

*PACT  
Pilot Actions For Combined Transport*

# **Developing a Quality Strategy for Combined Transport**



*Final Report  
November 2000*



International Union of combined  
Road-Rail transport companies



# Developing a quality strategy for Combined Transport

Contract n° PACT 48-B99-B2 7060

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We would like to express our thanks to the DG TREN for their support to the present project.

## UIRR Preface

This final report is the result of a very thorough analysis of the current quality of the „Combined Transport“ product, which has been carried out by the UIRR link office in Brussels and six of its member companies with the support of the European Commission through its PACT programme. At the UIRR partners' request, the well-known consultants Booz-Allen&Hamilton were associated in order to benefit from their expertise and to have a neutral partner involved in the project.

It is generally recognised that the severe quality deterioration which characterises the contribution of railway companies to the combined transport chain is the main reason for the general product degradation and of the stagnation and even decline in traffic registered in the last two years. The objective was however to widen the scope of investigations to all actors of the combined transport chain. Indeed, we believe that every improvement , however small, is important.

Our wish is that all those in charge – each one according to the degree of his shortcomings and to his remedying potential – should take notice of the content of the recommendations and consider their implementation as a sustained priority. The interests of all undertakings concerned, and equally the general public, call for the urgent revitalisation of combined transport.



Rudy COLLE  
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Project Co-ordinator

# **A QUALITY STRATEGY FOR COMBINED TRANSPORT**

**The Beginning of a Transformation**

**FINAL REPORT**

November 2000

## Management Summary

The UIRR and the European Commission have jointly embarked on a project beginning in the Autumn of 1999 and reaching its conclusions in the Autumn of the year 2000, which seeks to give direction for the improvement of the quality of combined transport (CT) in Europe.

The immediate trigger for starting the project, funded through the PACT facility, was the rather dramatic downturn in CT quality in 1997 and 1998, and continuing in 1999 when systematic quality measurement by the UIRR was begun, based on data from its members in co-operation with the railways.

***It appears that the major cause of this quality deterioration was the rail component of the CT product and that this was probably somewhat compounded by the various weaknesses in the interaction between the national railways and the CT operators and their customers, the logistic service providers.***

In the early months of the year 2000 the quality problems have continued, and have lent urgency to the resolution of key issues as outlined in these findings.

- ***Strategic structural issues*** that should be addressed in the political arena, focusing on liberalisation and privatisation and the introduction of more competition in the railway industry
- ***Institutional problems***, requiring substantial investments by the railway operators but also requiring fundamental analysis of key issues including:
  - Examination of the relationships between railway operators, UIRR members and the logistic service providers (LSP's) and inherent conflicts of interest therein, as well as the development of more stringent performance regimes
  - Investigation into product industrialisation and innovation possibilities as well as examination of new approaches more akin to the "integrator" model
- ***Issues relating to operating processes and procedures*** covering both commercial and operational aspects of the entire CT transport chain

It is clear that progress is required on all three levels of the industry, and that constructive initiatives sponsored by the PACT program are indeed under way, but also that more of such progress is urgently needed.

These findings provide the background to these issues, focusing most strongly on the short term operating processes and procedures as these are the items that UIRR members and their counterparts can influence most directly and immediately.

That does not diminish the fact that the need for progress on the long- and medium term issues of liberalisation and institutional development is urgent, and indeed key to the prospect of improving quality, without which the situation will not be ameliorated.

***If the goals of the European Commission are to be achieved, in strengthening CT for the sake of both road traffic congestion relief and environmental relief, the quality of CT must be addressed.***

The cost of *not* addressing these issues is substantial, not only in the sense of the stated goals, but also in economic terms. At a time when economic growth is strong the demand for CT should be and indeed is very strong, but the CT value proposition simply cannot answer the demand, neither in qualitative nor in quantitative terms.

***At hand is an opportunity to bring CT back to the forefront of the logistics formula, but to achieve this will take tremendous efforts in the directions outlined herein.***

These efforts – as focused on the short term operating processes and procedures – revolve around the commercial and operational issues identified during the course of this investigation:

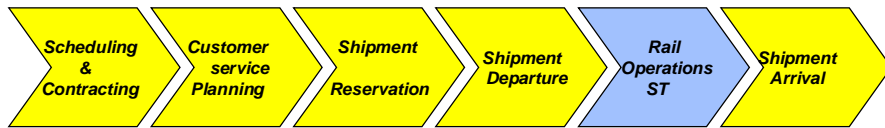
- ***Improved planning procedures between UIRR members and the railway operators, using service request templates and joint, phased planning procedures***
- ***Clear and common booking rules and procedures to address timing norms, overbooking and late acceptance issues***
- ***Enforcement of existing procedures in accepting late arrivals so as to avoid late departure of trains and revised procedures to assure document integrity***
- ***Establishment of corridor quality teams and corridor service centres, using best practice problem resolution approaches as demonstrated by the parties themselves, particularly on the Brenner Pass, but also at Modane, at Port Bou/Cerbere, and at Irun/Hendaye border crossings.***
- ***Appointing a lead carrier as corridor manager on each corridor so as to provide a clear and accountable interface to the UIRR members***

- **Development of back up and contingency operations plans, so as to be prepared for inevitable service breakdowns**
- **Redefinition of technical standards such as weights and rounding off rules so as to avoid off-loadings and unnecessary disputes**
- **Rebalancing workload across the system throughout the day to reduce peak loads**

These major recommendations are outlined herein and require a follow up over the next year, dovetailing with the institutional and structural developments to be achieved concurrently.

### Fig 1: Operating Procedures Improvements

In the short term, operating procedures can significantly improve quality as a basis for medium and long term strategic repositioning



- |   |  |  |   |   |   |
|---|--|--|---|---|---|
| <ul style="list-style-type: none"> <li>• Template for service requests</li> </ul> | <ul style="list-style-type: none"> <li>• Develop joint phased planning with LSP, rail operators</li> </ul> | <ul style="list-style-type: none"> <li>• Standardize reservation timing norms</li> <li>• Revise procedures to assure document integrity</li> <li>• Minimize need for overbooking with no-show penalties</li> </ul> | <ul style="list-style-type: none"> <li>• Enforce rules regarding late arrivals at terminal to ensure on-time departure</li> </ul> | <ul style="list-style-type: none"> <li>• Structure quality mgt. teams</li> <li>• Day to day cooperation &amp; Service Center</li> <li>• "Corridor Manager" concept</li> <li>• Contingency planning</li> <li>• Standardize weight rules</li> </ul> | <ul style="list-style-type: none"> <li>• Off-loading time norms standardized</li> <li>• Workload rebalancing</li> </ul> |
|---|--|--|---|---|---|

Such is the nature of any quality program or strategy, that it must become an aspect of daily life, to be engrained on all staff and processes over time. These findings are therefore not to be seen as a Final Report, but rather as a starting point for achieving a significant opportunity in a dynamic logistics environment in which CT can and should play a leading role.

We would hope that the UIRR would be enabled to continue to play a strong role in furthering these processes.

- On the political front continue developing momentum toward privatisation, liberalisation and increased competition
- Form working groups around institutional development issues and formulate concrete projects to further their resolution

- Provide structural support for ongoing and new quality management groups to deal with each of the issues we have identified here and continue to further this insight and work on the implementation of solutions as we have suggested them here, as well as other approaches to be identified

We have seen the value of sharing the information across parties, but also note that a lot of knowledge is not being shared. We have seen a lot of initiatives, but also a lot of frustrations in the process of learning to work together to address these issues. We have indeed seen tremendous value in the statistics the UIRR is collecting but also gaps in structural data on terminals, infrastructure capacity and bottlenecks.

We would advise this effort be further strengthened by a number of actions and steps:

1. Create a web-supported learning structure in which parties can deposit information regarding statistics, evolving problems and issues and best practices using the frameworks developed in this process thus far
2. Create a data base of routes, terminals and their capacity, peak loads and bottlenecks so that these can be seen in advance and anticipated

Finally, we would urge an understanding of the professional frustration staff on the ground feel daily as they are asked to again commit themselves to these quality efforts on top of their daily operations, knowing that in the face of lack of progress on the political and investment side, a lot of their effort will be ineffective. They deserve our support in the difficult task of making the CT product reach its full potential across Europe.



## TABLE OF CONTENTS

|  |    |
|--|----|
| TABLE OF CONTENTS .....  | 7  |
| 1. Introduction: CT Traffic and Quality Developments .....       | 8  |
| 3. Business Model – Quality Issues .....                         | 19 |
| 3.1 Commercial Issues .....                                      | 20 |
| 3.1.1 Service Scheduling and Contracting .....                   | 20 |
| 3.1.2 Customer Service Planning .....                            | 22 |
| 3.1.3 Reservation Process.....                                   | 24 |
| 3.1.4 Departure and Arrival Procedures.....                      | 26 |
| 3.2.1 Rail Service Planning & Preparation .....                  | 29 |
| 3.2.2 Terminal and Railway Operations.....                       | 30 |
| 3.2.3 In-Transit and Border Disruptions .....                    | 31 |
| 4. The Cost of Non-Performance .....                             | 36 |
| 4.1 Lost Revenues .....  | 36 |
| 4.2 Staff and Asset Utilisation.....                             | 38 |
| 4.3 Claims.....  | 39 |
| 4.4 Total Cost of Non-Performance .....                          | 40 |
| 5. Market Requirements .....                                     | 41 |
| 6. Cases: Three Corridors .....                                  | 44 |
| 6.1 Quality .....  | 44 |
| 6.2 Physical and Operational Bottlenecks.....                    | 46 |
| 6.2.1 Brenner Corridor .....                                     | 47 |
| 6.2.2 Modane Corridor .....                                      | 48 |
| 6.3 Quality Management .....                                     | 50 |
| 7. Commercial and Operational Strategies.....                    | 53 |
| 7.1 Long Term - Structural Evolution.....                        | 55 |
| 7.2 Medium Term Context – Institutional Development .....        | 57 |
| 7.3 Operating Procedures .....                                   | 66 |
| 7.3.1 Scheduling and Contracting: Service Request Template ..... | 68 |
| 7.3.2 Customer Service Planning: Joint Phased Planning.....      | 69 |
| 7.3.3 Shipment Reservation: Clear and Common Booking Rules ..... | 70 |
| 7.3.4 Shipment Departure: Enforce Existing Rules .....           | 70 |
| 7.3.6 Rebalancing Workloads .....                                | 76 |
| 8 Next Steps.....  | 78 |

# 1. Introduction: CT Traffic and Quality Developments

The UIRR and the European Commission have jointly embarked on a project beginning in the Autumn of 1999 and reaching its conclusions in the Autumn of the year 2000, which seeks to give directions for the improvement of the quality of combined transport (CT) in Europe.

The project is seen as a milestone for the UIRR and its members to intensify structured discussion together with the railways so as to be able to make concrete progress in addressing existing quality issues and improve performance. To that end, a comprehensive framework is developed encompassing an analysis of the industry, the business relationships and the commercial, operational and informational issues that are to varying degrees the root causes of the quality problems that are so evident.

Every effort is made to include examples of issues and problems as experienced by individual parties to ensure concrete reference points and more importantly to share such experiences and thereby strengthen mutual understanding of the problem. Also in the positive sense, industry and individual best practices are identified where available and applicable, again with mutual and shared learning as a strategic tool in the quest for excellence.

The immediate trigger for starting the project, funded through the PACT facility, was the dramatic downturn in CT quality as measured by the UIRR, based on data from the UIRR members.

Quality in the CT product was in decline as early as 1997, and this decline continued in 1998. Problems included missing locomotives, the deployment of inappropriate locomotives, missing drivers and associated delays and cancellations.

