer’ or their path request will be considered withdrawn. Path allocation is then made. This forms the legal basis of the transaction and at this stage (2006) it is done by individual countries along the route. Any remaining capacity can then be considered for allocation to late applicants.

2.3.4 **Australia - Interstate freight**

The Australian Rail Track Corporation does not administer its railway network according to an annual timetabling process. On most of the network there is surplus capacity at many times of the day (though not at peak freight departure times). The timetabling of new train service applications is by a process of ‘fitting in’ new train path applications into capacity that is not already allocated under existing access contracts. However, ARTC does reserve the right to withdraw train paths allocated to a Train Operating Company if the company under-utilizes its capacity.

An applicant for rail access can be an accredited railway entity, or can be a customer intending to contract with an accredited railway entity to provide the services. There are five main steps in the process by which an applicant for a train path obtains access to the railway network:

- preliminary meetings and exchanges of information between ARTC and the applicant;
- submission of an Access Application by the Train Operating Company;
- preparation of an indicative access proposal by ARTC;
- negotiations to develop an Access Agreement for execution or dispute resolution procedures (if necessary);
- Completion of an Access Agreement.

23 European Commission Directive 2001/14/EC
**provision of information:** if requested by an applicant will provide an extensive list of material about its railway network including infrastructure characteristics, performance (speed, axle load etc), capacity utilization, and incremental costs of traffic on each line segment. Moreover, ARTC’s website gives details of all existing train timetabled paths that are already used on each route.

**access application:** A schedule sets out the information to be provided in an Access Application. ARTC may seek additional information but must otherwise acknowledge receipt within 5 working days of receipt.

**indicative access proposal:** ARTC tries to give an indicative reply within 30 days of acknowledging the application. This sets out, amongst other things: the results of a capacity analysis to determine whether there is sufficient capacity to meet the application; if additional capacity would be necessary to grant the requested access an indicative estimate of the capital costs of providing the capacity; advice on whether there are any potential conflicts with other applicants; and an initial estimate of access tariffs.

**negotiations/dispute resolution:** procedures and response times are set out for the negotiation process or other dispute resolution procedures, including the possibility of arbitration. When two or more applicants are seeking mutually exclusive train paths, ARTC awards access to the applicant which will accept an access agreement most favorable to ARTC. Such a choice would normally be made on grounds of highest financial value of the contract to ARTC.

**access agreement:** The final access agreement will differ with each customer but must address a defined series of topic headings.

An interesting feature of the Australian example is that access seekers can request ARTC to connect to the network or to build additional capacity. ARTC approves connections that meet relevant government planning requirements, do not reduce capacity, and which comply with ARTC’s engineering, operational and safety standards. The construction and maintenance costs of the connection must be met by the owners of the connecting track; in other words full cost recovery is applied in situations where new capacity is required.

ARTC may approve construction of additional capacity requested if:

- it is commercially viable to ARTC;
- if the applicant agrees to meet the cost (either through capital funding or a tariff surcharge);
- if the extension is technically and economically feasible and does not compromise the integrity of the network.

### 2.4 Resolution of Operating Conflicts
However well timetables are drawn up, there will always be day to day events that disrupt train operations and which call for decisions to be made to give priority to one train rather than another. Where the trains are owned by different companies such decisions have financial consequences. Similarly there may sometimes be grounds for one Train Operating Company to compensate another for disruption that it causes. While the details of the rules may differ from one country to another it is important that investors in and managers of all such companies know what the rules are and what risks are involved. In this section examples of operational disruption regimes are summarized for the USA, United Kingdom, Germany and Australia. In the cases of United Kingdom and Germany, the systems used by Network Rail and DB Netz for handling operational disruption cover both domestic and international trains on the network.

2.4.1 USA-freight

Private trackage rights agreements typically contain a very general provision for what happens in the case of disruptions. For example the agreement may provide that the ‘host’ railway will ‘use its best endeavors to minimize delays’ to the ‘guest’ train services. Since the agreements are voluntary and often reciprocal (i.e. the two railways have similar agreements with each other) detailed procedural specifications are not required and train controllers usually treat all trains alike.

Unlike Europe, most freight railways in the USA do not operate according to a fixed timetable. There is of course a periodic scheduling process but trains are cancelled or re-scheduled, or run early or late with a lot more fluidity than is possible where there are heavy passenger train flows (such as in Europe or China). A typical set of general priorities on a large USA railway would be: Amtrak (passenger) trains first, inter-modal trains, automobile trains, general freight trains. With trains of equal priority a ‘first come, first served’ approach prevails, irrespective of whether it is the host railway’s own train or a ‘guest’ train operating under a trackage rights agreement.

If a ‘guest’ train breaks down on the system then the trackage agreement will normally give the ‘host’ railway the right to render assistance to clear the blockage and to seek reimbursement of its costs for doing so.

If the guest railway does not consider that it is treated fairly in recovery of schedules from disruption then it can take the case to an agreed Arbitration process (defined in the agreement), though we understand this is very rare.

2.4.2 United Kingdom – freight and passenger services

In countries such as the United Kingdom where track access is mandated by law, the detailed procedures for recovery from disruption tend to be more complex, as they must apply to all existing and potential operators, without discrimination. They must also cover not only the relationship between the Infrastructure Company and Train Operating
Companies but also scheduling conflicts between the Train Operating Companies themselves, which may include both freight and passenger Train Operating Companies.

The most codified and complex procedures exist in the United Kingdom. In consultation with the Train Operating Companies, Network Rail is establishing a Rail Operational Code (ROC) which will have the objective of sustaining operations in accordance with the Working Timetable as well as restoring operations in the event of disruption. The Rail Operational Code provides guidance on notification of disruptive events, contingency plans, clearance of blocked track and assistance to failed trains, emergency timetabling procedures, control arrangements, train regulations, seasonal preparedness and other matters. The plan for the Rail Operational Code has been agreed with the Office of Rail Regulation to ensure that it has proper regard for the needs of passenger and freight customers, safety and security, efficient and economical train operations and fairness and transparency between operators.\(^{24}\)

The Code divides operational disruptions into either a ‘Disruptive Event’ or a ‘Minor Disruption’. A Disruptive Event is one that prevents or causes material (major) impact on the operation of trains. In these circumstances Network Rail decides the most appropriate course of action taking account of the Rail Operational Code and with the aim of minimizing the inconvenience to passengers while having regard to the interests of freight trains. If the Disruptive Event affects the trains of only one Train Operating Company then Network Rail is required to take such action as the Train Operating Company reasonably requires to restore train operations safely.

A Train Operating Company must comply with Network Rail’s instructions in the event of failure of any of its trains provided such request does not contravene safety or other authorized standards (known as Railway Group Standards). Network Rail may also commission any Train Operating Company to use its rollingstock and train crews to assist a failed train of another Train Operating Company. Similarly, in adverse weather conditions Network Rail may request any Train Operating Company to provide Network Rail with reasonable assistance, including use of any of its rollingstock.

When disruption is expected to continue for more than two days Network Rail normally develops an amended timetable in consultation with affected operators.

Minor disruptions are dealt with through Train Regulation Statements issued to train signaling and control staff. These are issued annually following consultations with Train Operating Companies who can use the appeals procedure (a sub-committee of the Access Dispute Resolution Committee) if they are not satisfied, or they may ultimately appeal to the Office of Rail Regulation.

2.4.3 Germany – freight and passenger services

\(^{24}\) Details of procedures for Operational Disruption are given in Part H of the Network Code published on Network Rail’s website, previously cited.
As in the United Kingdom, Germany uses a set of traffic control guidelines for how to deal with service disruptions. DB Netz undertakes to implement measures to create a return to normal working conditions as soon as possible.

The overall process is not as responsive to Train Operating Company influence and external regulation as in the United Kingdom. DB Netz undertakes to take account of the wishes of Train Operating Companies as far as possible but makes clear in its Network Statement that the main emphasis when there is disruption is to restore the timetable. In the event of disagreements, DB Netz claims the right to have the final say. Any risk or cost burden associated with deviations from the timetable due to DB Netz actions during disruption is treated as a normal business risk to be borne by the Train Operating Companies.

In the event of disruptions caused by DB Netz’ own traffic management that makes it impossible for a Train Operating Company to use its own facilities (e.g. a train depot) the company undertakes if possible to offer Train Operating Companies the use of equivalent facilities. It may use the facilities of another Train Operating Company to do so, as long as it consults them first and it does not hamper the other Train Operating Company’s operations.

A Train Operating Company is required to promptly remedy any disruptions that are its own responsibility, for example a locomotive failure. If it does not do so, and no other Train Operating Company is able to rectify the fault, DB Netz has the right to gain access to the assets of the Train Operating Company (such as the locomotive), clear the line itself and charge the Train Operating Company accordingly.

In the case of derailments Train Operating Companies can take responsibility for re-railing the vehicles themselves; but DB Netz reserves the right to refuse permission for operational reasons, or because it believes the Train Operating Company does not have the requisite expertise, or that its equipment may damage infrastructure, etc. In that case DB Netz will deal with the derailment itself.

2.4.4 Australia-Interstate Freight

The Australian Rail Track Corporation (ARTC). Network Management Principles are set out in its indicative Access Contract (Schedule 5). Under each Access Contract, ARTC is obliged to use its best endeavors to inform the Train Operating Company of all incidents that affect or could affect the ability to maintain the contracted train path. The Train Operating Company has an obligation to ensure that its services minimize obstruction to the network, or to prevent delay to the trains of other Train Operating Companies (other than in compliance with an ARTC Instruction). In sorting out problems due to disruption the ARTC undertakes to apply the same principles of non-discrimination of operators as it applies in access pricing, while acknowledging that operating decisions will need to take account of local circumstances.
When disruptions occur ARTC’s policy is generally to give priority firstly to those trains that maintain timetable adherence over those that cause delays, and then to those paying the higher flagfall (Table 2.5(b)). (Because its lines carry mostly freight traffic, ARTC does not face significant problems in having to determine priorities between freight and passenger trains).

To overcome disruptions ARTC has a contractual right to instruct any Train Operating Company regarding its use of the train path during transit, including an instruction to hold a delayed train to enable another Train Operating Company that would otherwise be late to take priority. In this way it creates an incentive for on-time running.

ARTC can instruct a Train Operating Company to use its locomotive and crew for the purpose of clearing a network blockage such a train failure by another Train Operating Company, though it must consult with the assisting train operator first (except in case of emergency). However, when giving any instruction, ARTC must have due regard to minimizing disruption to a Train Operating Company’s services.

Train Operating Companies have an obligation to comply with all ARTC’s instructions. Train Control Instructions must be complied with immediately. ARTC is not contractually responsible for any delay suffered or cost incurred by a Train Operating Company in complying with a proper instruction by ARTC.

2.5 Liability for Accidents

This section considers the issue of accidents that involve the operations or assets of more than one railway entity. It is looked at in two parts: first, the issue of insurance against accidents; and secondly, the issue of how liability for the costs of damage to railway assets is apportioned between two or more railway entities involved in an operating accident.

2.5.1 Insurance

In all the countries included in this review there is a requirement that any railway, whether an infrastructure company, a Train Operating Company or a combined infrastructure manager/train operator be licensed or accredited by an appropriate government regulator or other official body. In all cases the licensing authority requires that the company have appropriate insurance coverage. Depending on the type of railway operations involved such insurances may be required to cover:

- railway workers in the event of injury or death;
- passengers in the event of injury or death;
- freight in the event of loss or damage
- property of other railway entities
• third-parties in the event of injury or death, property damage, environmental clean-up etc.

However, many railways do not take out commercial insurance cover for damage to their own assets. This is because railway accidents are comparatively rare and even serious accidents are unlikely to impact more than a small proportion of the assets of any railway company. Therefore companies tend to ‘self-insure’ their own assets, paying their own damage costs themselves as they occur, either out of current earnings or an internal fund maintained for that purpose.

When one railway entity then uses the infrastructure of another railway entity, whether under private agreement or mandated track access rights, the legal agreement that gives effect to access will normally specify that access is subject to the applicant holding all the insurances necessary for licensing or accreditation, and will contain a requirement that each party will indemnify the other against liability arising out of non-compliance with insurance requirements.

2.5.2 Apportioning liability for accident damage

Different countries have different systems of law to determine how, in general, liability for death, injury or damages may be determined (in any situation, not just railways) and it is not intended to describe these here. However, it is worth noting that track access agreements typically seek to limit the liability for such costs as between railway entities themselves.

For example, in the case of privately negotiated trackage agreements in the USA and elsewhere, the convention is normally that in the event of an accident (and excluding cases of gross negligence) each party takes responsibility for loss or damage to its own staff or assets, and its own cargo. The idea behind this ‘knock for knock’ policy is based on common experience that most railways tend to be very safety conscious: if an accident occurs, it is normally due to a combination of circumstances and rarely possible to apportion blame to only one cause or one party. Taking liability for their own staff, assets and cargo is thought to even out between the parties over time while minimizing the legal costs of trying to apportion blame.