Subsequently, UIRR members began reporting downturns in traffic for 1998 after many years of steady growth:

- Belgium-Italy reported –8,5%
- Belgium-Spain reported –49,5%
- Germany-Italy through the Brenner, -0,7%
- Denmark-Italy reported a decline of –8,3%

These examples<sup>1</sup> triggered the UIRR and its members to systematically collect data on CT traffic and quality on a pan European basis, and subsequently, to formulate the quality strategy project at hand.

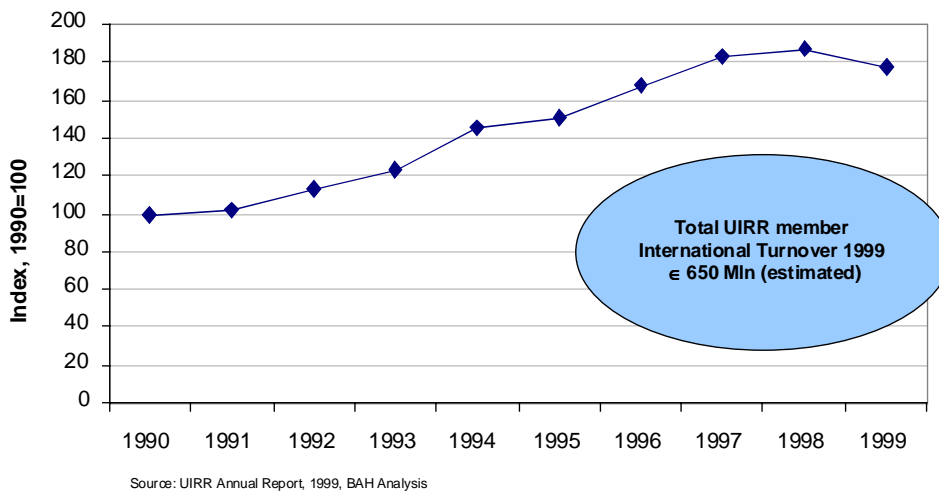
The serious downturn in quality was apparently the cause for the downturn in CT traffic volumes, after a sustained period of CT traffic growth.

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<sup>1</sup> Source: UIRR Press Release 1998

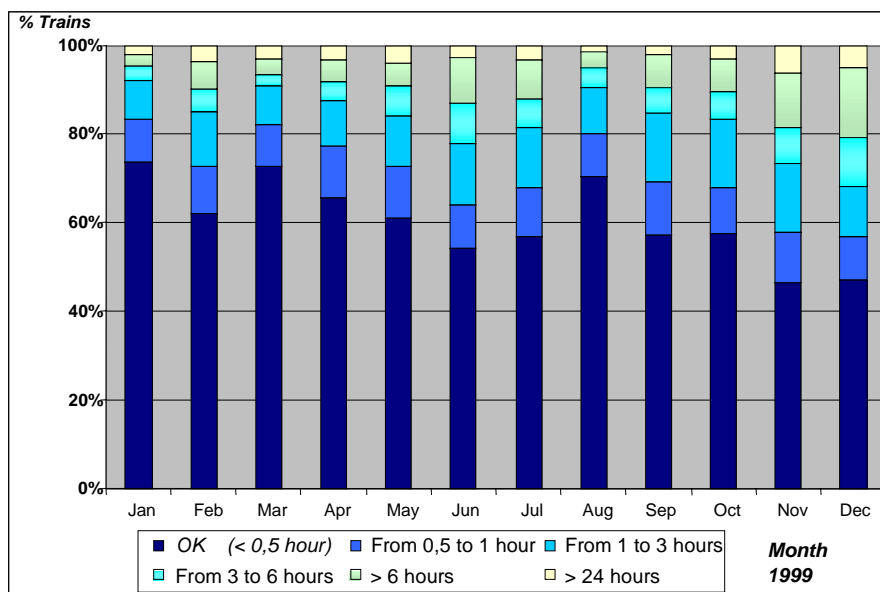
The total UIRR international traffic valued today at Euro 650 Mln, has grown significantly since 1990, but has shown a downturn in *absolute terms* in the course of 1999. **As a result the CT industry is failing to take part in the significant economic opportunity currently available as a result of the sustained economic growth that has occurred over this same period.**

**Fig 2: International Combined Transport Traffic Development**



**During the course of 1999, the quality of CT traffic on all observed international corridors deteriorated such that at the end of 1999 no more than 50% of trains were on time.**

**Fig 3: Quality Statistics Summary, 1999**



This data is based on 18,347 trains being observed by UIRR's members during the course of 1999 and also represents the first time that such data has

been collected so systematically and consistently and in a harmonised manner:

- All the parties, being UIRR members and the national railways agree on the fact of the delay and on the length of the delay
- All parties agree on the reasons for delay, such reasons being defined beforehand in a structured manner

On this basis, the delays in 1999 as a total have been documented as to their major causes as follows:

**Table 4: Key causes of delays 1999**

|   |      |
|---|------|
| Force Majeure                             | 11 % |
| Terminal Operator related                 | 3 %  |
| Railway causes                            | 65 % |
| Various (unidentified, EDI, customs etc.) | 21 % |

***Examining these aspects in detail shows the predominant cause of delays to reside in the railway component of the CT product. As we examine these problems in detail we see these delays are caused by a lack of staff and lack of equipment, particularly locomotives and wagons.***

**Table 5: Detailed delay cause analysis**

|                                    |     |   |     |  |
|------------------------------------|-----|---|-----|--|
| <b>1 Force Majeure</b>             |     |   |     |  |
| 1.1 Inclemency                     | 5%  | } | 11% |  |
| 1.2 External causes                | 6%  |   |     |  |
| 1.3 National strike                | 0%  |   |     |  |
| <b>2 Terminal Operator related</b> |     |   |     |  |
| 2.1 Crane                          | 1%  | } | 3%  |  |
| 2.2 Overload                       | 2%  |   |     |  |
| 2.3 Various                        | 0%  |   |     |  |
| <b>3 Railway Causes</b>            |     |   |     |  |
| 3.1 Anterior delays                | 11% | } | 65% |  |
| 3.2 Missing personnel              | 7%  |   |     |  |
| 3.3 Missing traction               | 16% |   |     |  |
| 3.4 Railway strikes                | 9%  |   |     |  |
| 3.5 Sorting fault                  | 4%  |   |     |  |
| 3.6 Traction faults                | 2%  |   |     |  |
| 3.7 Track works                    | 4%  |   |     |  |
| 3.8 Other                          | 12% |   |     |  |
| <b>4 Various</b>                   | 21% |   | 21% |  |

*UIRR Definition: Strikes within one national railway are not considered as "National" general strikes, and therefore Force Majeure (as done by the railways) but are attributable to "railway causes".*

We note that this information is also available by individual axis.

**Table 6 CT Transport Axes Analysed 1999**

| <u>Relations</u>                   | <u>Trains</u> | <u>%</u>    |
|------------------------------------|---------------|-------------|
| Belgium from/to Spain              | 441           | 2%          |
| Belgium from/to Italy via Luino    | 792           | 4%          |
| Belgium from/to Italy via Modane   | 2050          | 11%         |
| Germany from/to Spain              | 4131          | 23%         |
| Germany from/to Eastern Countries  | 748           | 4%          |
| Germany from/to Italy via Brenner  | 4347          | 24%         |
| Germany from/to Italy via Gotthard | 3787          | 21%         |
| Great-Britain from/to Italy        | 2051          | 11%         |
|                                    | <b>18347</b>  | <b>100%</b> |

However, per axis, similar quality results were obtained and hence the conclusion is that this problem is not restricted to one corridor but is indeed a European problem requiring a European approach.

We note also with emphasis that the purpose of publishing causal information is not to place blame on any one party, but to further the understanding of the problem such that it can be addressed by the right parties.

These causes are indeed institutional and need institutional answers from the parties responsible, indicating a need for substantial investments and staffing increases. Several national railway operators have indicated that this investment shortfall has been recognized and is being addressed.

There are other causes such as missing documents and prior events, leading equally to “anterior delays” which lie in the realm of joint operating processes and procedures, which will be examined in detail hereafter, and which are the responsibility of all parties.

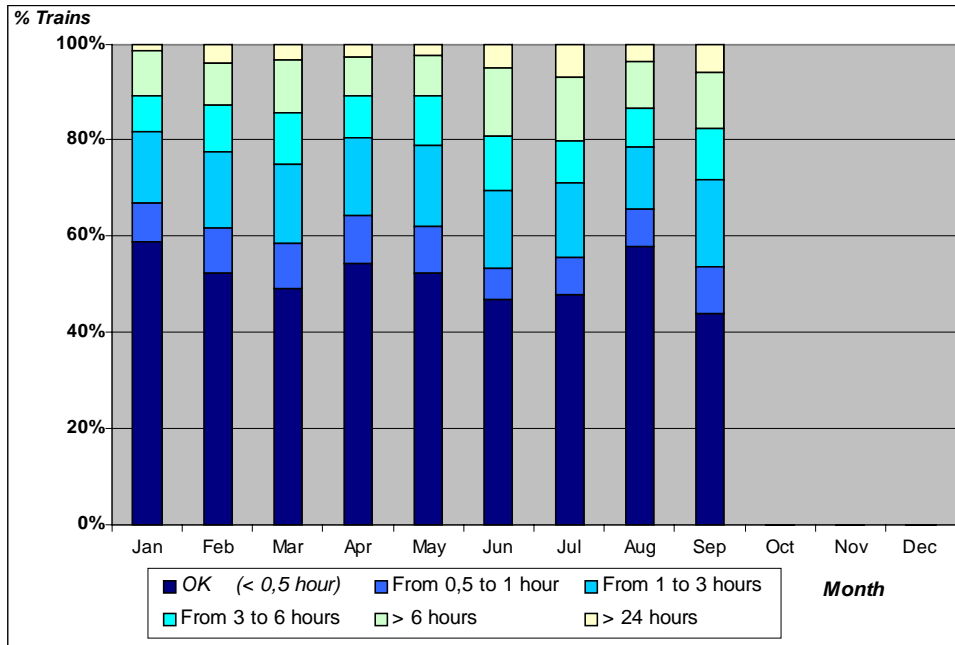
Also in the early months of the year 2000 the quality problems have continued, and have worsened.

Of particular concern is that the decline in quality is deep:

- Quality in the early months of the year 2000 reached almost its lowest point ever in July when little more than 40% of trains were on time
- Equally troubling is that relatively long delays of more than 3 hours – after which multiple reactions occur in the transport chain - remain a strong phenomenon, much more so than in the same period one year ago.
- Delays above 6 hours long, including a significant number of more than 24 hours long, affected some 10% of trains in June and in July as well

These latest findings have lent even greater urgency to the resolution of key issues as outlined in these findings

**Fig 7 Quality Statistics Summary August 2000**



Source: UIRR, Unaccompanied swap body, container & trailer traffic

**A clear point of progress however, is that all the UIRR members and their national railway operator counterparts have adopted this statistical structure as the cornerstone to the overall quality effort.** All progress to be achieved will be measured against these norms in the future, which will therefore become an indispensable benchmark and basis for transparent service management to be developed further over time.

## 2. Industry Model

To better comprehend the causes of delays and other aspects of quality and non-quality, we must understand the overall structure and model under which the CT industry operates.

The CT industry provides door-to-door container and trailer movements, using mostly rail as the long distance mode, so that road haulage is limited to the pick-up and delivery phases. The UIRR members organise and partly provide the rail-based terminal-to-terminal services.

This is, of course, in contrast to the typical road haulier who will complete the entire shipment cycle from Shipper to consignee by road. CT by nature uses more than one modality, but also within CT there are variations commercially and operationally.

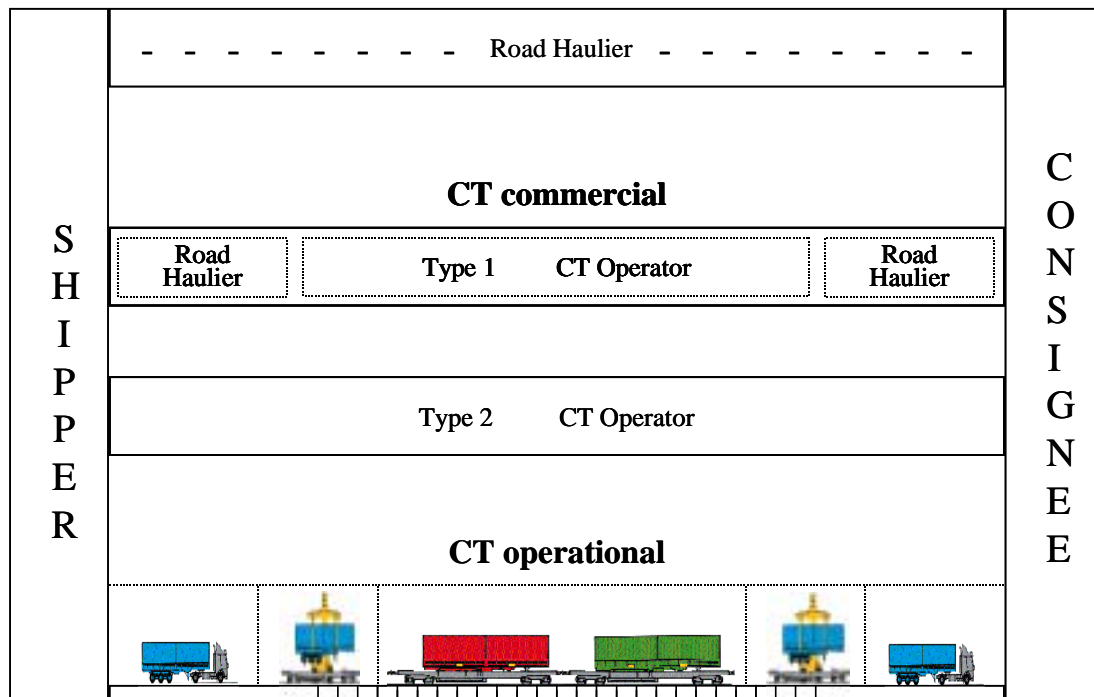
Commercially we distinguish also between Type 1 CT traditional operators (UIRR members) who work together with road hauliers or Logistic Service Providers (LSP's) who are the commercial interface with the shipper and consignee.

Type 2 CT operators (national railways or their subsidiaries) who maintain the commercial contact themselves and provide the entire service themselves.

Fig 8



**Comparison Road Haulier - Combined Transport**



In practice furthermore, there are many variations to this theme in terms of the modalities used, the infrastructure available, and the players involved.

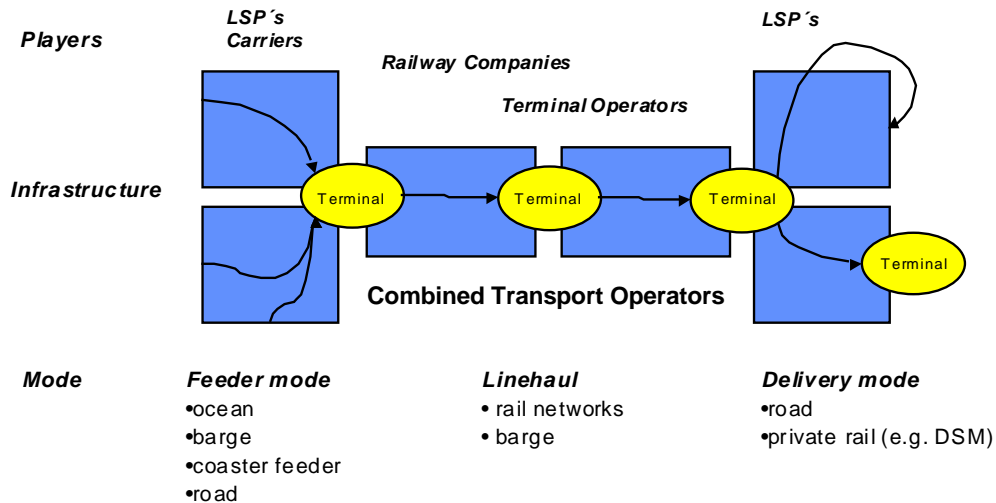
- Modalities
  - Pick up or feeder phases can be achieved by road, but also and increasingly by short sea coaster feeder vessels and barges, and of course through the intercontinental ocean carriers such as Maersk Sealand and P & O
  - The long distance Linehaul phase is conducted to a large extent by rail, and again increasingly by inland waterway, using barges, and of course still with trucks
  - The delivery of the container or trailer is done by road, by rail, and even by private rail through the private terminals of customers such as DSM
- Infrastructure
  - The infrastructure will include access to the terminal by road or waterway. At the terminal, cranes are used to lift containers and trailers on to the train or on to the barge
  - These terminals may be railway owned and operated, CT Company owned and operated or private terminals owned by inland waterways or operated by Public Private Partnerships involving the above as well local municipal authorities
  - The railway infrastructure is owned by national governments. In some cases it is structured as an independent authority, separate from the national railways. In most cases however, the railway infrastructure is still integrated with the national railway company, mostly national monopolies
- Players
  - The players include of course the various carriers that do the trucking and the barge and waterway feeding, the national railway companies, the CT and terminal operators and the final customer who is the end beneficiary of the whole process

The CT industry thus follows an extremely complex model, that poses serious challenges to be overcome, and it is fundamental to determining the quality approach to be pursued.



**In the process, the CT product suffers from a fragmented delivery system: up to 8 separate parties, both public and private are involved in a single shipment. Even if the parties are part of the same company, the inherent CT aspect, using different modes, creates complexities that are often at the root of the quality problems being addressed.**

**Fig 9: Combined Transport - Current State of the Art**



Furthermore, when examining the roles and the players involved in each phase of the delivery, that is, in each phase of the value chain, there are serious relational issues that emerge.

The first is that the railway companies are to a large extent also competitors of the UIRR members.

- Some 29 railway companies, the national railway companies of the European countries, together own Intercontainer. Intercontainer used to carry about 50% of the volume and now carries about 25% of the volume, still a significant part of the market. Intercontainer used to be solely focused on maritime containers but is now also carrying international continental flows
- Furthermore these same railway companies also have their own internal divisions or wholly owned subsidiaries for CT transport themselves, mostly aimed at national CT traffic but now also going to international flows
- Thirdly, these same railway companies are shareholders (up to 40% share) in the UIRR members, whose focus is, of course, international continental traffic

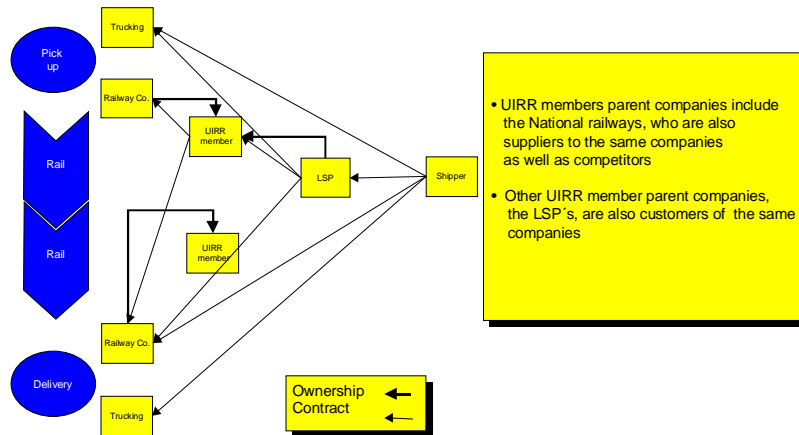
***Apart from this competitive element at the product level, the value chain of the UIRR members shows further multiple conflicts of interest to be examined and acted upon to ensure parties act under normal arms' length trading relationships***

- Railway operators are both shareholders of UIRR members, monopoly supplier of traction, and provider of wagons and terminal services to the same UIRR members, as well as being competitors, as mentioned above
- The hauliers, or LSP's, are also both shareholders in the UIRR member companies and are customers of these same companies

This raises two key issues:

- How, under current monopoly conditions, can UIRR members secure adequate services from the railways
- How can UIRR members secure adequate price levels from the LSP - companies that are not only customers but shareholders as well, and can themselves choose to use road hauliers if their requirements for price and service are not met

**Fig 10: The UIRR Value Chain Reveals Multiple Sources of Conflict**



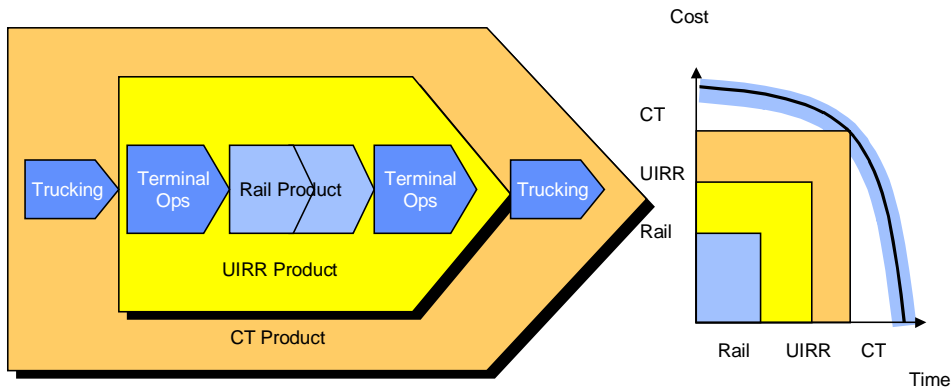
These aspects of complexity and of relational convolutions are strong determinants of the design of the appropriate quality strategy to be pursued by the UIRR.

The quality program of the UIRR should include all aspects of the delivery cycle from pick-up at origin to delivery at destination, as all players involved determine the total time, cost and quality associated with the product to be sold.

***In this initial phase of the process, the program will focus on the rail-based terminal-to-terminal aspects, as that is the direct action field of the UIRR membership, and as the current quality problem indeed seems to be triggered by the breakdown of the rail component of the system.***

As we shall discuss, the institutional and structural issues as to competition and fair-trading should be addressed as well, in parallel to the improvement of the more immediate concerns relative to the core business of the UIRR members.

**Fig 11: UIRR Quality Programme - Overall Scope**



*The overall service offer and competitive position for the CT product is fundamentally influenced by the trade off between price, door-to-door speed, and by overall reliability as determined by variations in actual cost and in actual journey time predictability.*

One of the key institutional aspects that is said to affect the quality of the CT product is the on going restructuring of the railway companies themselves. While this is not a responsibility of the UIRR members, it is clear that the process of privatisation, and getting ready for it, may initially have some negative effects.

- CT operators report that new Divisional structures in many railways, splitting cargo off from passenger services, have made it impossible to get any attention for the quality issues at hand
- As we shall note later in detail, separation of the infrastructure management from the service Divisions (Passenger and Cargo) has created a new set of priorities for this entity other than merely service; now the infrastructure entity will also optimise itself first in terms of cost-performance trade off and this again will require a new set of

dialogues and communications to be set up at the management and at the operational levels

- The same process raises new issues relating to the creation of dedicated pools of locomotives and drivers, one for passenger and one for cargo, instead of one large pool for both passenger and cargo together. Logistically speaking, having one pool is always better. Managerially speaking, one might prefer control over a smaller set of assets than having no control over the total pool, which will again have to be managed by a new Operations Division, if that were the choice being made

For a limited period of time these issues can be seen as normal and natural to expect from the otherwise healthy process of transforming a public service into market entities and preparing them for privatisation and competition. Nevertheless, they are indeed new issues and parties facing their effects are entitled to expect them to be urgently resolved.