Similarly, in Germany, the Terms and Conditions for Track Access preclude compensation being paid as between the infrastructure manager, DB Netz and any Train Operating Company. Otherwise, legal liability is determined in accordance with a general Liability Law that exists in Germany.

In Australia, the ARTC’s standard track access agreement also provides for various cross-indemnities between ARTC and Train Operating Companies having the effect of minimizing the recourse to legal proceedings to recover damage costs from the other party unless there has been a breach of the provisions of the access agreement.
In all jurisdictions, serious accidents are subject to an independent investigation by an authorized safety body. The ‘knock for knock’ approach allows the external safety regulator to investigate cause objectively with the two rail entities without the complication of a mutual damages claim. However, nothing in the track access agreements about mutual damage to rail property can prevent safety investigators from apportioning responsibility on safety grounds, or from taking any legal actions that might be permitted or required under wider safety laws.

2.6 Possible applications in China

At this stage it is not anticipated that China will introduce a generally mandated right of track access across its network. The very high utilization of existing capacity and the policy of maintaining the dominant position of the 14 regional railways suggest that track access will be restricted to specific situations.

Nevertheless policy initiatives to encourage external investment in the industry suggest that in the future there may be various new organization forms in the railway sector established under various ownership structures. Such diversity will inevitably lead to a need for policies, procedures, charging mechanisms and regulatory recourse for issues of track access even if the scope of access is narrowly delineated to specific geographic or business areas. For example the new structures may include:

- vertically integrated joint-venture railways having responsibility for both rail infrastructure and train operations in their region but which may nevertheless need to use the tracks of other railway companies in border areas in order to reach convenient handover or terminating stations;
- specialized Train Operating Companies such as container companies or tourist passenger train companies, who would need to pay track access fees to one or more of the 14 regional railway administrations;
- concession companies for providing new railway infrastructure, over which China Rail and others may operate train services in return for track access fees.

In our view, the circumstances in China are not appropriate for a system in which any track access arrangements are all separately and privately negotiated, with minimal regulation, as occurs in the USA. This is for three reasons.

First, the railway network in China is legally a public asset and many of the services that use it, such as passenger transport are treated as public services. The Government of China therefore has both a custodial role and direct public policy interest in the terms and conditions of its use. This role and interest should be pursued through a fair and transparent articulation of the rights and obligations of the parties that use the network, rather than simply left to individual interests of those parties. By contrast over 95 percent of the USA railway network is privately-owned; the predominantly freight transport services that use it are treated as being in the commercial sphere. In those circumstances access by private negotiation is more appropriate.
Second, the ultimate policy objective is to encourage new sources of investment financing into the railway sector. Investors will want to know the ‘rules of the game’ in advance and not face the high risk and uncertainty of what they may be able to negotiate once they enter the industry. Similarly, there needs to be a strong independent regulatory regime to oversee these rules and to ensure fair dealings by all parties.

Third, the financial strength and negotiating power of the 14 existing regional railways is likely to greatly eclipse that of any new railway entity contemplating establishing itself within their current territory. This inequality needs to be counter-balanced by centrally determined rights and agreement frameworks that require compliance by the regional railways.

This suggests that whatever scope of track access is selected by China’s rail policy makers (that is, whether access is narrowly or widely specified) it is desirable that the rights and obligations of railway entities should be mandated and codified through legislative or regulatory instruments. This would involve the adoption of a regulated system of track access, based on defined procedures, standard forms of documentation, developed tariff structures and independent regulatory safeguards. The regulations covering access should apply neutrally, irrespective of the ownership of any particular railway entity (whether Government, provincial government, city authority, private sector or joint venture). They should also be transparent, so that external investors would be aware of their rights and obligations prior to industry entry.

The international experience, taken as a whole suggests that China may want to consider a system for railway track access that contains the key elements shown in Table 2.6.
### Table 2.6: Key elements of a possible regulated track access structure for China

<table>
<thead>
<tr>
<th>Element</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of rail infrastructure access rights</td>
<td>To be determined by policy: may be narrowly defined (e.g. as in Canada and Mexico) or more broadly defined (as in European Union and Australia)</td>
</tr>
</tbody>
</table>
| System and criteria for licensing railway entities | May be different licenses for different types of rail entity (e.g. infrastructure, passenger, freight, integrated entities)  
Typical requirements might include company registration in China, safety accreditation, evidence of relevant experience, financial capacity, insurance etc.  
Licensing should be undertaken by a body independent of existing China Rail companies |
| System for safety accreditation or certification of railway entities | Safety accreditation to be a condition of licensing (above)  
Safety accreditation typically relates to company safety plan, management responsibility, staff, vehicle approval, operating plan etc. |
| Procedure for applying for rail infrastructure access rights | Needs to identify to whom the entity applies for access, information to be provided with application, criteria for considering application, timetable for responding to requests, conflict resolution methods, appeals procedure etc |
| Standard templates for various forms of rail infrastructure access contract | Typical agreement forms will include a track access agreement, electricity usage agreement, passenger station usage agreement, freight terminal usage agreement, haulage agreement, shunting agreement etc. |
| Establishment of criteria and framework for rail infrastructure access charges | Requires detailed study to determine optimum structures for different freight and passenger service situations likely to be encountered in China  
General principle on highly utilized infrastructure is that charges should provide costs and a return on use of assets  
Should be a high premium on use of most congested infrastructure, if access is possible at all. |
| Procedures for train timetabling in a multi-operator environment | Information requirements, process, criteria, and dispute resolution procedures for incorporating track access agreements into the working timetables of regional railway administrations. |
| Institutions and procedures for regulatory review and recourse | Requires independent and transparent procedures to maximize investor and operator confidence. |
3 Vehicle interchange

3.1 Institutional frameworks

Vehicles can and often are interchanged between neighboring railways by mutual arrangement. But interchange on networks with several operators, such as in Europe, North America or Australia, is almost always controlled by an Association representing these operators. The Association sets minimum technical standards for interchanged rollingstock and also develops and maintains the associated technical and commercial rules.

The Australian and North American institutional frameworks for vehicle interchange are similar, being based on voluntary industry agreements of railways. In Europe, though the role of industry Associations is important, the international nature of European vehicle interchange situations means that arrangements are influenced by international conventions, and increasingly affected by European Union requirements.

3.1.1 North America

In the USA (and extending for some functions to Mexico and Canada) the key role is performed by the Association of American Railroads (AAR). AAR was formed in 1934. Its main role is the setting of interchange standards relating to operations, safety, track and infrastructure, rolling stock and data systems. It also has a Quality Assurance certification role. It is responsible for all aspects of interline freight operation and accounting. The AAR also represents the railway industry before government committees, regulatory and administrative organisations and the courts.

Over 1.6 million freight cars operate in the USA, Canada, and Mexico. AAR has played a continuous role in developing and maintaining a comprehensive set of industry rules and standards for safe and efficient operation. These initiatives are undertaken in close cooperation with the United States Federal Railway Administration, Transport Canada, and the Mexican Secretario de Communicaciones y Transporte. The North American railway industry largely self-regulates in the mechanical standards area. AAR has two independent subsidiaries which are important to vehicle interchange methods:

- the Transport Technology Centre Inc operates the industry Test Centre, located near Pueblo, Colorado and is involved in maintaining and developing the technical standards;
- RAILINC Corp is responsible for the centralised computer information and settlement processes.

25 Although AAR has members who are passenger operators, there are few interline passenger services as such. All long-distance services are operated by Amtrak, largely over the networks of AAR members.
Railways engaged in interline traffic must ensure their rollingstock and components, operating practices and accounting procedures comply with AAR’s interchange rules and technical standards:

- Interchange Rules (‘Field and Office Manuals’);
- Manual of Standards and Recommended practices.

The objectives of the Interchange Rules are to:

- ensure everyday effectiveness of interchange amongst the subscribing railways;
- foster uniform compliance with agreed rules and standards;
- provide a system for billing fair, compensatory charges for car repair;
- provide a system outlining general repair limits, responsibilities and the handling of disputes.

The Interchange Rules apply to over 1200 organizations, including:

- railways;
- private wagon-owners/lessors;
- shipper owners;
- contract repair facilities.

Those subscribing to the rules agree to abide by the AAR interchange rules and the decisions/interpretations of the AAR Arbitration and Rules Committee. Virtually all railways and owners of interchange wagons in North America are subscribers. Further details are given in Sections 3.2 and 3.3.

### 3.1.2 Europe – international

Until recently, most European railways were Government-owned nation-wide systems. Interline traffic in Europe has therefore tended to be synonymous with international traffic, and interline procedures closely related to those established for international traffic generally. These procedures are being significantly revised in response to the growing importance of the European Union in railway policy and the restructuring of the industry in many countries. Restructuring has caused the emergence of private Train Operating Companies (without infrastructure) and the conversion of the previously monolithic government railways into separate infrastructure and operating companies.

The responsibility for setting standards in Europe is gradually being transferred from the individual railway (within a country) or a railway industry association (trans-national) to government agencies which are independent of particular railway operators. The current situation is therefore one of overlap between the various standard-setting bodies, and the historically important bodies are having to redefine their role and functioning to adapt to the new divisions between railway operations and government regulations.
Intergovernmental Organisation for International Carriage by Rail (OTIF)

The first International Convention concerning the Carriage of Goods by Rail was established in 1890. This created an Administrative Union based on the international law of that time, with a permanent secretariat in Berne, Switzerland and its management supervised by the Swiss Government. In 1956, this supervisory function was transferred to an Administrative Committee made up of representatives from some of the Member States.

In 1980, a new Convention concerning International Carriage by Rail (COTIF) was agreed and, after it came into force in 1985, a new Intergovernmental Organisation for International Carriage by Rail (OTIF) was created, still located in Berne. OTIF has a legal status both in international law and in the national laws of OTIF members. At present it has over forty members in Europe, North Africa and the Near East, including Ukraine and the Baltic States (but not Russia). Since 2000, regional economic organisations, such as the European Union, have also been eligible for membership.

Its principal objective is to establish a legal framework for international rail transport which applies in all member countries and to facilitate the application and development of this system. Initially, COTIF had two appendices setting out uniform rules concerning the contracts for the international carriage by rail of passengers (CIV) and of freight (CIM). Within CIM, there were four annexes, dealing with the international carriage by rail of: dangerous goods; private owner’s wagons; containers; and express parcels. The rules for vehicle interchange in Europe were thus set within a more general framework covering international passenger and freight traffic.

However, a fundamental revision of international rail transport law became increasingly necessary with the widespread separation of the commercial role of railways and the regulatory role of government, the growing trend of converting state railway authorities to state-owned companies, and the separation of infrastructure management from the transport of passengers and goods. This revision was initiated in 1995 and covered the following areas:

- amendment of COTIF itself (its responsibilities, financing, simplified revision procedures and easing the opportunities for accession).

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26 The current version of COTIF includes:
- Basic Convention (COTIF)
- Appendix A (CIV / Contract for International Carriage of Passengers)
- Appendix B (CIM / Contract for International Carriage of Goods)
- Appendix C (RID / Carriage of Dangerous Goods)
- Appendix D (CUV / Contracts of Use of Vehicles)
- Appendix E (CUI / Contract of Use of Infrastructure)
- Appendix F (APTU / Adoption of Uniform Technical Standards and Procedures for Railway Equipment used in International Traffic)
- Appendix G (ATMF / Approval of Railway Equipment used in international traffic)
- liberalization and modernization of the CIV and CIM Uniform Rules, i.e. of the laws concerning the carriage of passengers and freight;
- creation of uniform rules applicable to all rail vehicles, with a clear distinction between technical approval and their use as a means of transport in international transport on a commercial basis;
- creation of uniform rules concerning the contract of use of foreign rail infrastructure by different rail carriers;
- substantial revision concerning the carriage of dangerous goods.

The CIM Uniform Rules have been made as consistent as possible with the laws applicable to other transport modes, especially those covering the international carriage of goods by road. The system of joint and several liability of the railway companies involved in a transport operation has been retained and updated to ensure Train Operating Companies are also liable for damage or losses due to actions of rail infrastructure managers.

The CIV Uniform Rules have also been amended with the aim of liberalizing and modernizing the law applicable to the international carriage of passengers by rail.

The new rules concerning contracts of use of vehicles in international rail traffic (CUU) make a clear distinction between technical approval and the contractual agreements concerning the use of wagons as means of transport. They do not differentiate between railway-owned wagons, privately-owned wagons and other wagons. Nor do they distinguish between the different types of contracts of use. The parties have a large degree of freedom as to the form of the usage contract.

New rules (known as APTU and ATMF) were also developed to create uniform technical standards for railway equipment and to harmonise procedures for their technical approval for international use and for uniform construction and operating procedures.

The APTU Uniform Rules create a legal basis and specify the procedure by which technical standards and technical provisions for railway equipment in international use are adopted, with those standards and provisions already adopted incorporated in Annexes. The technical specifications remain the responsibility of the national or international standards organizations and the international rail sector Associations, especially the International Union of Railways (UIC).