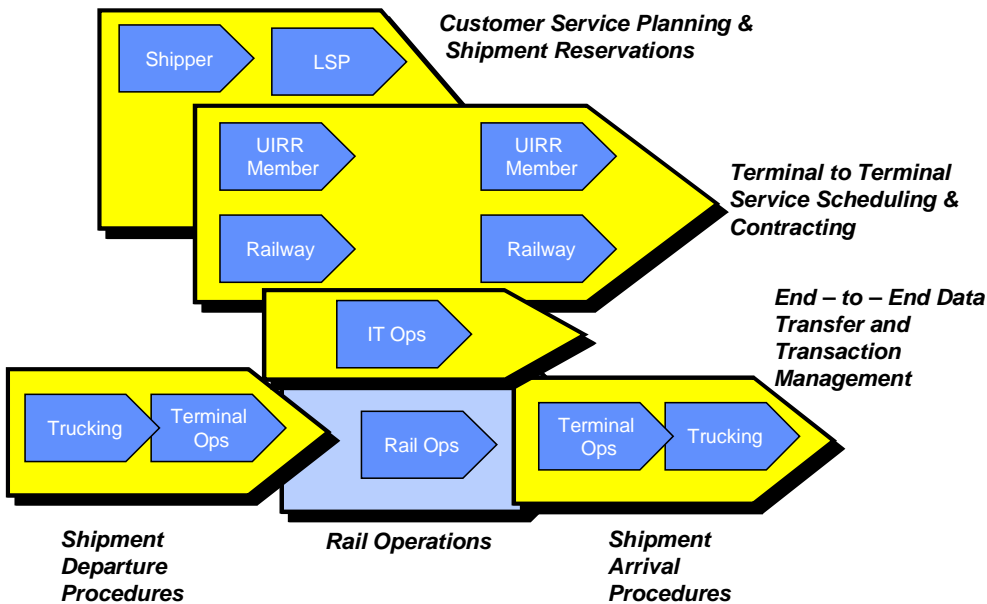
### 3. Business Model – Quality Issues

In the context of the Industry Model outlined above, the quality issues are identified within a Business Model that defines the key functions and relationships involved. The aim is to provide a permanent framework within which parties can continue to define the issues at hand, and be able to put them into a context in the relevant part of the workflow.

There are three areas in which the key issues are identified as a basis for the quality improvement being pursued:

1. Commercial issues, regarding service scheduling and customer service planning, product and service definition, reservation processes and departure and arrival procedures
2. Operational quality issues, regarding lack of drivers and equipment, but also regarding multiple physical and organisational bottlenecks
3. IT issues, that are largely being addressed through the CESAR project, but where future developments are rapidly redefining requirements

**Fig 12: Generic Business Model**



### 3.1 Commercial Issues

There are a number of fundamental commercial issues to be explored, which will form the basis for some key recommendations for quality improvement. These are issues regarding:

- Service scheduling
- Customer service planning, product and service definition
- Reservation processes
- Loading and departure
- Arrival procedures

***It is intended that this issue analysis is an on-going effort, and hence the issue analysis provided in these sections are not the end-product but only serve as examples of the many issues that will evolve and that parties themselves will be bringing into the discussion.***

#### 3.1.1 Service Scheduling and Contracting

In order to initiate a CT service, UIRR members confer with the national railways on a corridor-by-corridor basis.

This process involves determining trade flows and derived demand as conditioned by various price levels, as an input for determining service and agreed cost levels. Rail capacity can then be purchased and at the end of this process the agreed timetable can be published.

The three key issues that have been defined by both UIRR members and the national railways involves the way in which new services are requested or existing ones modified and how the plans are implemented:

1. There is a long lead time for service planning required when ordering rail capacity, often only possible two or four times per year, when the railways change their schedules

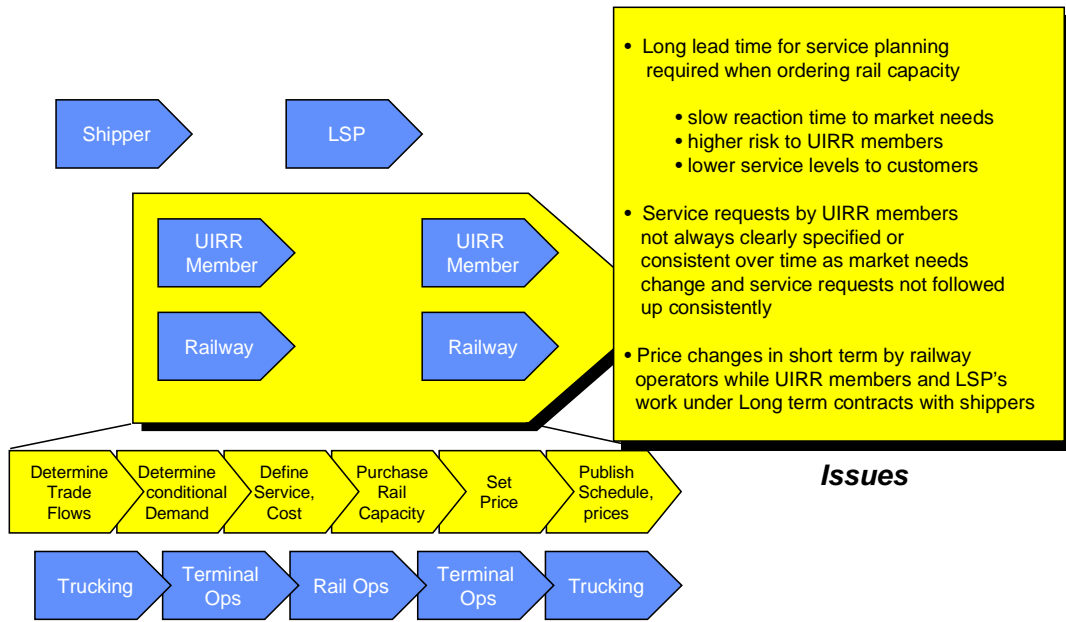
**Table 13: National Timetable Changes, 2000/2001**

|                               | Austria  | France   | Switz'd  | Germany  | Italy    | Belgium  |
|-------------------------------|----------|----------|----------|----------|----------|----------|
| Sept 23 <sup>rd</sup><br>2000 | <b>X</b> |          | <b>X</b> |          | <b>X</b> | <b>X</b> |
| Nov 4 <sup>th</sup><br>2000   |          |          |          | <b>X</b> |          |          |
| Dec 2 <sup>nd</sup><br>2000   |          | <b>X</b> |          |          |          |          |
| Jan 28 <sup>th</sup><br>2001  |          |          |          |          | <b>X</b> |          |
| June 10 <sup>th</sup><br>2001 | <b>X</b> | <b>X</b> | <b>X</b> | <b>X</b> | <b>X</b> | <b>X</b> |

This has consequences for the UIRR members:

- a. Higher risk to UIRR members when market changes occur, either in having too much or too little capacity
  - b. Lower service levels to customers, in not being able to respond to their changing needs
2. Timetable changes are not fully coordinated between railway companies; for instance, German schedule changes are on November 4, France on December 2, and Italy on Jan 28, requiring further changes to working schedules, and confusing customers. Progress is being made however, in the Train Forum Europe which has achieved that 10<sup>th</sup> of June 2001 will be the first time all European railways change their time tables together; the next joint time table change thereafter will be 14th December 2002
  3. Service requests by UIRR members are not always clearly specified or consistent over time, as market needs change, creating complications. Aspects of mutual uncertainty include
    - a. When to start the service, and when to end the service, and how much lead time the railways need for making their commitments
    - b. How many wagons to make available, and what rules apply for adding wagons later on, perhaps on the same day of travel
    - c. What weight to be pulled, and what the weight limits are
    - d. What routing and train paths are required for commercial reasons and what routing and timing is best for operational reasons
  4. Railway operators do not follow up Service requests by UIRR members consistently; parties complain of requests not being responded to, or of only a very late response
    - a. Some parties complain of a complete lack of response to their service requests ("...we get no phone call back...")
    - b. Some parties complain they sometimes have to wait weeks or months before getting confirmation of their service request from the railways
  5. Since logistic service contracts are set for up to 4 years, and railway operators change not only their schedule but also their prices 2 –4 times per year, there is significant exposure for UIRR members and LSP's

**Fig 14: Service Scheduling & Contracting**



These issues are real and to be expected in a fast growing and changing industry. The UIRR client base, the shipper and his LSP, is undergoing fast change and growth, and this causes instability in a system that inherently prefers stability and long term planning horizons. This is not unique to the CT industry, but is increasingly also applicable to the CT product.

**3.1.2 Customer Service Planning**

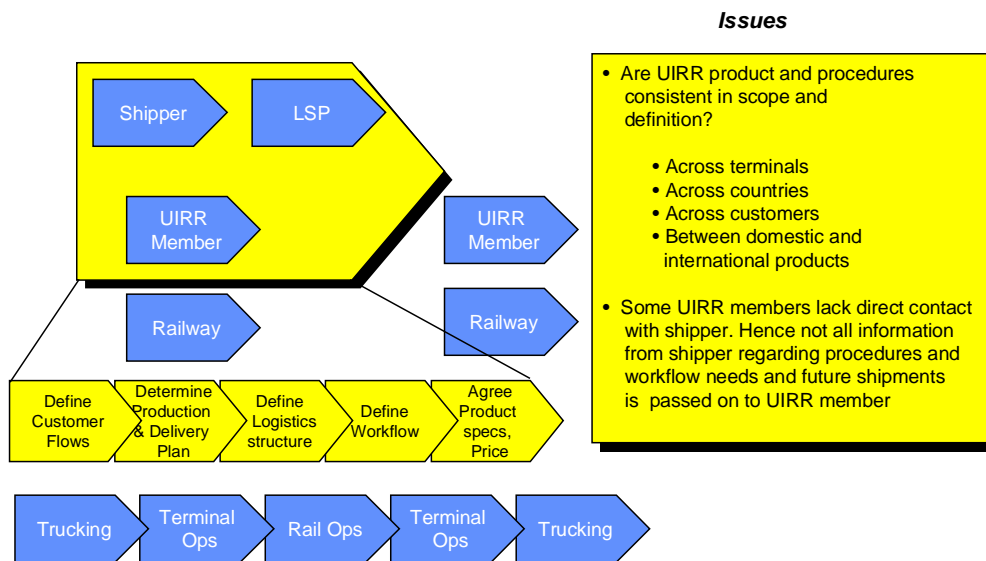
Based on a contracted schedule the key UIRR customer, the LSP, approaches his clients to define a service package for his logistics needs.

Based on customer flows, and subsequently the production and delivery plan, a logistics structure may be defined. Subsequently, the workflow between the manufacturer and the LSP and the UIRR member can be discussed and defined. Only then can the CT product in terms of quantity and flows, timing of pick up and information exchange and price be agreed.

Two key issues are emerging:

1. Are UIRR products and services consistent in scope and definition?
2. How close can UIRR members get to the end user when the LSP has the commercial control over the relationship?



**Fig 15: Customer Service Planning**

***From discussion held with UIRR members it is evident that not all product elements are equally well defined or formalised. A product is more than a schedule and a freight bill.***

Increasingly transportation products are becoming integrated and professionalised, and more strongly workflow and information based. But even the schedule is a problem:

- The schedule should be clear and transparent as to routing and waypoints, to give the CT user maximum flexibility in flow planning. Recent surveys done by IQ for the European Commission show that even for regular customers of CT, the information about timetables and features and alternatives is not easy to understand. Indeed, irregular and new users (which is the purpose) will have even greater difficulty understanding the service, and particularly knowing the changes in the schedule, as referenced above, as well with respect to scheduling <sup>2</sup>
- Latest allowable booking time must be specified, and made consistent for each CT service provider; not only booking time is significant but also booking mode – phone, fax, EDI, internet - and how far in advance the space can be reserved as well
- Latest allowable shipment delivery time at terminals must be clear, for each type of product; inconsistent procedures across terminals cause confusion and delays
- Standardised documentation and shipment specification therein must be consistent

<sup>2</sup> IQ, work package 3 August 99 project nr. PL 95 313

- Information provided to the customer is increasingly becoming a standard part of many transportation products and must be made clear up front, also as to costs
- Speed of availability of shipment at the arrival terminal is a critical determinant of the product
- Agreements as to no-shows and associated refunds and charges must be clear and enforced

Distinction must be made between standards for the industry and the product as provided by each individual UIRR member. Standards must be broad and clear, but must not infringe on ability for competition to emerge between UIRR members on service, price and quality.