The ATMF Uniform Rules lay down the procedure under which railway vehicles and equipment are approved for use in international transport. The technical approval itself is the task of the relevant national or international authorities. It is carried out through an initial ‘design type’ approval followed by operating approval for individual vehicles corresponding to an approved design type. Such approval must be based on standards and

27 The annexes include the Convention of 1882 concerning the Technical Unity of Railways (TU), which is still valid under international law, and which has been signed by 26 of the 42 Member States of OTIF, as well as other technical regulations concerning rail transport, such as the RIV, RIC and the technical UIC leaflets.
technical provisions adopted in accordance with APTU. Approval by a competent authority in one country must be recognised by the authorities, Train Operating Companies and infrastructure managers of other countries. A central database will be established under the authority of OTIF to facilitate the monitoring of vehicles used in international traffic. This database, which appears to be similar in concept to UMLER in the USA, will contain all relevant data relating to vehicles admitted for international traffic.

For European Union Member States or for states party to the European Economic Area agreement, the obligations arising from those agreements prevail, and this is now applying to an ever-increasing proportion of COTIF signatories. The European Commission has issued directives on railway infrastructure (Directives 2001/12/13/14/EC) and the ‘inter-operability’ of the conventional rail system (Directive 2001/16/EC) i.e. the requirements for rollingstock to be able to operate across borders. One proposal is for the European Union itself to accede to COTIF so that its powers in relation to railway interoperability and technical specifications can then be exercised within OTIF.

**International Railway Transport Committee**

The International Railway Transport Committee (CIT) is an Association of railways. It is independent of OTIF, which is an organisation of states. The objective of the Association is the uniform implementation and application of international rail transport law in accordance with COTIF. CIT’s rules are therefore more detailed than those of COTIF and are applicable to all railways that are members. However, given the changes in the railway market, it is debatable whether these rules should continue to be made by an Association of national railways who are competing in the market or whether this is best done by independent government agencies.

**International Union of Railways (UIC)**

International rail movements in Europe, without the need to transship goods between wagons or for passengers to change trains, have been in existence since the 1870’s. The first international decisions on standards to permit international through running, (including the decision to adopt the standard track gauge) were taken in 1882. The Treaty of Versailles following the First World War significantly changed the political geography of Europe. Countries were anxious to re-establish international traffic and trade over the European rail network with its newly drawn national frontiers. As a result UIC was founded in 1922 to produce technical standards and improve conditions relating to international rail traffic. Frameworks for addressing commercial matters were subsequently added.

UIC currently has 159 members in 88 countries, out of which there are 67 principal members (known as Active Members) – mainly the larger railway companies in Europe, the Middle East, and North Africa, together with Japan, China, India, and Pakistan. There are 56 Associate Members comprising railway companies and organisations in the rest of the world (including the USA Department of Transportation), and 36 Affiliate Members.
made up of companies and organisations that are not railways themselves but have key interests in rail transport. The North and South American railways are members through their respective regional Associations. The members include integrated rail entities, infrastructure managers and Train Operating Companies. However, over the past fifteen years UIC has had to address three major developments which have had a significant impact on its role in Europe:

- application of European Union treaties to railways in many UIC member countries;
- the break-up of the Soviet Union (creating 16 new independent railways);
- the break-up of Yugoslavia (creating 7 new independent railways).

The conventional model of unitary national railways owned by Governments is being replaced by a much more diverse industry: public and private companies, Rail Infrastructure Companies, Train Operating Companies and integrated companies. They are not all necessarily UIC members and the authority of the UIC to set technical and other standards is coming under challenge. The rail industry is evolving from an engineering-led business watched over by the technical and procedural bodies such as UIC, to a demand-led market business requiring shorter response times and greater creativity, and with standards monitored by external non-industry authorities to ensure fair competition.

The UIC operates in a region in there is great variety in railways’ objectives, technical approaches and attainments, and in the social and economic circumstances of their host nations. Furthermore many railways have been or are state-owned and subject to direction by governments: the UIC is therefore a consensus body slow to come to agreements and without the power to compel. (By contrast the AAR in North America works in a much more homogeneous policy environment with a predominantly private membership. It has frequently made binding decisions on its members, aided by systems that compensated those that lost from decisions which were to the benefit of the majority.)

In spite of these weaknesses, the work in progress at the UIC remains important, as demonstrated by the numerous UIC guidance leaflets on technical standards and procedures. The new version of the COTIF mandates the UIC to produce new international railway standards which will then be validated by OTIF. But within the European Union, UIC standards are likely to progressively become of secondary importance to the Technical Specifications for Interoperability created by the European Commission under Directives 96/48/EC and 2001/16/EC. These will be promulgated by a newly formed European Railway Agency (see below).

**Regulations for Reciprocal Use of Rolling Stock**

The arrangements covering the movement of wagons and coaches between one railway company and another (and in particular the use of the vehicles by a company other than the owning company) were first agreed by two groups of railway companies (one for freight wagons and one for passenger coaches) in 1921. The arrangements are set out in two sets of regulations:

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• ‘Regulations governing the reciprocal use of wagons in international traffic’ (RIV) for freight vehicles; and
• ‘Regulations governing the reciprocal use of carriages in international traffic’ (RIC) for passenger vehicles.

These rules had the objective of allowing vehicles to operate on other networks without obstacles, while guaranteeing safe operation. UIC took over administration of the Regulations in the 1980s.

Around 650,000 wagons in Europe, of which around one-third are privately-owned, carry the abbreviation RIV (Regolamento Internazionale Veicoli or International Vehicle Rules). The RIV wagons can operate over 41 networks in 33 countries in Europe and the Middle East. The RIV requirements have been revised several times to keep pace with technical and operating developments, with the most recent version being RIV 2000.

**European Union**

There are two European Union directives on the technical and operational harmonisation of railway systems. They are both designed to encourage a single European market for railway equipment. One directive is for high-speed railways and one for conventional railways. The directives create a framework for common technical specifications for interoperability between member states and the assessment of conformity with the specifications. At present, these directives are obligatory only on the lines of the designated Trans European Transport Network.

As indicated above, the European Commission has recently set up a European Union-wide railway agency (the European Railway Agency) with responsibilities to:

• develop common safety standards and indicators;
• develop a harmonized format for safety certification;
• assess and monitor safety performance in European Union member states’ railways;
• draft and revise technical standards on interoperability of rollingstock between European Union member states;
• maintain registers and databases of interoperability documents;
• maintain safety databases, including licenses, safety certificates, national rules, investigation reports, safety statistics etc;
• undertake economic evaluations of all safety and interoperability proposals.

In case of overlap between COTIF and European Union rules for technical harmonisation and safety procedures, the COTIF provides for European Union regulations to prevail for those states that are members of the European Union.

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28 Directive 96/48, on the interoperability of the Trans-European high speed rail system, and Directive 2001/16, on the interoperability of the Trans-European conventional rail system.
29 The European Railway Agency’s website is at www.era.eu.int
European Association for Railway Interoperability (AEIF)

With the creation of the single European market in 1993, the railway equipment supplying industries formed the Union of European Railway Industries (UNIFE), which represents nearly 100 leading European companies responsible for the design, manufacture, maintenance and refurbishment of guided land transport systems, subsystems and related equipment. UNIFE has also 10 National Organisations as associated members, representing another 900 railway supply companies.

The European Association for Railway Interoperability was set up in Brussels in 1994 and includes UNIFE, UIC, and the International Union of Public Transport. AEIF was mandated by the European Commission, under the Directive for High Speed Trains, to draft the Technical Specifications for Interoperability to ensure the compatibility of infrastructure, rolling stock and other equipment.

Working groups have been set up and are making progress to the draft Technical Specifications on Interoperability for the following areas: Infrastructure, energy, rolling stock, control-command, maintenance and operations.

The European Union Draft Directive on Interoperability foresees an equivalent role for the AEIF in conventional (non high speed) rail where it would become the body responsible for the legislative process related to this Directive.

Summary

In summary, the institutional framework in Europe is complex, with a multitude of international bodies, some covering only the European Union whilst others cover a wider area of Europe and (in the case of UIC) many countries elsewhere in the world. Technical and operating standards are similarly variable and this is combined with changes in the structure of the industry which have been implemented at radically different speeds in different countries. As a result, no single body in Europe has the unchallenged technical authority of AAR in North America.

3.1.3 Australia – intersystem freight

Railway development in Australia evolved on an individual basis by each State, which at the time were self-governing colonies of United Kingdom. The systems were built to different track gauges and for many years physical interlining of rollingstock was only possible between two of the six systems. All other railways physically transhipped passengers and freight at state borders. It was only in the 1970’s, following a major program of track gauge standardization, that interchange became nationally significant.

Like the national railways in Europe, each system had its own technical standards and operating regulations. However, it was decided that vehicles used in standard-gauge interstate traffic should be subject to national standards set by a body which came to be called ‘Railways of Australia’ similar to AAR in America, but consisting of Government
railways only.\textsuperscript{30} ‘Railways of Australia’ operated until the mid-1990s but as the State railways were progressively privatized\textsuperscript{31}, it became less relevant and was re-formed as the Australian Railway Association with a strong private-sector participation in its membership and a wider role in lobbying governments for railway interests.

The privatization or corporatisation of the previous Government railways was accompanied by the creation of safety regulators (one for each State) who theoretically approve all rollingstock. In practice, this is confined to one or two States, with the remainder relying on the general legal requirements of the operators and track authorities to operate a safe railway. An Inter-Governmental Agreement (between the various States) in 1993 also established that once a vehicle had been certified in any particular jurisdiction, it would be accepted by all others. Again, in practice, such recognition does not always work as smoothly as was intended.

In what appears to be a policy to demonstrate that industry self-regulation is a workable option, ‘Railways of Australia’ set up in 2004 a Code Management Company, with the aim of producing industry-agreed codes in a manner similar to the AAR Technical Committee, and thus avoid the alternative of government-mandated codes. To date, codes have been produced for track and train operation. Codes for rollingstock are proving more difficult. What is also proving problematic, in a market much smaller than the USA, is the ability to get staff from the private railways who are sufficiently skilled to contribute the substantial amounts of time required (in contrast to the previous situation where this task was done by railway technical staff as part of their normal duties).

3.2 Vehicle interchange systems

3.2.1 North America

The AAR Interchange Rules consist of three main subgroups, covering the standards, interchange rules proper and loading rules (Figure 3.1).

\textsuperscript{30} At this time, the private railways in Australia were almost all linked to specific mines and industrial plants.
\textsuperscript{31} There is currently only one freight railway which is still Government-owned. The combination of privatisation and open access on the main interstate networks meant that State railways could now operate far outside their political borders and the number of vehicles physically interchanged dropped dramatically.
The Field Manual:

- contains the agreed rules for accepting wagons being interchanged;
- outlines the allowable repairs, condemning limits, responsibility for damage and the handling of disputes; and
- lists wagons and components that are prohibited from interchange.

The Office Manual contains:

- a system for billing fair, compensatory (i.e. recovering the costs that have been incurred) charges for wagon repair;
- agreed time standards for labour for billing repairs; and
- AAR mechanical requirements for new, rebuilt and upgraded wagons.

The Manual of Standards and Recommended Practices (MSRP) contains:

- mandatory specifications and standards; and
- recommended practices.
Manual of Standards and Recommended Practices (MRSP)

The MSRP is published by specialist area: brake equipment, tank wagons, locomotives, cushioning systems, wheels and axles, bearings, general wagon design. It consists of 19 volumes of Technical Standards covering the manufacturing and reconditioning of wagons and components. It is produced and updated by the AAR technical committee of experts, with the actual management and maintenance of the manual being done by AAR’s Transport Technology Centre Inc.

Certification of vehicles and equipment is governed by the MSRP standards. Ultimate certification authority is held by the AAR Technical Committees (see below) and the certification process is managed by Transport Technology Centre Inc. Approval of wagons and components generally includes a service test and some components require both technical approval and quality assurance certification.

Technical Committee membership includes experts from AAR member railways, large wagon owners, Amtrak (the national passenger train operator) and a representative of the short lines. The Committees vary in size from 5-12 members. They receive input from wagon manufacturers and component suppliers ‘engineering committee’, as well as from individual interested parties through open meetings and correspondence. Recently, there have been moves towards allowing membership to the large wagon repair companies.

The Federal Railway Administration also publishes safety-related rules, which must be complied with by all carriers, whether interchanging or not, and which has an oversight of AAR activities. The AAR rules are generally more rigorous than the government rules but may be waived by agreement between individual carriers.
The Mechanical Inspection Department of AAR ensures compliance with AAR rules and standards by performing unannounced inspections of member railways, short lines, private wagon owners and wagon repair workshops. They are supported by about 10 Transport Technology Centre Inc. technical staff, all drawn from the railway industry.

**Wagon Interchange**

All operators wishing to interchange traffic under the auspices of the AAR do so under the umbrella of the Master Interchange Agreement. Under this agreement, operators agree to comply with interchange rules, including:

- complying with the reporting requirements; and
- maintaining vehicle standards.