*For a number of years now, the air cargo industry, through IATA has been struggling with precisely this issue, to standardise all processes and procedures across the industry, or to compete amongst themselves by having better and therefore different procedures. The issue is still unresolved.*

*It is clear that eventually the operators have to choose, but at this stage we would advise that focussing on a baseline quality target as an industry is the first priority, to create a stable platform on which parties then can choose to deviate from for their own purposes.*

More fundamental to even being able to formulate the required product specification is having close contact with final customers themselves. This varies greatly across UIRR members. In some countries the LSP fully controls the relationship with the shipper, and in other countries – and within some industries like chemicals - there is a true collaborative structure and UIRR members talk extensively with shippers – together with the LSP's - to streamline the process.

### **3.1.3 Reservation Process**

Based on the schedule and the specific customer service plan, individual reservations can be made.

The LSP and the shipper will confer as to speed of service required and relative prices of different modes, depending on the nature and urgency of the individual shipment. Thus the order to ship is given to the UIRR member and the order is confirmed.

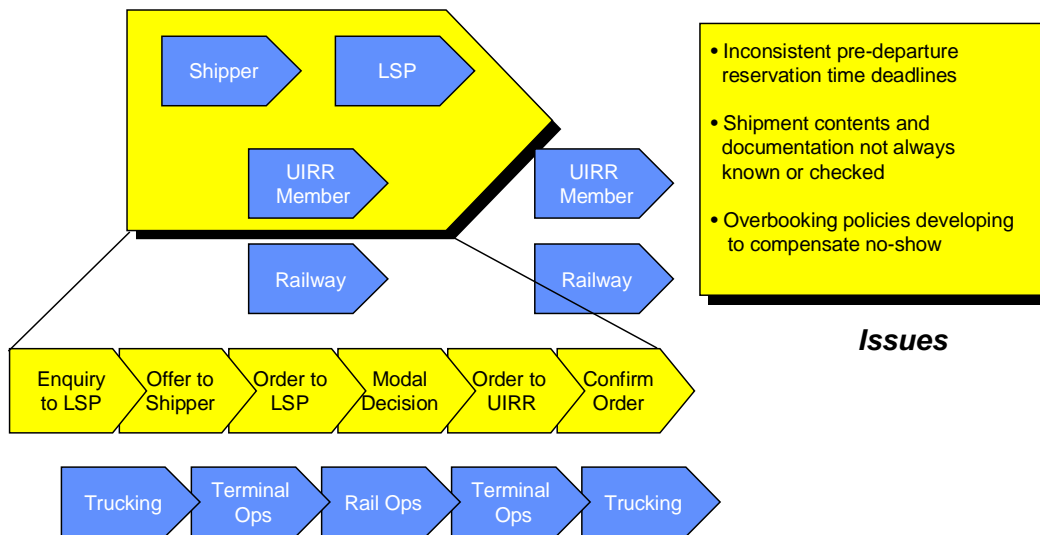
Several issues arise during the course of this process, some of which arise from the product definition, and some arise from customer behaviour.

- Differences as to inconsistent pre-departure reservation deadlines can lead to missed deadlines, misunderstandings and missed shipments

- Shipment contents are not always well documented and the required documentation isn't always included with the shipment. These are the normal human process errors that occur in any transport industry and mode, but do lead to missed connections. Particularly with dangerous goods, the right codes must be filled in and the document must be put in the right language. In other cases the weight filled in on the document is the agreed maximum weight and not the actual weight, which may even be more. Some railway operators have begun to actually weigh the loading units to ensure accuracy and compliance
- More serious is the phenomenon of no-shows and the resultant overbooking behaviour by the UIRR members. No shows are serious as they result in direct economic damage to the UIRR member if a no show fee is not part of the product specifications. Overbooking is equally serious in that it results in direct economic damage to the shipper and damages the reputation of the UIRR member and of the industry

As a result, one railway is now insisting that all reservations made by a specific CT operator be confirmed by fax. The implication is that reservations made by phone are repeatedly contested as to their validity and certainty, resulting in additional costs for one party or the other. **More seriously it implies that these reservation processes are not fully and formally defined, allowing for such discussions and misunderstandings to occur.**

**Fig 16: Shipment Reservation**



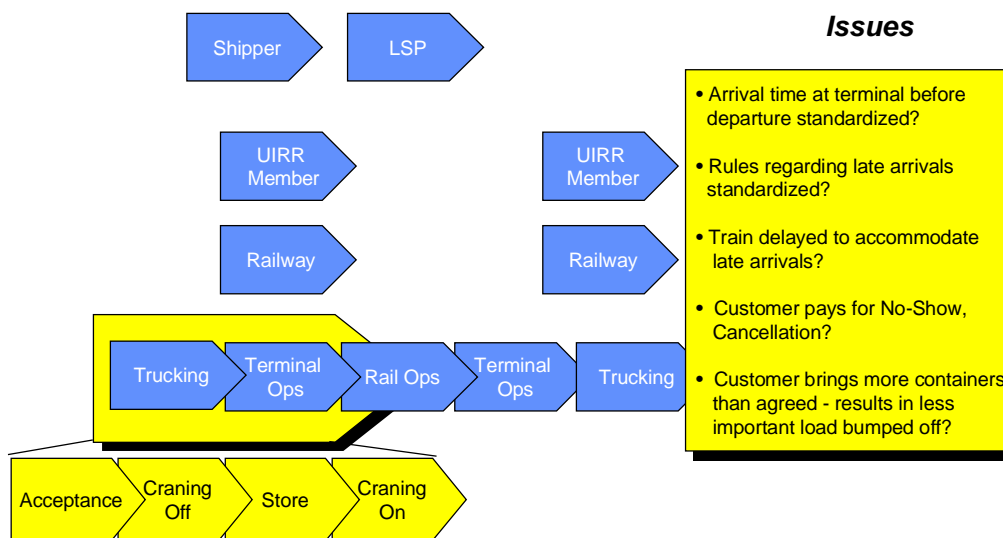
### 3.1.4 Departure and Arrival Procedures

There are in the transportation sector strong cultural factors that influence the systematic reliability of a service. Coming from a trade oriented past, traditional transport services have always been extremely customer oriented. Hence it is not unusual in shipping to delay a ship, an aircraft or a truck for the sake of a late customer shipment. The staff involved sees their customer representatives every day and have personal relationships of many years which influence behaviour the moment when something goes wrong. This of course works both ways and has been a key success factor in the transport sector for many years.

At the same time it raises issues regarding shipments that are late delaying the shipments that are not late, in a period when transportation is becoming more systematised and industrialised as a product and as a process occurring in an ever more crowded infrastructure environment.

Late arrivals cause delays and today that is an issue. At the same time LSP's sometimes bring more shipments than booked, which causes other (late) shipments to be bumped off the train.

**Fig 17: Shipment Departure Procedures**



By contrast we note the very strict culture operating in the parcel integrators and in the USA based intermodal operators, where there is a strict separation of authority between commercial processes and operational processes. The operational process adheres to a very strict deadline and after that moment no late parcel or truck is allowed on the aircraft or train departing. We note how UPS is, in the USA, a huge customer of railway services coast to coast, and has a very strict performance standard.

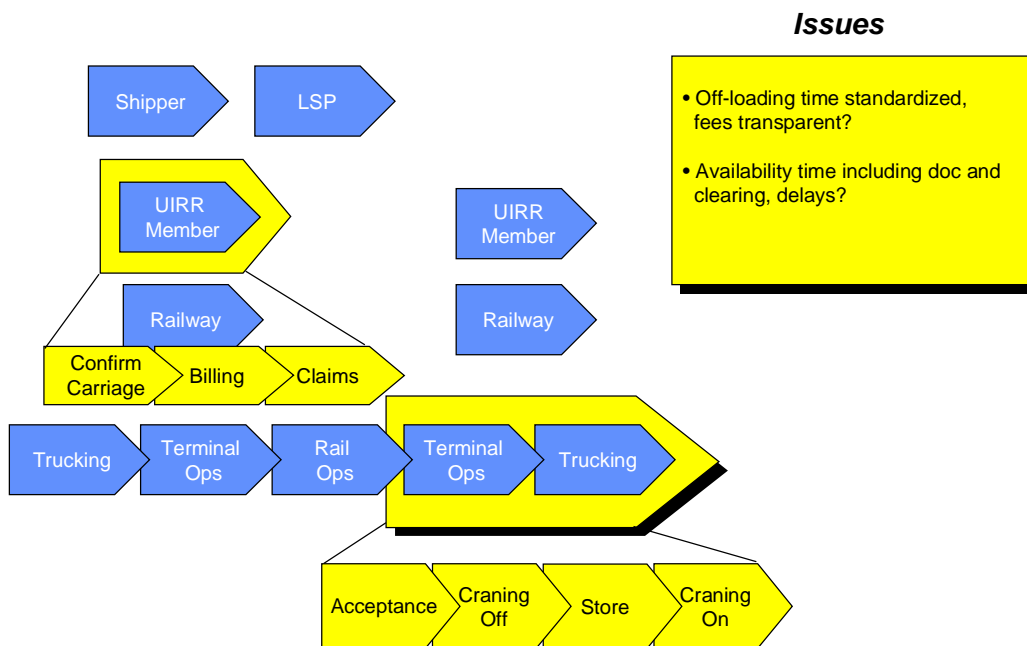
From the perspective of the UIRR members, the CT transaction is concluded when the shipment arrives at the terminal.

The arrival terminal accepts the shipments administratively, cranes them off the railway wagons, if possible directly on to the truck, or stores the containers or the trailers, to be again craned on to the next transport mode.

From a commercial point of view, few critical issues arise other than the desirability to have fees and charges made more transparent and consistent across various terminals.

Further issues emerge at arrival terminals with respect to driver waiting times to process documents so as to then be able to collect their container. In many terminals waiting times arise from badly designed document flows and customs procedures.

**Fig 18: Shipment Arrival Procedures**



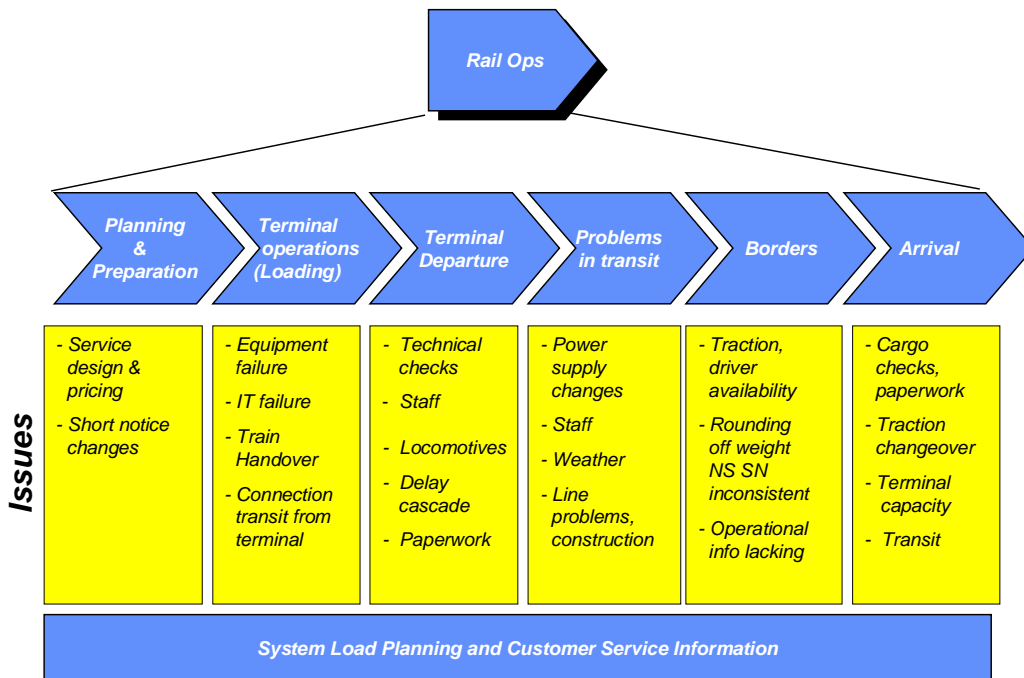
### 3.2 Operational Issues

The rail operations have been examined separately from the rather more commercial processes that surround it, and which were reviewed in Section 3.1.