The two key rules covering interchange are the ‘car’ service and ‘car hire’ rules. These rules - and the related directives - are issued by the AAR’s Customer Operations Division and published in the Office Manual of the AAR Interchange Rules and the Field Manual of Interchange Rules for Railway Cars.

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32 ‘Car’ meaning ‘vehicle’
The administration of the interchange system is undertaken by RAILINC, which is a standalone wholly-owned subsidiary of AAR. It is responsible for processing all inter-company commercial transactions between AAR members. It maintains a number of master files, two of the most important of which are UMLER and TRAIN II

- UMLER is a rail equipment information database which contains the physical characteristics, transportation management information and pool assignments of virtually every piece of rail equipment in North America (about 3.5 million items – including wagons, trailers, containers, locomotives and end-of-train devices). It provides the basis for reporting and recording equipment tests (such as air-brake tests) and for administering mechanical early warning advisory notices that restrict a wagon’s usage in interchange service. It is updated twice-daily.

- TRAIN II (Tele-Rail Automated Information Network) provides physical location and status information on rail equipment in North America as reported by more than 330 railways. This information can be accessed through various customised enquiry programs.

In summary, the USA system consists of a set of industry-wide rules and standards, a defined certification process, an Early Warning/Maintenance Advisory system, a comprehensive quality assurance program, and voluntary self-policing by the operators.

Initiatives currently under way include the development of an AAR interchange agreement for locomotives, with certain mandatory standards for new locomotives, including locomotive crashworthiness requirements, aimed at more consistent operation of run-through locomotives and the development of standard training programs.

Vehicles being interchanged are generally inspected by the receiving railway at a convenient location near the border - this need not be at the physical border itself. The procedure for handing over freight cars, including where the exchange will take place, is defined by an Interline Service Management Agreement (ISM). The procedure is:

- the two Yard Masters confer and agree the track and yard that the train will be delivered to;
- the train consist information (i.e. a list of the train formation, wagons and their contents) is sent electronically to the Yard Master, and is confirmed by Automatic Equipment Identification readers as the train arrives;
- the delivering locomotive(s) leave(s) the train on the appropriate track;
- after any shunting has been completed the outbound train is coupled to the new train locomotive(s);
- a full brake test is carried out, and the train-crew walks the entire length of both sides, undertaking a visual inspection for car defects.
Wagons which are defective, either at the border or at subsequent en-route inspections, will then be marked for either immediate repairs or repairs prior to return. En-route maintenance and repair is then performed at the AAR-agreed rates.

3.2.2 Europe - International

For many years, the interchange of wagons between operators in Europe was primarily governed by the RIV agreement and two UIC leaflets: Leaflets 433 (Standard General Conditions for the introduction into service and operation of privately owned wagons) and Leaflet 992 (Apportionment between railway entities of compensation for damage or injury resulting from the use or running of privately owned wagons).

Increasingly, this regime needed to be adapted to reflect the European Union policy of freight sector liberalisation and the associated development of competition between railway operators. One of the essential elements is the legal framework for the use of wagons, covered by the COTIF Convention. This was modified in 1999 as discussed above and the system moved away from one based on cooperation between national carriers to a contractual regime also accessible to ‘new entrants’. Against this background, UIC then developed the Standard Contract of Use of Wagons (CUU): its objective was to make the cross-border operation of freight trains more efficient whilst avoiding the need to conclude separate contracts for each wagon movement in international traffic.

The CUU Standard Contract of Use of Wagons is a framework contract designed to replace the provisions currently governing exchanges of wagons between railway freight operators. The new provisions therefore apply uniformly to wagons belonging to all types of freight operator. The CUU Standard Contract of Use of Wagons covers the use of some 400,000 wagons owned by railway companies and 200,000 private owners’ wagons. The remainder of this section discusses in turn the previous RIV system and the key features of the new CUU Standard Contract of Use of Wagons.

Regulations for Reciprocal Use of Rolling Stock (RIV/RIC)

The pre-2006 RIV agreement (with its annexes) contained over 600 pages of text, sample forms, procedures and rollingstock markings. It applied to the exchange and use of wagons between railway entities in international and domestic traffic, including wagons of a non-member railway entity which a member accepts. It was last revised in 2000 (RIV) and 2001 (RIC) to take account of European Union Directives on railways, and the division of some railways into infrastructure managers and railway Train Operating Companies.

The RIV 2000 ‘agreement’ consisted of ten individual agreements:

- RIV Agreement 1 - Scope of application of the RIV agreement

33 Only a part of this text will be reproduced in the CUU Standard Contract of Use of Wagons and associated Technical Instructions.
Material related to wagon loading and the technical exchange of wagons (including a list of wagon defects and the associated remedial measures), together with rules for repair and preventative maintenance of wagons, was previously included with RIV but after 2000 this was published separately.

The Regulations themselves did not contain details of the technical standards necessary for international running, which were instead given in the UIC standards leaflets. Instead the vehicles were required to comply with UIC standards in order to be accepted for use under the RIV and RIC Regulations. The Regulations concentrated on matters such as the marking of the vehicles to indicate that they come under the Regulations (and have any special characteristics or restrictions), the conditions under which the wagons can be used, the charges levied while a wagon belonging to one railway company is in use by another and the arrangements covering damage and repairs.

Until 2006, the use of railway-owned wagons was based on the following principles:
- the owning railway gave instructions for reloading its wagons at any station or could send the empty wagons to another country for reloading;
- if the owner did not give any instructions, the using railway could reload under certain conditions;
- wagons which were not reloaded must be returned empty, by the route taken when loaded or, via the shortest route, in the direction of the owning railway;
- empty running not balanced by loaded running gave rise to compensation;
- the using railway provided to the owning railway details of its use.
These principles have now been abandoned with the introduction of a new common model for both railway-owned and private wagons. The precise procedures for their use, and particularly for data on their location and their movements as well as pricing, are currently being developed.

Privately owned wagons were able to be registered for international movement under the Regulations, but were not for use by another railway company (except by special agreement) and hence the charges for use did not apply; as a result different arrangements applied for repairs and for returning empty wagons.

Vehicles were able to be used internationally outside the Regulations on a regular basis by arrangement between adjacent companies, or in special cases if they were checked at the border to ensure that they are within the loading gauge and otherwise met the requirements to travel safely (e.g. braking systems and running gear).

The common RIV rules, for both railway-owned and private wagons, were:

- before being placed in service, wagons must be type-approved by the relevant authorities;
- the holders are responsible for maintenance of their wagons;
- wagons must carry markings and signs allowing their identification and proper handling during operations;
- only those wagons in good technical condition can be operated and exchanged between railways;
- wagons whose condition or loading could affect operating safety can be refused acceptance;
- the using railway is responsible for losses or damage caused by a wagon unless it can demonstrate that the damage has been caused by a fault of the holder
- the holder is responsible for damage caused by a wagon that can be attributed to him;
- the holder has ultimate control over his wagons.

The RIV principles governing wagon repair and loss/write-off are:

- a damaged wagon is repairable if this is technically feasible and if repair costs do not exceed its current value;
- the user railway may repair the damaged wagon up to a amount of EUR500; if anticipated costs exceed this amount, the owner is to decide on the subsequent action (repair by the user railway or transfer to the owner).
- if repair costs exceed the current value of the damaged wagon, it is to be considered beyond repair;
- a wagon is lost if it has not been returned to the owner within 18 months since it was handed over to the user railway;

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34 Holder is a technical term used to denote the beneficial owner as distinct from the ultimate owner (this is important for leased wagons)
• the liable user railway must pay compensation for a non-repairable or lost wagon (after payment it is then assumed to have ownership of the wagon).

These last two sets of rules governing technical standards and repairs were retained in the CUU Standard Contract of Use of Wagons (see Annex B).

3.2.3 Australia – intersystem freight

Prior to privatisation, wagons which were suitable for interchange were included in an interchange pool and were accepted by all other connecting railways. Wagons were inspected at locations adjacent to the various interchange points (normally a border station but in one case over 200 km away). If a defect was found, the wagon was then either ‘green-carded’ (fit to travel but to be then returned to the owning system) or ‘red-carded’ (not fit to travel and to be repaired before it could continue its journey). Repairs were charged between railways, based on standard prices for common activities such as cost of replacing brake-blocks.

Following widespread privatisation and open access to track, there is now very little interchange because companies run almost all trains from origin to destination. The small amount of interchange that remains is entirely by prior and specific arrangement.

3.3 Vehicle interchange charges

As early as the 1840s in United Kingdom, vehicle interchange charges were being made on both a mileage basis (for the loaded journey only) as well as on a time basis (that is a charge per hour or per day that a wagon was being used by a non-owning railway). Over time, most interchange systems simplified this to a time basis only, probably because of the difficulty of measuring the distance traveled by individual wagons. Most current systems throughout the world are based on time only.

The per-day charges normally depend on the type of wagon. Rates are generally set on a cost basis, reflecting the daily cost of owning the asset (capital plus interest) plus a maintenance cost based on ‘average’ usage. The per-day rates are sometimes constant no matter how long the wagon is on a ‘foreign’ railway: in some systems, especially where there is a shortage of wagons, the rates increase once a ‘reasonable’ time has elapsed to discourage the ‘foreign’ railway from the practice of ‘borrowing’ its fleet from its neighbours instead of buying its own wagons.

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35 Wagons not accepted for interchange included much of the four-wheel stock, some wagons which did not conform with the structure gauge or operating procedures of some of the railways (as these had been constructed independently to their individual standards).
3.3.1 North America

In North America, the per-day rates are set by individual railways and can vary depending whether wagons are in under- or over-supply. Typical charges are US$[20] – [30] per wagon per day.

Maintenance and repair costs are billed separately. The charges are based on an agreed schedule of rates, which is monitored quarterly by AAR based on railway actual costs.

3.3.2 Europe - International

Under RIV, the interchange charges were fixed and applied uniformly for a particular wagon type, no matter who was the owner. Wagons were classified into eleven groups of wagons and charges applied on a per-hour basis. In order to discourage railways keeping wagons that were in short supply and using them for their domestic traffic (particularly as the basic RIV rates were generally significantly lower than the cost of hiring equivalent wagons) the rates increased by about 15% after 240 hours (10 days) and by 100% after 720 hours (30 days). After 1 year, the wagons were assumed to be lost and the compensation arrangements were implemented. Table 3.1 gives the 2005 rates.

<table>
<thead>
<tr>
<th>Wagon type</th>
<th>0 – 240 hours</th>
<th>241- 720 hours</th>
<th>720-72960 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-axle wagon</td>
<td>Typical wagon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101 Open</td>
<td>0.43</td>
<td>0.49</td>
<td>0.86</td>
</tr>
<tr>
<td>102 Van</td>
<td>0.70</td>
<td>0.90</td>
<td>1.40</td>
</tr>
<tr>
<td>103 Specialised</td>
<td>0.52</td>
<td>0.60</td>
<td>1.04</td>
</tr>
<tr>
<td>104 Flat</td>
<td>0.77</td>
<td>1.00</td>
<td>1.54</td>
</tr>
<tr>
<td>105 Hopper</td>
<td>1.01</td>
<td>1.31</td>
<td>2.02</td>
</tr>
<tr>
<td>Bogie wagons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201 Van</td>
<td>0.77</td>
<td>0.89</td>
<td>1.55</td>
</tr>
<tr>
<td>202 Open</td>
<td>0.85</td>
<td>1.00</td>
<td>1.70</td>
</tr>
<tr>
<td>203 Flat</td>
<td>1.00</td>
<td>1.35</td>
<td>2.00</td>
</tr>
<tr>
<td>204 Specialised</td>
<td>1.10</td>
<td>1.45</td>
<td>2.20</td>
</tr>
<tr>
<td>205 Hopper</td>
<td>1.05</td>
<td>1.40</td>
<td>2.10</td>
</tr>
<tr>
<td>206 Van</td>
<td>1.29</td>
<td>1.68</td>
<td>2.58</td>
</tr>
</tbody>
</table>

Although the RIV charging system operated for very many years, it eventually became clear that it had to be updated:

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36 With some very minor differences (1-2%) for a few railways, following changes in 2003 to comply with EU competition directives which prohibited uniform charges of this nature.
the cost differences across Europe meant that in some parts (especially the European Union) the rates were far too low to provide adequate compensation and in others were too high and discouraged use of underutilised assets;

- as the rates were based on general wagon classes, they took no account of quality of asset;
- the charges provided little incentive to improve subgroups of wagons for particular traffic purposes;
- there were no RIV charges as such for private wagons. Instead customers using these received a discounted tariff (typically about 15%) for the loaded journey but then had to pay a haulage charge for the return leg on a per-kilometer basis by each railway it travelled over.

These problems will be overcome to some extent with the new arrangements under the CUU Standard Contract of Use of Wagons by which each owning railway will be able to set its own charges for the daily rates for each group and subgroup of wagons, as already occurs in North America. All running of empty wagons will be charged for, whether privately or publicly-owned. The system is new and a full set of charges has yet to be established.