The rail service can be seen as a series of phases, each with its own operational issues:

1. Rail service planning & preparation
2. Terminal and railway operations
3. In-transit and border crossing
4. Arrival procedures
5. System load planning

**Fig 19:**  
**The Quality of the Rail Operations leg can be negatively impacted in many ways**



The issues arising from each of these phases have been analysed and discussed with the UIRR members and several railway operating companies.

### 3.2.1 Rail Service Planning & Preparation

Planning & Preparation for new or revised rail services are characterised by inflexibility and long lead times – as already discussed from a commercial point of view.

#### 1. Service design & pricing

Prices quoted by the railway companies vary strongly from country to country. These charges obviously create large differences in service costs and may and do cause uneconomic routing or other modes to be favoured if neighbouring countries do not impose these same charges

- a. We note in the Netherlands (data 1998) the freeway charges were set at Euro 1.0 per train/km
- b. Other prices range from Euro 4 to Euro 7 per train/km for the use of the freeways

#### 2. Short notice changes

Service change requests can usually only be accommodated by the railway companies on introduction of new timetables, once or twice a year. This mirrors the commercial concerns around the same issue but is complicated further by more deeply rooted operational problems

- a. Rail freight services are normally rated low in the operational priorities, and can only use paths not reserved for passenger services
- b. Whereas customer driven changes take a long time to effect, railway operator driven changes are often imposed at very short, notice, due to for instance, engineering works
  - i. Certain tonnage limitations are imposed on the CT operator after acceptance of the train by the railway operator, resulting for one railway in claims of up to Euro 250,000 for 1999 alone
  - ii. Repeatedly at quality meetings, parties discuss the need for better communication between CT operators, railways and the newly independent infrastructure management entities now being separated from the railways as independent authorities

### 3.2.2 Terminal and Railway Operations

Terminal Operations for loading and departure from the terminal can be influenced negatively by various factors and by multiple potential disruptions:

- The terminal will not, in many cases, be owned by the CT operators, and they will therefore not be able to influence the reliability of loading of equipment and other facilities like IT systems
- Lack of supervisory staff in particular is reported to occasionally have particularly strong effects on the terminal's ability to function properly
- Incorrect train marshalling and information handover may have unforeseen consequences at the train's destination, particularly if the train is to be separated to form local distributor rail services
- Incomplete or incorrectly processed documentation can delay departure or may generate problems at the train's destination

Specifically we note the following causes of delay, which are a combination of the above factors, **and point to a lack of clear definition of responsibilities between the parties:**

- Delay due to open valve on a tank wagon, where the railway operator refuses responsibility and the LSP/haulier/forwarder claims it is the railways that are responsible because they accepted the load as ready for carriage
- Delay due to CT operator asking railways for more wagons to be included in a particular train, causing delays due to need for re-marshalling and configuration of the train
- Repeated interventions by CT operator to challenge the decisions made in the dilemma between on-time departure and the inclusion of the last wagon or container, still en route to the terminal
- Contradictory reservation then cancellation of railway engines by terminal operator, who of course is not a party to the contract, but acting on own accord and without the proper authority to do so

***As stated repeatedly, the primary cause of non-quality is the lack of drivers and locomotives at the departure terminals. And as we shall note again later, at border crossings.***

***The single biggest cause of delay in 1999 (16% of the total recorded) was a lack of traction as ordered, and this may have many causes. A probable factor is a lack of priority given to freight service, as indeed,***



***because of the long lead times required by the railways themselves, the requests are known long before departure date.***

***Other causes do exist such as information gaps in specifying equipment such that sometimes the locomotive provided is not strong enough to pull the train as loaded.***

***Traction is the combination of locomotives with their drivers, and indeed there is a complex dual problem of lagging investment in the equipment and lagging recruitment of staff. Several railways have noted they are hiring but have equally noted that a lot of the hirings are to replace retiring staff, and when hired they still have to undergo two years of training. Hence, there is a long lead time to solving this problem.***

***The total quality problem is compounded further by a lack of wagons to be made available for loading. Here too there is a lack of investment, and ironically, the lack of investment in locomotives and drivers is causing a requirement for even more investment as late incoming wagons have to be replaced with spare wagons, also to be purchased.***

***Here we see the vulnerability of the system is increasing, and one problem is causing other problems and in the process is causing even more of the scarce investment funds to be required to compensate for it.***

***We can only urge all parties to fully focus on this viscous circle of deterioration of service quality and economic waste, and on the lost opportunity, and place it high on the political agenda.***

### **3.2.3 In-Transit and Border Disruptions**

The in-transit and border disruptions are probably one of the most critical aspects of the whole CT quality challenge, and also one of the most difficult to solve. A number of key issues emerge:

- The need to change locomotive involving more than one railway company, whether due to border crossing per se, or voltage changes (or both) clearly introduces the same major vulnerability of missing drivers and locomotives into the transport chain for a second time. Indeed, here again, missing drivers and missing engines are a major problem of non-quality. ***The fact that national CT networks do achieve high levels of reliability, even to the point of their being used by parcel delivery firms, means that locomotive changes per se are not the problem, but rather the interface between two national railway companies is problematic and has everything to do with commitment, intent, availability and priorities***
- We have also noted that the rounding off rules defining weight restrictions vary between railway operators, resulting in the off-loading

of a wagon so as to make the train comply with maximum weight for a given locomotive

- Weather problems, particularly in Alpine passes, disrupt winter services, which points to a lack of back up and contingency planning for such events, which are, after all, predictable. It also points to a potential lack of routine trackside maintenance for the clearing of shrubs and leaves off the tracks that can be equally cause disruptions
- Engineering works and accidents result in temporary speed or weight restrictions or perhaps even diversionary routing, without adequate notice being given. In some instances at the Modane tunnel, this has resulted in a 20% reduction in allowable weight (from 1050 tons to 870 tons)

### 3.2.4 Arrivals

On arrival, a number of complications may delay the actual availability of cargo, the availability of equipment, and hence undermine the CT product commercially and cause financial damage to all parties involved.

- Paperwork may be missing due to bad handover earlier in the process, delaying availability to the haulier for delivery to the end-user
- Terminal capacity may be such that planning is too tight to accommodate delays and unexpected peaks
- As a result of these delays, connections with on-going local trains may have been missed
- Most critically, a delay of an arriving train means that wagons are not available for loading of the new outbound journey and CT operators have to acquire or finance spare wagons so as to compensate and not have the outbound train be late as well. From the railway side, additional locomotives are needed as well, whilst from the terminal side an additional handling movement is needed (from truck to terminal to train, instead of directly on the train)

### 3.2.5 System Load Planning

Some of the issues discussed are major and quite structural, and some are trivial, and yet all contribute to the overall reliability of the service. Operational problems tend to accumulate, such that early disruptions cause multiple disruptions later on in the process.

***It is important that all parties remain aware – under current political and operating conditions - of the interdependence of the system on each other's performance.***

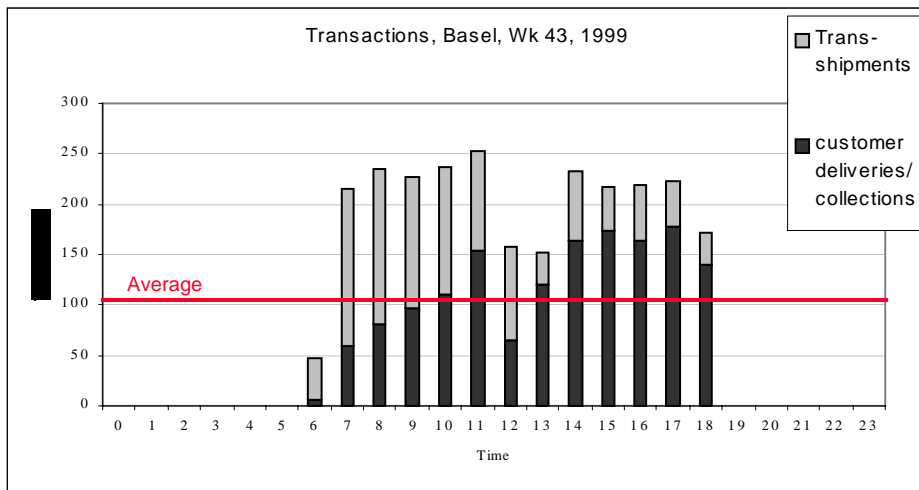
In particular, the peak load problem deserves attention, as it permeates through the entire system, and refers back also to the starting point of the process, at the departure terminal, and of course to the scheduling.

Due to various labour and regulatory restrictions, work at the terminals and at the receiving shippers' locations is limited so as to often preclude all-night operations. This creates peaks at higher levels than would have been the case if there were no restrictions. Of course, there are some natural peaks in any transport system, as the departure of the train is in itself a deadline, and as such creates a peak.

We see typical terminal operations beginning at 0600 hrs and ending at 1800 hrs so as to comply with working rules.

Within these limits, we see peaks forming around truck arrivals, train departures, train arrivals and truck departures as driven by in-coming and out-going traffic.

**Fig 20: Typical Terminal activity pattern**



Several peaks form, and the overall workload is obviously higher than if the entire 24-hour cycle could be utilised. The average workload per hour is 107 arrivals and departures per hour, and we see peaks forming at around 250 per hour. Such peaks increase the costs and the vulnerability of the system and imply an under-utilisation of the assets.

We understand several attempts have indeed been made to create a continuous workflow across 24 hours, but these have been frustrated by local government, or by unions, or by customers not wishing to keep their facilities open at night.

Today, DB estimates that these peaks, and the resultant congestion at the terminals, lead to an increase of traction cost by some 15%.<sup>3</sup>

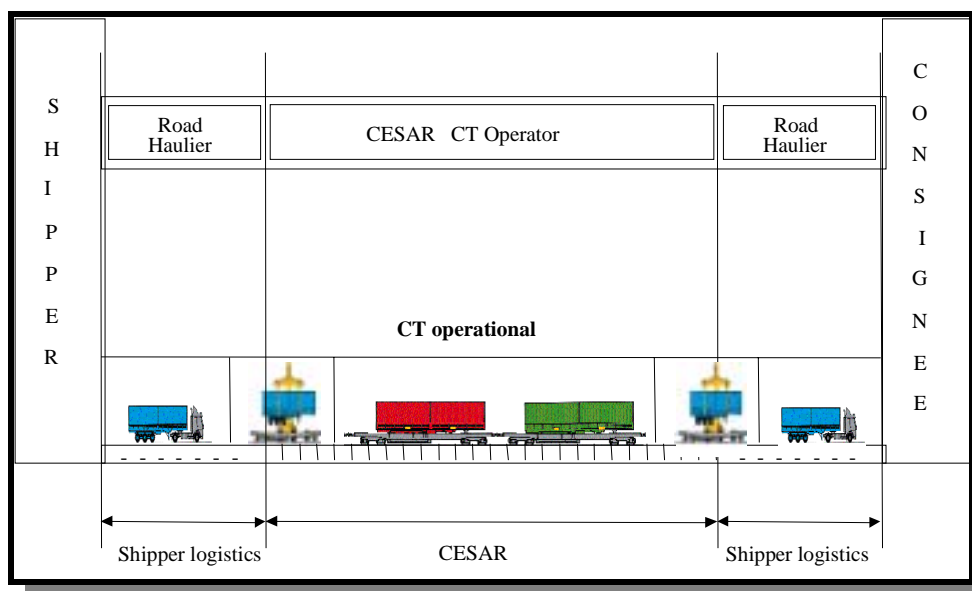
<sup>3</sup> IQ Work package 3, August 99, p22.

### 3.3 Information Technology Issues

As we have seen in the discussion above, information is the glue that integrates the process. Great strides are being made in information processing and the technologies available to do this. The Internet is proving to be a powerful platform for multiple parties to procure goods and services including logistics services. The Internet, through these procurement platforms, will also provide a new medium for transparent service control and for shipment tracking and tracing for customers.

In this respect, the UIRR is making strong progress in developing the CESAR system, which represents a major step in linking all the parties in the chain. CESAR will - through the Internet – provide basic functionality for booking and for tracking and tracing.

**Fig 21: Role of CESAR in CT**



*CESAR in the combined transport chain*

There remain some significant challenges to be overcome by CESAR and in general, as we are dealing with a moving target: the demands shift and the world wide norms and expectation levels shift at the same time as CESAR is being rolled out:

- 1) CESAR is operational for an initial group of users as of November 6, 2000, but terminals have to be linked centrally by UIRR CT operators and certain contractual and commercial issues remain to be resolved
- 2) Data input and output from CT operators – i.e. booking processes - are now reasonably standardised

- 3) There are still several different EDI systems on the UIRR CT operator's side, although a stronger commonality is emerging
- 4) Insufficient data exchange between railways and CT operators, which is a gap that can be solved in a number of ways, manually, or eventually by such means as a common railway booking system. There is extensive experience in the air cargo industry on which to base such a system and such knowledge is readily available

The scope of the customer IT needs is evolving, from basic tracking and tracing to full shipment life cycle control, and beyond, into full logistics workflow management with intelligent agents steering events.<sup>4</sup> This will be a major leap forward for all parties and will require a commitment to quality at the level of aligning interfaces, workflow and message standards, but will also allow for service differentiation as each party sets its own norms for advance booking, reselling of capacity through the logistics exchanges emerging, and for new levels of customer information.

We see the scope of the evolving IT needs as encompassing four key elements:

- 1) Deeper penetration into the user organisation, with the information being required not just by transport managers but by different users within each of the product BU's being affected by the delays
- 2) Greater complexity as to the entity being planned, booked and followed, to include not only the wagon but also the container on the wagon and the contents of the container at the pallet level
- 3) Users will want to include its progress through the terminals, to include greater scope in terms of the actions being followed
- 4) Status is in itself not interesting, only exceptions, and more so, the user wants to see the CT operator already having fixed the problem and see the new ETA

With CESAR, a huge step is being taken to facilitate these developments and create a greater, network wide visibility of the operational problems as they occur, allowing staff to react more quickly to correct them and hence provide better service.

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<sup>4</sup> Intelligent agents are mini computer programs that sit on top of standard programs and trigger actions based on an "event" which is formally defined. For example an "event" may be a train being more than 2 hours late at a certain point; the *intelligent agent* will check for the event as occurring or not, and if it occurs send messages to various parties to act on, inform the customer, reschedule onward transportation etc..

## 4. The Cost of Non-Performance

The nature of the causes of non-performance in the CT transport chain are multiple and complex. Creating a top class CT product in Europe will clearly take tremendous effort and will cost significant amounts in investment.

Clearly, decision makers will need to know whether the effort and the investment are worth it.

The cost of non-performance can serve as a basis for such decision-making, although, of course, as with any economic decision, such estimates are always suspect and subject to many interpretations. Nevertheless, the case is overwhelming, and hence any adjustments to the estimates cannot change the key conclusions.

The key components to the cost of non-performance are

- Lost revenues
- Staff and Asset Utilisation
- Claims

The total cost of non-performance is significant and is an indication of the lost opportunity, the potential of the investment that could profitably be made, and of the potential reduction in price that could be achieved if, indeed, these costs were avoided.

### 4.1 Lost Revenues

The value of lost revenues is clearly significant, and the most insidious because revenues lost this year can never be recouped: there is a perpetual revenue stream that would have been captured under normal conditions that is now foregone.

Stating the annual loss is equally problematic as incremental revenues also generate incremental costs, and in the long term, generate full costs.

The core of the opportunity lies in the fact that road and rail traffic in the Alpine routes continued to grow as CT traffic dropped. Meanwhile CT traffic had shown a sustained 10% growth over the previous years. Had CT traffic continued this trend some additional Euros 200 mln. in revenues would have been earned during 1998 and 1999.

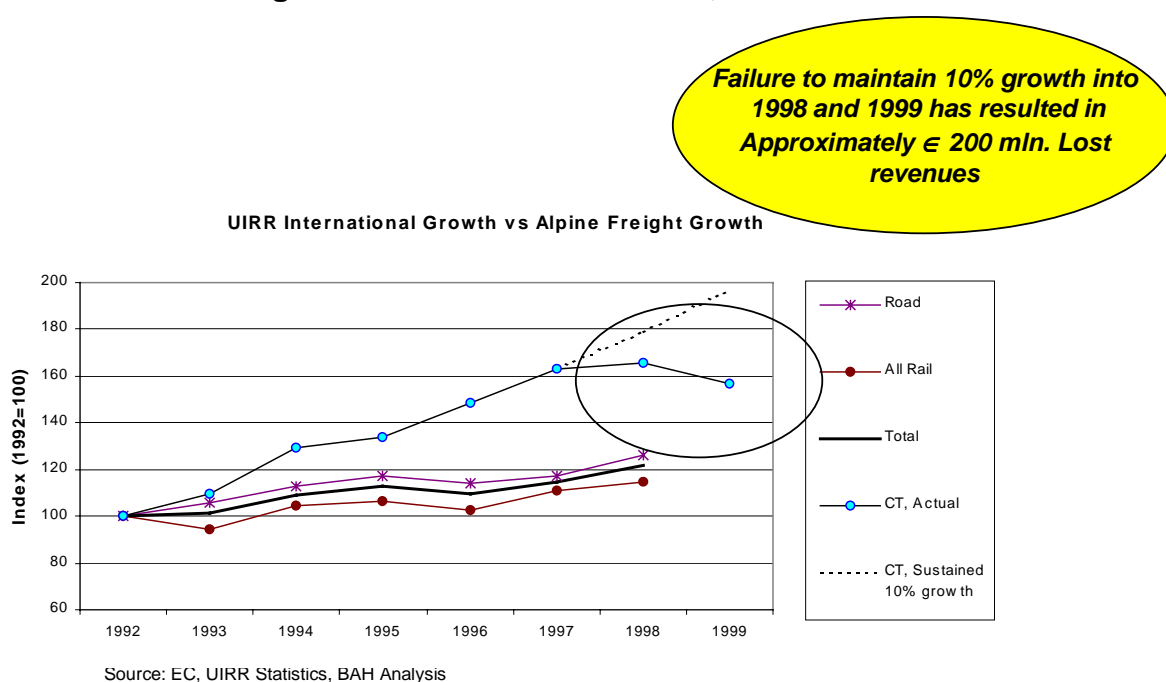
Very conservatively speaking, this might have generated Euros 4 mln profits assuming comparable profit margins on higher turnover. However, if service quality levels had been higher, then a possible spin-off could have been higher margins, triggering a further beneficial effect on overall profitability. Assuming a margin increase from 2% to 6%, a profit of Euros 12 mln might

have been achieved. An alternative approach is to view these surpluses as additional re-investable net margin rather than profit, leading to a steady improvement in the equipment and systems used to support the CT product, and thereby facilitating further long term growth.

***It is realistic to envisage that before the drop in revenues flattens and picks up again, some Euros 500 mln in revenues will have been lost to the system.***

More insidiously, CT will always lag behind its potential of 3 years ago, and the lost profits accrue into perpetuity, unless a significant catch-up operation is implemented.

**Fig 22: Lost Revenue Potential, 1998/99**



***At the heart of the argument is the realisation that at a time of strong and sustained economic growth and growth in trade, the CT industry is unable to capture this opportunity and realise – on the basis of this development - the EU-wide goal of achieving a major shift in the modal split. The fundamental cause behind this lost opportunity is indeed a lack of staff and equipment, but also a lack of slots and rail capacity at various bottlenecks that will only grow worse as the growth continues.***

***One argument to explain the decline in quality for CT services is that the rail industry has traditionally been geared towards static or slowly declining demand for its services. This results in only slow recognition of genuinely consistent upward trends in demand, and a consequent delay in providing the equipment necessary to service that demand. Thus the EU member states and their national railways have been slow to provide the additional infrastructure capacity, whilst the railway***

***operators themselves have also been slow to recognise the need for additional locomotives and drivers.***

***Indeed, significant, additional costs relate to damage to professional image for CT as a result of poor service quality, and lost goodwill from customers, which puts in doubt the ability to regain lost ground unless a truly concerted effort is launched to address the problems.***

## **4.2 Staff and Asset Utilisation**

Delays cause add on costs in terms of staff waiting and having to work overtime while the incoming train is still underway, in terms of the locomotive operating more hours than anticipated, and in terms of needing additional wagons on which to load outgoing cargo.

The costs of these can be summarised as follows:

- Some 54,000 hours of delay impact on international CT services in 1999 would have generated additional staff costs of around Euros 3.3 mln

For example, HUPAC's assessment is that their annual additional terminal staff cost amounts to some 240,000 Euros. Additionally, they spend an estimated 180,000 Euros per annum on additional administrative costs associated with disruption. Combined, the delays impacting HUPAC alone cost some 520,000 Euros per annum

- Assuming a “power by the hour” rate of Euros 118 for locomotive usage, the same number of hours of delay would cause additional traction costs of Euros 6.4 mln
- The additional investment required to provide extra wagons to compensate for late arrivals of incoming equipment represents an annualised additional cost of Euros 10 mln
- Empty stock movements as a result of out-of-place wagons cost an estimated 1 mln Euros per annum

Already this represents an annual cost of Euros 20.7 mln. One way of looking at the scale of this cost is that it is enough to finance and operate a fleet of 35 freight locomotives. Given the market opportunity that exists today, this might appear an attractive proposition, which would go a long way to alleviating some of the problems discussed here.



## 4.3 Claims

The impact of claims is not consistent across UIRR members, but is becoming a significant indicator of the economic losses of shippers.

Several factors influence the estimate of the losses, and we have to conclude that in fact the estimate given in the context of this investigation is probably significantly understated.