### 3.3.3 Australia – intersystem freight

Before privatization, the Australian system worked on a daily rate by wagon type, which was meant to represent a combined ownership/maintenance charge. This was applied to all wagons which were on a ‘foreign’ railway at midnight each night (this sometimes led to a frenzy of late-night shunting at border stations to send wagons back to their owning systems). The pricing system was based on the manual wagon recording procedures of the time and would not be necessary with the current ‘real time’ wagon data recording systems.

Both daily hire and maintenance settlements were made through the ‘Railways of Australia’ office, which received and reconciled the returns from the individual systems. All interchange settlements are now made directly between the parties affected.

### 3.4 Possible applications in China

The case-studies suggest that the three key issues in vehicle interchange are:

- which vehicles are eligible for interchange?
- what operational procedures are required to accept and maintain ‘foreign’ vehicles?
- how are payments (settlements) to be organised?
3.4.1 Vehicle eligibility

Most railways round the world operate under vehicle standards that are governed by national regulation of some form or other. But interchange traffic is nearly always restricted to a subset of vehicles which comply with tighter standards. Sometimes this is because of physical constraints, such as in Australia, but more often because wagons in interchange traffic face more demanding operational requirements. Examples include North America, where the US Federal Railroads Administration standards are not as demanding as the AAR standards; and Europe, where non-RIV wagons can still operate on individual railways, and on others by special agreement.

The various Chinese operators will need to develop a set of standards that define which wagons will be acceptable for interchange and the condition that they should be in to be accepted for interchange. This will not necessarily be the same as what is allowed for operation under the general Chinese standards. Standards for local operation on industrial railways and local railways (which are conceptually equivalent to the North American short lines) may not need to be as high as those for mainline running on the trunk network.

There is a clear difference in approach between North America, with its single industry Association setting clear and unambiguous standards, compared to Europe, with several standard-setting authorities. There is no doubt that the former is simpler, more flexible and adaptable to the market, and has provided better incentives for efficient use and development of the wagon fleet. For something similar to work in China, it would require an equivalent body to AAR to be established which can take responsibility for setting, maintaining and updating these standards. Such a body, which for the purposes of this Report is referred to as an Association of Chinese Railways (ACR), should cover all operators who may wish to interchange wagons. To fulfill these functions it would be necessary for the Association to procure or develop (probably through a special-purpose subsidiary company) the information and communications technology necessary for efficient implementation.

Vehicles that are to be interchanged then need to be identified to show that they are eligible for interchange (e.g. by having a mark or identifier painted on their side, as with RIV in Europe). At the same time, a master list of vehicles eligible for interchange will need to be created (as in the UMLER file maintained by AAR), which maintains an up-to-date record of the vehicle, its dimensions, modifications and key operating characteristics. This will need to cover not only the vehicles belonging to the 14 regional administrations of MOR but also those belonging to the other operators; this in turn will require that any such file is held centrally by ACR but that it be accessible by computer for all the member railways.

3.4.2 Operational procedures
The first and most important procedure is to check that the vehicles arriving are eligible for interchange; this can be done by either physically checking the vehicle identification or by computerized checking of the train consist.

The next step is to check that the vehicle is in acceptable physical condition, and this can be done at an agreed location at, or near, the handover point. The AAR protocol described earlier appears sufficient and could be simplified for, say, a constant group of vehicles moving over the same route. Any vehicle that is identified as having defects, either at handover or subsequently en-route, will require assessment as to whether it is safe to complete its journey. Vehicles that require immediate maintenance will then need to be repaired; a schedule of agreed charges will need to be developed so that the cost can be recovered with a minimum of bureaucracy. Such a schedule will also need to be maintained and developed by ACR.

Vehicle locations will also need to be reported so that charging for vehicles can be carried out automatically and efficiently. The major interchanging railways will thus need computerized vehicle location databases and on-line links to a central database administered by ACR.

### 3.4.3 Payments mechanism

Uniform interchange charges may have been acceptable at a time when almost all railways were government-owned, and when interline traffic was a small part of their overall business. However, the experience with RIV shows that they have some inherent weaknesses in a more commercial environment. Most systems are moving, either deliberately or by default, to arrangements in which each railway sets a price on its wagons which reflects the value of the wagon to it and the cost it incurs when it is being used.

A settlements mechanism also needs to be developed to handle both wagon hire and maintenance charges. Clearing houses are discussed in more detail in the next section but there appear to be clear advantages for a central body unconnected with any individual railway which calculates the charges from a single database (as in North America) and then distributes the settlements for checking and payment.
4 Revenue division

4.1 Institutional frameworks

Conventional practice in passenger operations is for the allocation of revenue to the railway companies which should receive them to be made by the railway company that sells the ticket. By contrast, the destination railway often allocates freight revenue as total charges may not be known until delivery. The freight allocation process involves an analysis of the charges on the consignment note.

In most cases centralised charging systems make these allocations automatically on the basis of splits agreed when the rates were negotiated between the railway entities concerned. In order to do this efficiently, a clearing house is normally established – as noted in Section 2, the first for railways was set up in 1842. Clearing houses also exist to serve other transport modes: for example the International Air Transport Association and the Universal Postal Union.

Inter-railway accounting always provides for an audit function so that every railway entity can be satisfied that the processes guarantee their shares will be paid (those for Europe are defined in UIC leaflets 301 and 304). Audits are undertaken by the railway entities themselves. These audit processes are entirely separate from the process of settlement.

This first section below gives examples of four such railway ‘clearing houses’ and the remaining sections then discuss various technical issues associated with revenue division.

4.1.1 North America

Inter-railway settlements in North America are carried out by RAILINC. It is not just a clearing house but performs financial settlements as one part of its more general role of providing industry-wide electronic commercial support to the industry (e.g. through maintaining the master databases). It handles about 4 million transactions per day, including settlements, bills of lading, ship notices, equipment tracing and rates, and other business transactions between the AAR members.

4.1.2 Europe – International

The exchange of funds between railway administrations in Europe is handled by the Bureau Centrale de Compensation (BCC), the European railways’ in-house clearing bank, hosted by Belgium Railways but with financial oversight by UIC. BCC is responsible for the distribution of traffic receipts for international freight and passenger movements, and RIV and RIC inter-railway payments. BCC is a co-operative company with limited liability under Belgian law, owned by its members (most European railways), but with strong links with the UIC Finance Committee.
Membership is restricted to members of the UIC. Other railway Train Operating Companies or infrastructure managers may also join as associates if approved by members. (In fact there have never been associates and no fee structure has been worked out for them.)

After balances between the railway entities have been calculated, the larger entities settle through the BCC. It should be emphasised that the BCC is just a clearing house, it performs no actual rate division, which is done by the individual railways prior to submitting their balances. The benefits of BCC relate solely to the efficiency of the financial transactions.

The clearing process makes a monthly settlement; members pay in the total amounts they owe other members and lay claim to amounts they are owed. In-payments in theory are in a variety of currencies. The clearing process then attempts to pay each railway entity what it is owed in its own currency. The arrival of the euro has simplified the process of settlement considerably, but the common currency has not changed the initial process, that of reconciling the claims to funds and resolving differences. Charges are made for the process, based on the number of transactions.

The benefit of the BCC to user railways is that it more-or-less simultaneously settles over a large number of entities and for a railway with many relationships this outsourcing represents a significant benefit. The same is unlikely to be true for a third-party open access Train Operating Company with a limited number of commercial relationships with other railways. There appears little enthusiasm from such operators to join the organisation.

Alternatives to BCC, such as joint current accounts, are specifically provided for in European railway protocols and BCC is therefore not an essential facility in the same way as the AAR’s RAILINC is in North America. BCC’s relevance appears to be declining as traffic flows progressively simplify. Some of the major freight operators (e.g. the German National Railways Freight Company (Railion) and the large United Kingdom rail freight company (English, Welsh and Scottish Railway) are reportedly increasingly making direct transactions through the banking system. The benefits from BCC membership seem very much a function of the complexity of traffic patterns; membership is not a crucial factor in gaining access to the market, and for most open access operation it is irrelevant.

4.1.3 United Kingdom – domestic services

The Association of Train Operating Companies (ATOC) is an umbrella organisation set up by the United Kingdom Train Operating Companies, following railway privatisation. It is an unincorporated Association owned by its members, i.e. the Train Operating Companies, with the objective of facilitating co-operation between them and managing industry-wide inter-operator arrangements (‘schemes’). In a similar manner to AAR, ATOC also has a trade Association role, including promoting the advantages of the rail
network (particularly as regards journeys involving more than one operator),
communication with government and the media, monitoring and responding to legislation
likely to affect the industry as well as providing information on passenger rail industry
issues.

The Train Operating Companies have entered into a number of schemes with other
operators and third parties, with the overall aim of delivering network benefits, for three
main reasons:

- they can offer network-wide products to passengers, to the commercial advantage
  of the railway industry compared to the competition;
- some arrangements are required as a licence condition and/or by the franchise
  agreement to safeguard the interests of passengers; and
- they reflect the former method of operation of the network that was documented
  in formal contracts between the pre-privatisation business units of BR.

The schemes fall into two groups:

- **Mandatory** schemes:
  - National Rail Enquiry Service Scheme
  - Ticketing and Settlement Scheme
  - Certain Railcard Schemes (Young persons, Senior Citizens and Disabled
    travellers)
  - London Schemes
  - Rail Staff Travel Scheme

- ATOC’s remaining schemes are *voluntary*:
  - Other Railcard Schemes
  - International Scheme
  - Retail Agents Scheme
  - Operations Scheme
  - Engineering Scheme

As some of the schemes are mandatory (through licence or franchise requirements)
membership of ATOC is effectively a pre-requisite for operation on the network.

The two most important of these schemes are:

- The National Rail Enquiry Services, which was set up in 1995, managed by ATOC on
  behalf of the Train Operating Companies. It allows customers to get train timetable
  and other information on any service by any Train Operating Company by contacting
  (by phone or internet) one central inquiry centre. This is seen as a nation-wide railway
  network benefit and participation in the scheme is a requirement of both the passenger
  licence and the franchise agreement. The scheme is run under the umbrella of ATOC.
- The Ticketing and Settlement Scheme, the need for which arose because, under the
  United Kingdom Passenger Licence required by both franchised Train Operating
Companies and open access operators, the Train Operating Companies must comply with arrangements to achieve:

- sale of through-tickets at stations
- honouring through-tickets
- settlement of revenue from through-tickets
- common conditions of carriage

The arrangements that enable operators to comply with this licence condition are set out in the Ticketing and Settlement Agreement (TSA). The Ticketing and Settlement Agreement was designed to preserve the commercial benefits of being able to offer network-wide products for passengers and to ensure the retention of important “network benefits” for passengers. This enables the customer to buy a ticket at any station to travel anywhere on the network with any operator, regardless if the journey involves more than one operator.

In order to implement these two schemes in particular, ATOC established Rail Settlement Plan Ltd (RSP), in the same way that AAR established RAILINC, RSP’s activities concentrate on the commercial aspects of passenger railways rather than also including operational aspects. RSP is responsible for administering and managing outsourced IT service contracts for all rail tickets, information distribution, ticket issuing systems, revenue allocation and revenue settlement between train companies.

### 4.1.4 Australia – intersystem freight

Prior to privatization, all intersystem revenue allocation and settlement was handled through ‘Railways of Australia’. This received electronic copies of all intersystem consignment notes from all railways, reconciled them, performed the revenue allocation and then derived the settlements.

### 4.2 Passenger revenue distribution systems

#### 4.2.1 Europe – International

International passenger transport by rail is mainly organised as co-operation between national railway entities. This co-operation is made under the provisions of the COTIF convention and its annexes, and is further determined by many detailed recommendations issued by the UIC. An international service from Berlin to Brussels for example is a co-operation between the German operator DB AG and the Belgian operator SNCB, where the responsibility for the service is allocated to DB on the German territory and to the SNCB for the Belgian part of the trip. The revenues and costs for running the international services are shared between the railway entities on a pre-determined basis and are settled by the BCC (see above).

Railway entities selling tickets for international journeys aggregate the revenues according to a breakdown of the countries where the journey takes place. A compensation scheme negotiated within the framework of the UIC determines the exact amounts to be
paid, per UIC member railway, and this information is sent to the BCC in Brussels. The latter collects the information from all its members and settles the claims accordingly.

4.2.2 United Kingdom – domestic

With more than 25 different passenger train franchises operating many connecting and overlapping routes, the passenger ticketing co-ordination and revenue allocation requirements are formidable. Within United Kingdom, there are many alternative routes between many pairs of cities, by several different operators. This complexity has existed for nearly thirty years, as prior to privatization BR operated with three passenger business units, which likewise often competed on particular routes (e.g. with a fast non-stop service compared with a more frequent slow all-stops train). As noted above, these network benefits have been preserved under privatization through the Ticketing and Settlement Agreement. The key elements of co-ordination and revenue allocation are summarized below in some detail reflecting that United Kingdom has developed perhaps the most sophisticated responses to the challenge of ticketing, revenue allocation and settlement co-ordination in multi-operator environments. Though more complex than likely to be required in China, it is illustrative of the fact that even the most complex situations have engendered workable solutions.

National Rail Conditions of Carriage

The National Rail Conditions of Carriage set out passengers’ rights and Train Operating Companies obligations. Train Operating Companies may add to passengers’ rights but must not detract from them. The National Rail Conditions of Carriage therefore set out the minimum level of service the passenger is entitled to expect. The conditions cover, among other things, validity of tickets, use of tickets, the customer’s responsibility, refund rights, damaged and lost season tickets, train accommodation and reservations, train service failure and lost property. It is a legally binding contract between the Train Operating Company and the customer.

Retailing

Each staffed station must have a ticket office operated by a single Train Operating Company, called the Lead Retailer. Each ticket office operated by a Lead Retailer must continue to sell at least a comparable range of fares for national rail products, with the same ticket issuing and reservation capability, and during the same opening times as it did pre-privatisation. Large stations thus continue to sell most national fares, whereas smaller stations often only sell local fares and the more relevant long-distance fares for that station, such as to London.

The Lead Retailer must act fairly and impartially when selling fares for travel on, or providing information about, other Train Operating Companies services. Train Operating Companies must offer a specified quality of service and information supplied by other
Train Operating Companies must be displayed. The accuracy and impartiality of retailing is monitored externally.

**Commission**

As retailers often sell tickets for travel by other Train Operating Companies, a system of commissions has been established:

- 2 % for season ticket sales, such as monthly cards
- 9 % for all other sales

**Fares**

The main components of a fare are the origin and destination stations, the permitted route(s), its name (the ‘fare type’), price and conditions that apply, e.g. period of validity, time restrictions and class of accommodation. By agreement between a Train Operating Company and a third party, a fare may include goods or services provided by that third party, e.g. ferry travel or entry to a theatre.

The Ticketing and Settlement Agreement sets out ways in which new fares can be created and existing ones altered. Compliance with the Ticketing and Settlement Agreement’s fares-setting rules is mandatory although Train Operating Companies determine the terms of each fare themselves. The Ticketing and Settlement Agreement provides for three principal types of fares:

- **Permanent fares** comprise the majority of fares. These are determined three times per year by Train Operating Companies to encourage competition; all proposed fares are disclosed to all Train Operating Companies. The permanent fares are published in the National Fares Manual.
- **Temporary Promotional Fares** may be notified to RSP, who administer the revenue settlements, at any time to a set procedure. These fares are not published in the National Fares Manual, so customers get information of these fares via the Train Operating Companies (for instance leaflets, on board information, sales staff and for some fares also via the internet)
- **Special fares** are created by Train Operating Companies for rail-inclusive tours and group travel. These fares must also be notified to RSP

**Flows and permitted routes**

A flow is a combination of routes between an origin and a destination station. Where multiple routes exist there may be more than one flow, e.g. via London or not via London, and often there are different Train Operating Companies serving the same flow. Unless the SRA directs otherwise, a flow always has compulsory inter-availability. This means that fares must be made available which allow passengers the choice of travelling
on any of the Train Operating Companies trains serving the flow\(^{37}\). Flows can consist of a number of permitted routes.

This requirement is responsible for most of the complexity in the settlement procedures.

\textit{Revenue Allocation}

The Ticketing and Settlement Agreement sets out detailed procedures for allocating revenue received from the sale of rail and non-rail products between Train Operating Companies and approved third parties:

- A Train Operating Company creating dedicated fares – valid only on his own trains – is entitled to the entire revenue from such fares, less refunds and commission. This revenue is not settled via RSP.
- Two or more Train Operating Companies creating jointly agreed fares are entitled to the proportion of revenue agreed between them and notified to RSP when the fare was created.
- Revenue allocation is usually based on the actual number of passenger miles travelled on each Train Operating Companies services vis-à-vis specific fares. In the absence of such data, an allocation model for revenues (called ORCATS) is used. According to this model, revenues (after allowing for commission to the selling agent, who is normally a Train Operating Company) are allocated on predictions based on the train plan and assumptions derived from historical data, rather than actual passenger miles travelled, which is not routinely collected on a service-by-service basis. It allocates income between operators in proportion to the distance travelled on services of each operator for a through journey, and in proportion to the estimated share of overall journeys made on flows where services are provided by more than one operator. The ORCATS procedure is based on mathematical models of passenger choice, built up from data and analysis over 20 years, much of it summarised in a document known as the Passenger Demand Forecasting Handbook. The key algorithm, known as the ‘rooftop’ model, distributes demand between any two stations based on timetabled departures and such factors as travel time, number of interchanges, waiting time etc.

The Ticketing and Settlement Agreement provides for an arbitration procedure to resolve disputes. Although this is used from time to time, Train Operating Companies generally prefer to solve matters between themselves.

\textit{Settlement of Revenues}

Each Train Operating Company is required to settle revenues from the sale of rail and non-rail products, and expenses such as refunds, through RSP. During each 4-weekly period every Train Operating Company must provide RSP with sales data. At the end of each such period, RSP will calculate the net amount each Train Operating Company owes,
or is owed, for that period. The net payment may have a negative or positive value. To reduce the risk of exposure to Train Operating Companies to non-payment by other Train Operating Companies and ensure an even flow of cash over the 4-week period, interim payments are being made during the period.

4.3 Freight revenue distribution systems

4.3.1 North America

The Staggers Act of 1980, which liberalised railways from the very extensive government/regulatory intervention which had existed for nearly 100 years, gave them greater freedom to set market rates. In particular, it:

- permitted railways to price competing routes and services differently;
- permitted railways to enter into confidential rate and service agreements with shippers;
- abolished collective rate making (except for joint line movements);
- gave the Surface Transportation Board (STB) power to exempt categories of traffic from regulation, if the nature of the market does not require shippers to be protected;
- gave the STB power to set maximum rates where railways abuse their market position, or engage in anti-competitive behaviour, but also, required that the STB allow railways to achieve an adequate rate of return.

Although USA railways still have standard distance-based tariffs, which exist in conjunction with common carrier obligations, relatively little traffic moves in accordance with them as they are not generally competitive in the market, and the majority of traffic instead moves on the negotiated contract tariffs that the Staggers Act permitted.

USA railways who are pricing a joint-line movement either apply agreed discounts to the standard rates for joint line movements or, if the discounted rates are still unable to attract the traffic, then negotiate a tariff between themselves. It is understood that almost all traffic for major customers moves this way.

Normally the contract is between the shipper and the railway with whom they negotiated. This railway to whom payment is made then shares the revenue with other railways, in accordance with the agreed apportionment, through the Interline Settlement Scheme (ISS) administered by RAILINC.

The Interline Settlement Scheme settles interline revenues via Electronic Data Interchange between the participating carriers. The system distributes revenue waybills, including rates and divisions; and provides a mechanism for concurrence prior to settlement, thereby eliminating most post-settlement disputes. Associated systems include databases of rates. The system then facilitates the monthly exchange of funds from debtors to creditors.
4.3.2 Europe – International

All European railways traditionally used and published domestic railway tariffs, and most continue to do so. However, the former British Railways ceased to publish or use domestic freight tariffs in the 1970’s and prices offered to customers have since been market-based. Private European operators have a similar philosophy and some other government-owned European railways (such as Germany) also no longer publish tariffs.

The CIM currently obliges member railways to publish tariffs for traffic moved under COTIF conditions, i.e. internationally, and also prescribes the use of these tariffs for such traffic. These tariffs have developed over the years to make it easier for customers to obtain international rates instead of approaching each railway in turn for tariffs on their particular section of the route. These tariffs are negotiated between participating railways and the conditions and prices reviewed at annual tariff conferences.

Rates are generally below the sum of the relevant domestic tariffs, in order to compete in the market. Although the tariff may allow calculation of freight charges in more than one currency, a base currency is always selected for the division of receipts between the railways. Currency surcharges are applied if there is significant currency fluctuation.

The railway approached by the customer can, in theory, directly quote a rate for the whole movement. In practice, the tariff is generally much higher than the market price, and the railways usually allow each other to negotiate a lower tariff up to a maximum agreed discount. If this is still insufficient to win the traffic, inter-railway negotiations are then held to set an acceptable rate, if possible.

Revenue shares are sometimes disproportionate to the distance involved, being affected both by terrain (e.g. mountainous sections) and also the relative cost bases of the rail operators participating.

As in North America, revenue is collected by the railway with which the customer has the agreement. Unlike North America, however, the division of revenue is made by the railways themselves rather than by a central settlements body and only the transfer of funds between debtor and creditor railways being handled through the BCC.

4.3.3 Australia – intersystem freight

From 1993, all inter-system traffic in Australia was carried by a specialist above-rail operator, the National Rail Corporation, explicitly set up to provide a complete origin-destination service. This was to avoid, amongst other things, the need for inter-system negotiations on rates, marketing and operational issues. Prior to its establishment, settlement of intersystem revenue was controlled by ‘Railways of Australia’, which reconciled the revenue divisions and calculated the net inter-railway payments. The actual payments, however, were made directly between each pair of railways. ‘Railways of Australia’ therefore acted as a settlements agency but not as a clearing house.
The actual divisions were established for each movement and noted as such on the consignment note. Initially, they were based on a formula which allowed a terminal component at each end\(^{38}\) and then divided the residue on a distance basis. Subsequently, however, negotiated divisions began to appear for the more significant traffics, although these only ever represented a small proportion of the total number of consignments.

4.4 Possible applications in China

The types of revenue settlement scheme that may be required in China depend on the likely commercial relationships between the various operators. Some key issues are summarized below.

4.4.1 Passenger Services

The need for revenue settlement depends to what extent China attempts to maximize the network benefits, particularly the extent to which through-ticketing is possible across operators. The United Kingdom approach, with neutral retailing of tickets and information across all operators will maximize the benefits both to the public and to the sector as a whole.

It probably requires two actions:

- regulatory action by the government (either through MOR or through a specialist regulator) to require all passenger railway entities (including both the 14 regional rail administrations and the joint venture railways) to sell each other’s tickets, and through-tickets, on a neutral basis: and to provide information on each others services\(^{39}\); and
- collective action by rail entities (preferably through ACR) to establish protocols, agreed operating and commercial procedures (such as commission rates), a settlements scheme and a clearing house (based on modern electronic data interchange methods).

There are a limited number of alternative railway routes in China between any two points, so a settlement scheme with the computational complexity of the United Kingdom ORCATS procedure is unlikely to be required. However, agreements will need to be made for the division of add-on fares, particularly where these may be market-based (e.g. to meet airline or bus competition on some routes).

4.4.2 Freight Services

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\(^{38}\) A special allowance was also given where traffic had to be transferred between gauges.

\(^{39}\) This does not mean that all stations have to sell all tickets but rather that all operators must provide through-ticketing to the extent it is generally available on the network.
The need for revenue settlement for freight services depends on the extent to which inter-operator traffic is billed on a through consignment note or is billed separately by each of the participating railways:

- single billing will require a settlements procedure which provides for the rapid resolution of disagreements;
- if commercial relationships are overwhelmingly between, say, one joint-venture railway and one or two MOR regional railway administrations, then there may be little need for specialist clearing house But if local railways begin to deal with each other, or with separate regional administrations, then there may be advantages in having a central clearinghouse to avoid multiple financial transactions. However, smaller railway entities may prefer an independent settlements system to reliance on direct commercial transactions with a more powerful neighbor.

If either or both of these procedures are introduced, experience from North America, United Kingdom and Australia suggests this is best done through organizations set up and controlled by the railways themselves, such as an Association of Chinese Railways proposed in the conclusion to Chapter 3.
Summary of method used by Canadian transportation Agency () to determine interswitching rates.

The rules for determining railway variable costs are set out in the Railway Costing Regulations (SOR/80-310), which stipulate that variable costs shall include the increases and decreases in rail operating expenses resulting from changes in the volume of traffic. However, it is recognized that certain costs are incurred by the railway even with a very small volume of traffic.

The Railway Costing Regulations set out various factors considered in making costing determinations, including the cost of capital and depreciation. The Uniform Classification of Accounts (UCA), which is prescribed by the regulations, is used by railways under Canadian federal jurisdiction to report their operating expenses, revenues and other statistics to the Agency, as well as to national transport and statistics agencies. This serves as a principal source of financial and operating data used in railway costing.

In determining the actual costs at all interchanges in Canada where interswitching occurs, the Canadian Transportation Agency uses system variable costs and the amounts of specific work activities required to handle interswitching traffic. The work activities vary from one interchange to another, based mainly on the configuration of the railway yard and the location of customers. Agency staff update the amounts of work activities annually by visiting several interchanges on a rotating basis. The interchange-specific costs were then averaged for each distance zone and adjusted for inflation and estimated changes in railway productivity. also approves each year the cost of capital rates that are used in the determination of interswitching costs. Interswitching costs were then developed for trains of 1 to 59 cars and for block trains of 60 or more cars in each of the four interswitching zones. In addition, costs for interswitching single cars and block trains per each additional kilometre in excess of 40 kilometres from an interchange were computed for traffic moving to or from zone 4.

A contribution toward fixed costs of 7.5 percent of variable costs was then added to the variable costs to establish the revised interswitching rates. The resulting rates were rounded to the nearest multiple of CAN$5.
ANNEX B
Standard contract for the use of wagons (CUU)
[August 2005 draft]

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PREAMBULE
L'utilisation des wagons par les entreprises ferroviaires* comme moyen de transport exige la mise en place de dispositions contractuelles définissant les droits et obligations de chacune des parties.

Afin d'accroître l'efficacité et la compétitivité du fret ferroviaire, les détenteurs de wagons et entreprises ferroviaires dont les listes sont reprises en Annexe 1 conviennent d'appliquer les dispositions du présent CONTRAT UNIFORME D'UTILISATION (CUU).

CHAPITRE I :
OBJET, CHAMP D'APPLICATION, DENONCIATION, MODIFICATIONS AU CONTRAT
Article 1 : Objet
1.1 Le présent contrat, les annexes y comprises, règle les conditions de remise des wagons pour utilisation en tant que moyen de transport par les entreprises ferroviaires en trafic national et international dans le champ d'application de la COTIF en vigueur. Les conditions commerciales d'utilisation de wagons n'entrent pas dans les dispositions du présent contrat.
1.2 Les dispositions du présent contrat s'appliquent aux détenteurs* de wagons et entreprises ferroviaires* en tant qu'utilisateurs de wagons.
1.3 L'utilisation englobe le parcours à charge et le parcours à vide, ainsi que les cas dans lesquels le wagon se trouve sous la garde d'une entreprise ferroviaire adhérente.
1.4 L'utilisation et la garde commencent avec l'acceptation du wagon par l'entreprise ferroviaire et se terminent avec la remise du wagon au détenteur ou à un autre ayant droit, par exemple à une autre entreprise ferroviaire adhérente, au destinataire contractuel de la marchandise transportée ou à un embranché habilité à la réception du wagon.

Article 2 : Champ d'application
2.1 Le présent contrat prime en trafic ferroviaire international sur les Règles uniformes CUV (Appendice D à la COTIF 1999) et en trafic ferroviaire national sur les prescriptions nationales le cas échéant applicables, pour autant que cela est recevable.
2.2 Sont parties au contrat, les entreprises ferroviaires et les détenteurs de wagons ayant adressé une demande d'adhésion au bureau CUU (opting in). L'adhésion prend effet au 1 janvier ou au 1 juillet d'une année.
2.3 Les dispositions du présent contrat multilatéral s'appliquent entre les adhérents pour autant qu'ils n'aient pas souscrit d'autres dispositions entre eux.
2.4 La liste des adhérents est établie et mise à jour tous les six mois au 1 janvier et au 1 juillet d'une année par le bureau CUU.

**Article 3 : Dénonciation**
Chaque adhérent peut dénoncer le présent contrat pour la fin de chaque année civile moyennant un préavis d'au moins six mois par une déclaration écrite adressée au bureau CUU. Une dénonciation ainsi que la date à laquelle elle prend effet sont communiquées aux adhérents dans la liste selon l'article 2.4 publiée deux fois par année par le bureau CUU.

**Article 4 : Modifications au contrat**
Pour l'actualisation du contrat, les parties au CUU se dotent du Règlement intérieur (Annexe 8). Le Bureau CUU reçoit une mission de rédaction et de coordination de l'actualisation du CUU.

**CHAPITRE II : OBLIGATIONS ET DROITS DU DETENTEUR**

**Article 7 : Admission technique et maintenance des wagons**

7.1 Le détenteur veille à ce que ses wagons soient admis techniquement* conformément à la réglementation européenne en vigueur et le restent durant toute leur utilisation.

7.2 Le détenteur doit apporter la preuve aux entreprises ferroviaires utilisatrices qui le demandent que la maintenance de ses wagons est conforme à la réglementation en vigueur.

7.3 Le détenteur doit permettre aux entreprises ferroviaires d'effectuer toutes opérations de contrôle nécessaires sur ses wagons, notamment celles prévues par l'Annexe 9.

**Article 8 : Inscriptions figurant sur le wagon. Identification du wagon**
Sans préjudice des règlements en vigueur, les wagons portent les inscriptions suivantes :
- l'indication du détenteur
- le marquage identificateur selon Annexe 11
- le cas échéant la gare ou la zone d'attache*.

**Article 9 : Droit de disposition du détenteur**

9.1 Le détenteur a la maîtrise de ses wagons.

9.2 Sauf impératifs de sécurité, le détenteur est seul autorisé à donner des instructions aux entreprises ferroviaires pour l'utilisation de ses wagons.

9.3 Le détenteur donne en temps utile aux entreprises ferroviaires les instructions nécessaires à l'acheminement des wagons vides.

9.4 La requête d'un détenteur interdisant la remise de ses wagons à certaines entreprises ferroviaires adhérentes ou tierces est à satisfaire.

**CHAPITRE III : OBLIGATIONS ET DROITS DES ENTREPRISES FERROVIAIRES**

**Article 10 : Acceptation des wagons**
Sous réserve du respect par le détenteur des obligations mises à sa charge dans le chapitre II, les entreprises ferroviaires adhérentes acceptent les wagons dans le cadre de leur offre commerciale.

**Article 11 : Refus des wagons**
Une entreprise ferroviaire adhérente peut refuser des wagons lorsque
- leur acceptation est interdite par les Autorités Publiques ;
- il est temporairement impossible de les recevoir pour une raison d’exploitation propre à l’entreprise ferroviaire concernée ;
- des circonstances exceptionnelles, indépendantes de l’entreprise ferroviaire (en particulier en cas de force majeure), s’opposent temporairement à leur acceptation.
- l'état du wagon n'est pas conforme aux prescriptions techniques et d'entretien ainsi qu'aux directives de chargement en vigueur.
Une entreprise ferroviaire ne peut pas refuser ses propres wagons lorsqu'ils sont vides et aptes à circuler.

**Article 12 : Traitement des wagons**
Chaque entreprise ferroviaire traite les wagons avec soin et en bon père de famille et effectue les opérations de contrôle prescrites selon l'Annexe 9. Elle réalise de la même manière, notamment tout contrôle relatif à la sécurité sur tous les wagons, quel qu'en soient les détenteurs. Les frais liés à ces contrôles courants ne sont pas facturés en tant que tels au détenteur.

**Article 13 : Délai d'acheminement des wagons et responsabilité**
13.1 Les délais d'acheminement des wagons chargés dépendent du délai de livraison de la marchandise transportée. Les délais d'acheminement des wagons vides font l'objet d'un accord. En l'absence d'un tel accord, ce sont les délais de l'article 16 de la CIM pour les wagons complets qui s'appliquent.
13.2 L'EF utilisatrice est déchargée de sa responsabilité en cas du dépassement du délai d'acheminement lorsque ce dépassement a pour cause :
- une faute du détenteur,
- un ordre de celui-ci ne résultant pas d'une faute de l'EF utilisatrice,
- un vice propre du wagon ou du chargement,
- de circonstances que l'EF utilisatrice ne pouvait pas éviter et aux conséquences desquelles elle ne pouvait pas obvier,
- un refus justifié du wagon ou de l'envoi, relevant de l'art. 11.
13.3 En cas de dépassement de ces délais, imputable à une entreprise ferroviaire, le détenteur peut réclamer une indemnité de la privation de jouissance des wagons. Sauf convention contraire, le montant de l'indemnité pour privation de jouissance découle de l'Annexe 6. Cette indemnité cumulée avec l'indemnité en cas d'avarie selon l'article 23.2 ne peut dépasser le montant payé en cas de perte du wagon. Elle est imputée sur l'indemnité en cas de perte accordée selon les articles 20.3 ou 23.1.

**Article 14 : Disposition de wagons vides**
14.1 L'entreprise ferroviaire exécute, dans le cadre de son offre commerciale, les instructions données par le détenteur pour l'acheminement de wagons vides.
14.2 L'acheminement de wagons vides se fait sous couvert d'une Lettre Wagon* (voir Annexe 3). Les modalités relatives à l'utilisation de la lettre wagon sont contenues dans le Guide Lettre Wagon CUV (GLW-CUV), édité par le Comité International des Transports ferroviaires (CIT).
14.3 À défaut d'instructions données par le détenteur au plus tard lors de la reprise, par l'entreprise ferroviaire, du wagon déchargé, celle-ci est obligée de renvoyer le wagon sur sa gare ou zone d'attache ou sur toute autre gare convenue préalablement.

**Article 15 : Informations à fournir au détenteur**
15.1 L'entreprise ferroviaire utilisatrice fournit au détenteur les informations nécessaires à l'exploitation et à l'entretien des wagons.
15.2 Les entreprises ferroviaires fournissent aux détenteurs des wagons, dans le cadre de leurs systèmes d'exploitation et de saisie, des informations relatives au travail réellement effectué par les wagons.

**Article 16 : Remise d'un wagon à des tiers**
L'entreprise ferroviaire qui confie un wagon à un tiers sans y avoir été autorisé par le détenteur est responsable vis-à-vis de celui-ci et répond des dommages qui en résultent. La responsabilité du tiers reste inchangée.

**Article 17 : Acceptation de wagons appartenant à un détenteur non adhérent au CUU**
Le présent contrat s’applique également aux wagons appartenant à des détenteurs non adhérents au CUU et acceptés par une entreprise ferroviaire adhérente. Dans ce cas, l’entreprise ferroviaire qui a accepté le wagon est considérée comme détenteur de celui-ci vis-à-vis des autres parties au contrat.

CHAPITRE IV : CONSTATATION ET TRAITEMENT DES AVARIES AUX WAGONS SOUS LA GARDE D’UNE EF

Article 18 : Constatation des avaries

18.1 Lorsque l’avarie d’un wagon ou la perte ou l’avarie de pièces amovibles mentionnées sur le wagon sont découvertes ou présumées par une entreprise ferroviaire ou que le détenteur en allègue l’existence, l’entreprise ferroviaire doit dresser sans délai et, si possible, en présence du détenteur, un constat d’avarie constatant la nature du dommage ou de la perte et, autant que possible, sa cause et le moment où il s’est produit.

18.2 Lorsque l’avarie ou la perte de pièce n’empêche pas l’exploitation du wagon, on peut renoncer à inviter le détenteur à assister aux constatations.

18.3 Une copie du constat d’avarie est remise sans délai au détenteur.

18.4 Si le détenteur n’accepte pas le contenu du constat d’avarie, il peut demander que la nature, la cause et l’étendue du dommage soient constatées, par un expert nommé par les parties au contrat ou par voie judiciaire. La procédure est soumise au droit de l’Etat où la constatation a lieu.

18.5 Lorsqu’un wagon subit une avarie ou une perte de pièce empêchant sa circulation ou son utilisation, l’entreprise ferroviaire en outre informe aussitôt le détenteur en lui donnant au moins les informations suivantes:
- le numéro du wagon
- l’état du wagon (chargé ou vide)
- la date et le lieu de la réforme
- le motif de la réforme
- les coordonnées du service à contacter
- la durée prévisible d’indisponibilité du wagon (jusqu’à 6 jours ouvrables; supérieure à 6 jours ouvrables).

Article 19 : Traitement des avaries

19.1 L’entreprise ferroviaire fait assurer la remise en état de circuler du wagon, conformément aux dispositions de l’Annexe 10. Si le coût des réparations excède le montant de 750 Euros, l’accord du détenteur, à l’exception du remplacement des semelles de frein, doit être préalablement demandé. Si le détenteur ne réagit pas dans les 2 jours ouvrés (samedis exclus), les travaux de réparation sont effectués.

19.2 Si les coûts de réparation du wagon avarié dépassent l’indemnité calculée selon l’Annexe 5, le wagon est considéré comme économiquement non réparable.

19.3 Lorsque les dommages n’altèrent pas l’aptitude à circuler du wagon mais rendent toutefois difficile son utilisation, l’entreprise ferroviaire peut effectuer sans l’accord du détenteur des travaux de remise en état d’utilisation jusqu’à un montant de 750 Euro. L’entreprise ferroviaire peut, en concertation avec le détenteur, être autorisée à effectuer des travaux supplémentaires.

19.4 À la fin des travaux de remise en état, et à défaut d’instructions particulières données par le détenteur, l’entreprise ferroviaire achemine le wagon vers sa gare destinataire initialement prévue.

19.5 Dans tous les cas dans lesquels l’entreprise ferroviaire effectue ou fait effectuer d’ellemême des travaux de réparation en appliquant les dispositions de l’Annexe 10, elle le fait avec tout le soin qui s’impose en recourant à des ateliers agrées et en utilisant des
matériaux homologués. L'entreprise ferroviaire remet au détenteur une information sur le détail des travaux effectués.

19.6 La gestion des pièces de rechange est réglée dans l'Annexe 7.
19.7 La prise en charge des frais de réparation est déterminée dans le Chapitre V.

**Article 20 : Traitement de wagons et éléments amovibles perdus**

20.1 Un wagon est considéré comme perdu si le wagon n'est pas mis à disposition du détenteur dans les trois mois qui suivent le jour d'arrivée de la demande de recherche auprès de l'entreprise ferroviaire à laquelle il a été mis à disposition, ou bien lorsqu'il n'a reçu aucune indication sur le lieu où se trouve le wagon. Ce délai est augmenté de la durée d'immobilisation du wagon pour toute cause non imputable à l'entreprise ferroviaire ou pour avarie.

20.2 Un élément amovible mentionné sur le wagon est considéré comme perdu s'il n'est pas restitué avec celui-ci.

20.3 Si une entreprise ferroviaire est responsable, elle paie au détenteur :
- pour un wagon perdu, une indemnité calculée conformément à l'Annexe 5
- pour les éléments perdus, une indemnité dont le montant correspond à la valeur des éléments.

20.4 Le détenteur, en recevant l'indemnité, peut demander par écrit à être avisé sans délai lorsque le wagon (ou l'élément amovible) est retrouvé. Dans ce cas, le détenteur peut exiger dans les six mois qui suivent la réception de l'avis, que le wagon (ou l'élément amovible) lui soit remis contre restitution de l'indemnité reçue. La période comprise entre le paiement de l'indemnité pour perte du wagon et la restitution de celle-ci par le détenteur ne donne lieu à aucune indemnité pour privation de jouissance.

**Article 21 : Traitement des bogies**

Les dispositions du présent chapitre sont applicables de la même manière au traitement des bogies.

**CHAPITRE V : RESPONSABILITE EN CAS DE PERTE OU AVARIE D'UN WAGON**

**Article 22 : Responsabilité de l'entreprise ferroviaire utilisatrice**

22.1 L'entreprise ferroviaire sous la garde de laquelle se trouve un wagon est responsable vis-à-vis du détenteur du dommage causé par la perte ou l'avarie du wagon ou de ses éléments constitutifs dans la mesure où elle n'apporte pas la preuve de ce que le dommage n'a pas été provoqué par sa faute.

22.2 Il n'y a pas faute de l'entreprise ferroviaire si elle en apporte la preuve notamment en présence d'un des motifs suivants :
- circonstances que l'entreprise ferroviaire n'était pas en mesure d'éviter et dont elle ne pouvait éviter les conséquences ;
- faute d'un tiers ;
- entretien insuffisant par le détenteur lorsque l'entreprise ferroviaire prouve qu'elle a utilisé le wagon et l'a contrôlé sans commettre d'erreur ;
- faute du détenteur.

En cas de responsabilité partagée de l'Entreprise Ferroviaire, le dommage est supporté par les responsables en fonction de leur part de responsabilité respective.

Le détenteur ne peut arguer de la présence d'un vice caché de son wagon pour prouver qu'il n'est pas lui même cause de l'avarie.

22.3 L'entreprise ferroviaire n'est pas responsable :
- de la perte et de la détérioration d'éléments amovibles qui ne sont pas inscrits sur les deux côtés du wagon ;
- de la perte et de la détérioration d'accessoires ( tuyaux de remplissage, outils, etc... ),
pour autant qu'aucune faute lui est prouvée.

22.4
Pour faciliter le traitement des avaries et pour tenir compte de l'usure normale du wagon, de la qualité de son entretien et de son utilisation par des tiers, le catalogue des avaries figurant à l'Annexe 12 est appliqué comme suit :
- les avaries affectées au détenteur sont supportées par celui-ci,
- les avaries affectées à l'Entreprise Ferroviaire dont le montant ne dépasse pas la somme de 750 Euros sont supportées par l'Entreprise Ferroviaire utilisatrice,
- les avaries affectées à l'Entreprise Ferroviaire dont le montant dépasse la somme de 750 Euros sont traitées selon les modalités de l'article 22.1.

Article 23 : Montant de l'indemnité
23.1 En cas de perte du wagon ou de ses accessoires, le montant de l'indemnité est calculé conformément à l'Annexe 5.

23.2 En cas d'avarie du wagon ou de ses accessoires, l'indemnité est limitée aux frais de remise en état. Le dédommagement de la privation de jouissance est accordé conformément à l'article 13.3. En cas de demande de pièces de rechange adressée au détenteur pour des travaux de remise en état, la privation de jouissance est interrompue entre la date de la demande et la date de réception des pièces. L'indemnité ne peut dépasser le montant qui serait à payer en cas de perte.

Article 24 : Responsabilité d'utilisateurs précédents
24.1 Lorsque l'entreprise ferroviaire sous la garde de laquelle se trouve le wagon est déchargée de la responsabilité, tout utilisateur précédent de la chaîne d'utilisation en cours (parcours à charge ou à vide) répond vis-à-vis du détenteur des dommages aux wagons ainsi que de la perte ou des dommages aux accessoires selon l'article 22.

24.2 En dehors de la chaîne d'utilisation en cours, un utilisateur précédent ne répond vis-à-vis du détenteur que si le détenteur prouve qu'il a causé l'avarie et s'il ne peut pas se décharger selon l'article 22.1.

Article 25 : Obligation de minoration du dommage
Pour régler les dommages causés à des wagons, les parties au contrat respecteront les principes généraux liés à l'obligation de minoration du dommage.

Article 26 : Règlement des dommages
L'entreprise ferroviaire utilisatrice ou l'atelier en tant que son auxiliaire d'exécution facture les frais de remise en état du wagon au détenteur, à l'exclusion des coûts dont l'EF utilisatrice est responsable en vertu de l'art. 22.1. Lorsque l'utilisateur précédent est responsable de l'avarie, le détenteur adresse à celle-ci une facture correspondant aux frais de remise en état qui lui ont été facturés par l'EF utilisatrice ou l'atelier. Le détenteur peut demander une indemnité de privation de jouissance conformément à l'article 13.

CHAPITRE VI :
RESPONSABILITE DES DOMMAGES CAUSES PAR UN WAGON
Article 27 : Principe de responsabilité
27.1 Le détenteur ou un utilisateur précédent soumis au présent contrat répond des dommages causés par le wagon lorsqu'une faute lui est imputable. Le responsable garantit l'entreprise ferroviaire utilisatrice contre toute action de tiers si aucune faute n'est imputable à l'entreprise ferroviaire utilisatrice.

27.2 En cas de responsabilité partagée entre l'entreprise ferroviaire utilisatrice et le détenteur ou un utilisateur précédent, l'indemnité est supportée par chacun en fonction de leurs parts de responsabilité.
27.3 Lorsqu'un tiers est responsable ou co-responsable du dommage, les parties au contrat conviennent de rechercher prioritairement la responsabilité de ce tiers pour le règlement du dommage.

27.4 Pour simplifier et pour accélérer la procédure dans le cas de dommages de moindre importance, l'EF utilisatrice peut, dans ses conditions générales de vente, indiquer le montant par sinistre jusqu'à hauteur duquel elle renonce à faire valoir ses droits à l'encontre du détenteur, même si ce dernier en est responsable. Ceci ne s'applique pas en cas de faute intentionnelle ou grave de la part du détenteur ou de l'utilisateur précédent.

27.5 Une EF peut proposer de couvrir un détenteur dans sa propre assurance de responsabilité civile d'exploitation.

27.6 Pour autant que la responsabilité du détenteur ne soit pas couverte dans le cadre des articles 27.4 et 27.5, le détenteur est tenu de justifier d'une assurance de responsabilité civile conformément aux législations nationales.

1 II est recommandé aux EF de fixer ce montant à hauteur de 17 000 EUR.

CHAPITRE VII :
RESPONSABILITE POUR LES AGENTS ET AUTRES PERSONNES
Article 28 : Principe de responsabilité
28.1 Les parties au contrat sont responsables de leurs agents et des autres personnes au service desquelles elles recourent pour l'exécution du contrat, lorsque ces agents ou ces autres personnes agissent dans l'exercice de leurs fonctions.

CHAPITRE VIII :
DISPOSITIONS DIVERSES
Article 29 : Directives de chargement
Les EF sont tenus de faire respecter par les expéditeurs les Directives de chargement de l'UIC en vigueur.

Article 30 : Décomptes et paiements
L'Euro (code ISO : EUR) est à utiliser comme unité monétaire pour tous les décomptes et paiements.

Article 31 : Obligation à dommages-intérêts
Lorsqu'un adhérent enfreint par sa faute une obligation mise à sa charge par le présent contrat, il est tenu de réparer le dommage direct subi par l'adhérent lésé.

Article 32 : Juridictions compétentes
Sauf accord contraire conclu entre les parties, la juridiction compétente est celle où le défendeur a son siège.

Article 33 : Prescription
33.1 Les actions fondées sur le chapitre III sont prescrites par un an. Les actions fondées sur les chapitres V et VI sont prescrites par trois ans.

33.2 La prescription court :
a) pour les actions fondées sur le chapitre III, du jour où les délais convenus ou les délais prévus par la CIM expirent ;
b) pour les actions fondées sur le chapitre V, du jour où la perte ou l'avarie du wagon a été constatée ou du jour où l'utilisateur pouvait considérer le wagon perdu conformément à l'article 20 ;
c) pour les actions fondées sur le chapitre VI, du jour où le dommage s'est produit.

Article 34 : Langues de rédaction
Le présent contrat est rédigé en français, allemand et anglais, chacune de ces trois versions ayant un caractère obligatoire.

Article 35 : Entrée en vigueur
ANNEXE 2
AU CONTRAT UNIFORME D'UTILISATION
DEFINITIONS

ADMISSION TECHNIQUE
Procédure menée par l'autorité nationale compétente pour admettre un véhicule ferroviaire à circuler.

AUTORITE NATIONALE COMPETENTE
Un organisme administratif dont relève l'admission technique conformément aux lois et prescriptions en vigueur dans chaque Etat.

DETECTEUR DE WAGONS
Désigne celui qui exploite économiquement, de manière durable, un wagon en tant que moyen de transport.

Le détenteur est celui dont la raison sociale figure, en tant que telle, sur le wagon et/ou dans le Registre d'immatriculation.

Dans le présent Contrat Uniforme d'Utilisation, la mention "détenteur" signifie aussi bien le propriétaire que son ayant droit éventuel.

ENTREPRISE FERROVIAIRE
Toute entreprise à statut privé ou public et titulaire d'une licence conformément à la législation communautaire applicable, dont l'activité principale est la fourniture de prestations de transport de marchandises et/ou de voyageurs par Chemin de fer, la traction devant obligatoirement être assurée par cette entreprise; ce terme recouvre aussi les entreprises qui assurent uniquement la traction.

ENTREPRISE FERROVIAIRE UTILISATRICE
Toute Entreprise Ferroviaire dans les trains ou sur les installations de laquelle se trouve le wagon.

GESTIONNAIRE D'INFRASTRUCTURE
Tout organisme ou toute entreprise chargés notamment de l'établissement et de l'entretien de l'infrastructure ferroviaire. Ceci peut également inclure la gestion des systèmes de contrôle et de sécurité de l'infrastructure. Les fonctions de gestionnaire de l'infrastructure sur tout ou partie d'un réseau peuvent être attribuées à plusieurs organismes ou entreprises.

GARE D'ATTACHE ; ZONE D'ATTACHE
Gare d'attache : gare désignée, figurant sur le wagon, et à destination de laquelle un wagon vide est renvoyé à défaut d'instruction du détenteur.

Zone d'attache : zone géographique regroupant un certain nombre de gares d'une région donnée vers l'une desquelles un wagon vide est renvoyé à défaut d'instruction du détenteur.

LETTRE-WAGON
Document d'acheminement et de disposition accompagnant tout parcours à vide d’un wagon (modèle en Annexe 3).

OFFRE COMMERCIALE
Désigne les prestations et les conditions commerciales offertes par une entreprise ferroviaire aux détenteurs et aux autres EF. Sont constitutives de ces prestations, en particulier, les relations desservies, les produits ou marchandises acceptées dans les trains, les différents modes d'acheminement et les prix des prestations fournies.

STI
Spécifications Techniques d’Interopérabilité pour le système ferroviaire conventionnel transeuropéen.
UTILISATEUR PRECEDENT
Entreprise ferroviaire ayant utilisé un wagon dont elle n'est pas détenteur, et l'ayant remis à une autre entreprise ferroviaire pour utilisation.

WAGON EN ETAT DE CIRCULER (notion d'exploitation)
Wagon qui peut circuler sur ses propres roues dans des trains de marchandises du régime ordinaire, le cas échéant en queue des trains sans danger pour l'exploitation.

Other annexes deal with registration of member operators and railways, the form of wagon lettering, the process for reporting damage, the method of calculating the residual value of written-off wagons, penalties for delays and exchange components.