These factors include the following aspects:

- Most contracts between UIRR members and their rail service providers preclude the possibility of claims for poor performance
- Where incentive contracts are in place they allow for penalty payments of up to 6% of the agreed price
  - Some incentive mechanisms only apply to the trunk leg
  - Further exemptions include strike actions and “additional services”
- There is no automatic mechanism for payments by UIRR members to their customers in respect of service delays, but assuming 1-2 % of UIRR international transport turnover is lost in claims, such would give a current loss of around Euros 8 mln. per annum

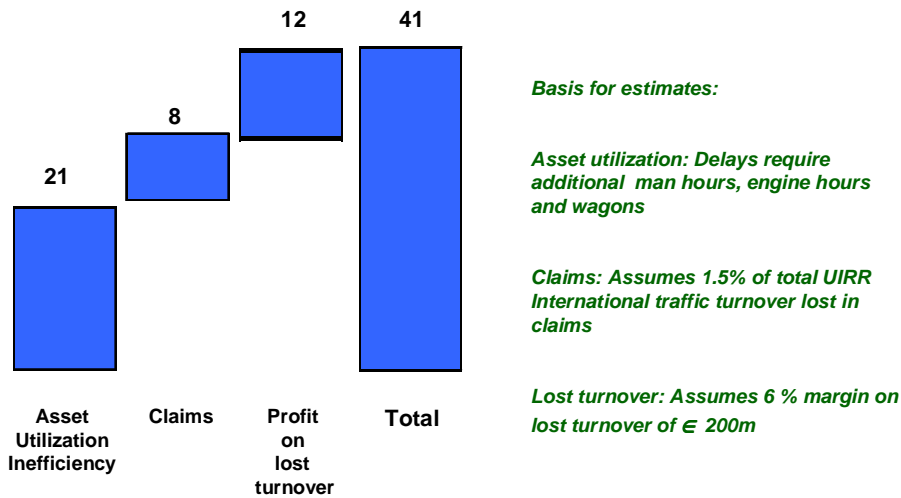
Note also that considerable charges are levied by railways to CT operators for the cancellation of trains that occur as a result of delays by those same railways. Hence, the total value of the claims may be under or over stated, and at this stage there is little insight into the losses from claims placed on the hauliers and LSP's by the end-user customers.

### 4.4 Total Cost of Non-Performance

On an annual basis the cost of non-performance may be estimated to be some Euro 41 Mln, as a result of inefficient asset utilisation, claims, and the annual lost profit from lost turnover.

**Fig 23**

**Cost of Non-performance for UIRR-sponsored International CT Operations, 1999 (Million Euros)**



***Above all, the key conclusion to be drawn is that the UIRR membership, for reasons of lack of quality, is not able to capitalise on the strong market currently developing in the European transport arena.***

Complaints are expressed by manufacturers that they cannot get truck service and neither can they get rail service in sufficient quantities to meet their needs. And when they do use CT, they are disappointed and hence rail as option to replace truck again fades, even though they would gladly use it.

***The overall – conservative – estimate of annual cost of non-quality of Euro 41 mln represents some 6% of total international UIRR revenues of around Euro 650 Mln. Avoiding these costs could alternatively lead to a similar reduction in price, which in turn could attract new traffic and make the whole system – with a high fixed infrastructure cost – vastly more economic in use.***

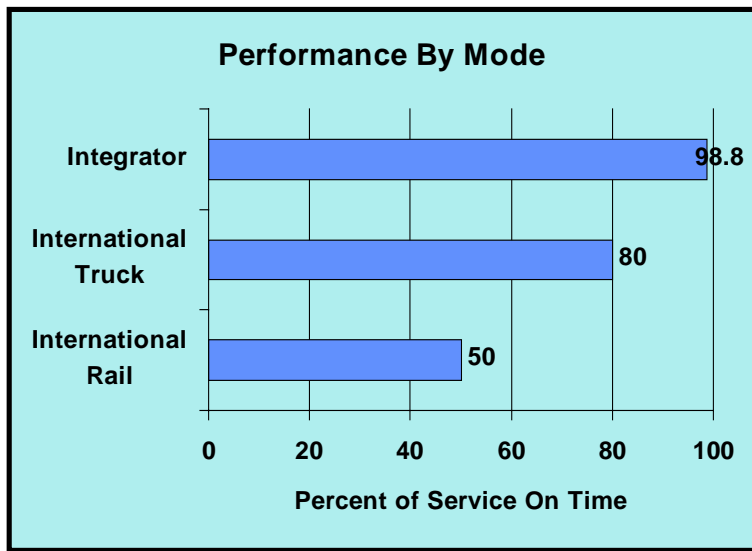
## 5. Market Requirements

The final customers of the CT product are the manufacturers who need to bring their goods to market or supply their factories with incoming materials. Supply chain management is undergoing rapid changes and the transport industry must respond to the new requirements emerging from these changes.

There is a considerable challenge to be met by all modes of transport to be able to meet the new requirements. As supply chains get longer due to centralised production and as delivery cycles get shorter due to lower stock levels and more frequent replenishment needs, so too does the opportunity for rail increase, but equally so does the reliability of all transportation modes face stricter requirements.

Today, the integrators (such as DHL, Federal Express, UPS, TNT) who have requirements of up to 98.8 % on-time delivery, set global reliability standards. By comparison, an average road haulage company achieves 80% on-time delivery and as we have noted, the international CT product today is currently only 50% on time.

**Fig 24: Reliability is the Priority**



Source: Bravo

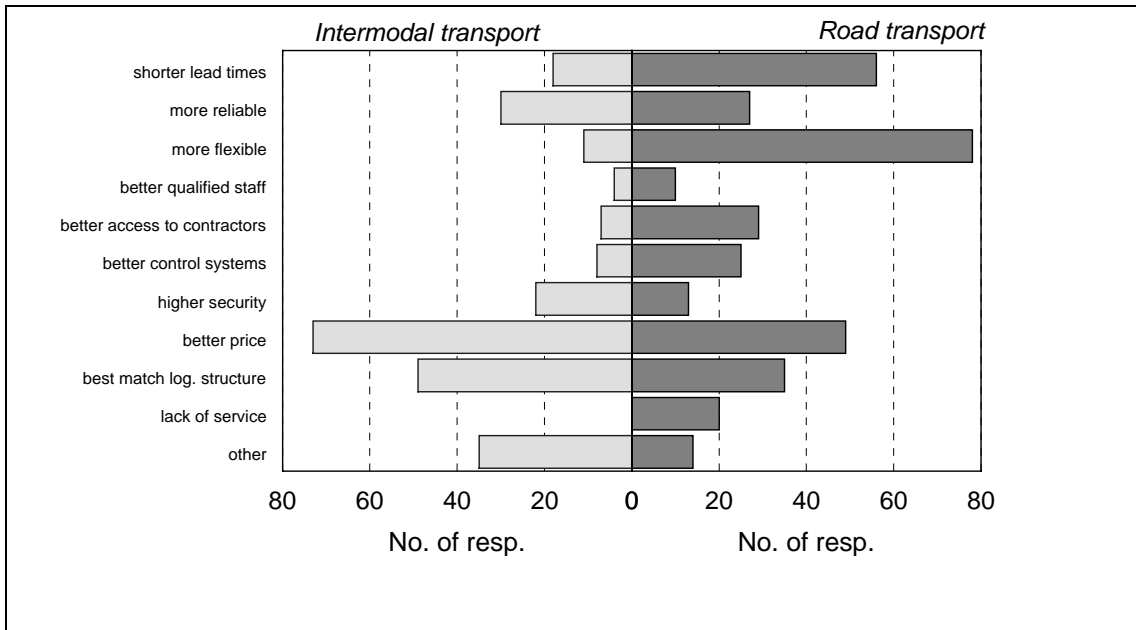
Depending on the goods carried, these performance differences may or may not be critical, and a certain self-selection occurs in this respect. Nevertheless we have seen the drop in traffic for the CT product, even when there is a supply shortage in the road haulage industry.

**CT is, however, very well positioned to be successful, if executed well. We note the success of DB and Kombiverkehr's Kombi-Netz 2000+**

**which provides a domestic CT network in Germany with an average on-time performance rate of 90%. The performance is without doubt good enough to attract a domestic parcel delivery service as a key customer.**

While typically road transport has advantages as to flexibility, and lead-time, the CT product scores well as to price and fit with the customers' own of infrastructure such as terminals. Ocean containers can fit straight onto rail wagons at ports, to complete the last leg by road near destination.

**Fig 25: Decisive factors in the modal choice between intermodal and road Transport (number of respondents).**



Source: The IQ Shipper Survey 1999

The needs of customers of the CT product depend also greatly on the specific segments being served. These segments can be categorised as:

- Maritime hinterland flows
- Continental hazardous goods
- Continental perishable goods
- Shippers
- Forwarders and road hauliers

Each of these segments has indicated in the same IQ Survey what their needs are and where the CT product needs improvement.

1. The maritime hinterland segment, finds cost the most important, but misses flexibility, control and reliability

2. The continental hazardous goods segment finds control, safety and security important and the CT product scores well on that dimension, but finds it lacking in control and flexibility
3. The continental perishable goods segment finds cost and control important and find CT lacking in flexibility and accessibility, as their customer base is mostly rural
4. The shippers find cost, lead time, reliability and flexibility important and find the CT product lacking in flexibility; time is problematic depending on the region and corridor, as often trucks suffer from congestion, tunnels, and long haul restrictions more than rail does
5. Forwarders and road hauliers find lead-time and flexibility important and find CT lacking in flexibility as well as in reliability

***The overriding message from the various segments summarised here seems to be that cost is significant, but lead-time, reliability and the associated controls are very critical indeed. Speed is itself not a distinguishing factor as over the longer distance rail already has some natural advantages over road haulage, and over the short haul, speed is by definition not so critical.***

We concur with the IQ conclusion that the challenge is to provide low cost, smart and flexible shuttles on the medium distance routes of 500 km. or less.

CT already has a longer distance cost advantage over road after some 700 km. (some argue less). Hence the large volumes of medium distance traffic with a 400 – 700 km journey is the target where there are new customers to be found.

In this respect the various governments also have a strong role to play: the Dutch/German locomotives of Short Lines had to install four different safety systems to meet both Dutch and German regulations, at of course huge expense. Recent news reports suggest that the new Dutch Betuwelijn, a dedicated cargo line from Rotterdam to Germany is adopting a new safety system incompatible with all others, forcing all users to invest again to be able to use it. This would not appear to be in line with accepted policy to attain maximum interoperability.

It does not therefore necessarily follow that privatisation will exclude the possibility of at least a strong influence from governments: infrastructure will always have a strong public aspect to it in Europe, and here over-regulation or uncoordinated regulation can and does lead to significant costs being generated that make the CT product indeed a less competitive alternative from a user perspective.

## 6. Cases: Three Corridors

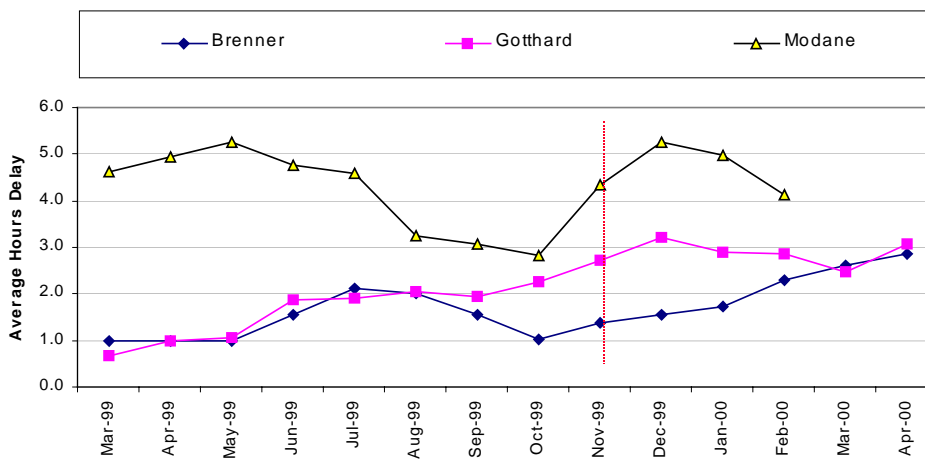
To test some of the issues discussed above, three key corridors were examined in some closer detail. The three corridors, through the Brenner, Gotthard, and the Modane, were examined as to quality, and quality management issues. We can see that all three corridors have the same or similar issues to deal with in varying degrees, and are applying some of the same approaches to solving them.

### 6.1 Quality

All three corridors have been suffering from increased levels of delays. The Modane corridor in particular has long delays, although the situation is improving somewhat.

**Fig 26**

**Corridor Comparisons (3-Month Rolling Average)**



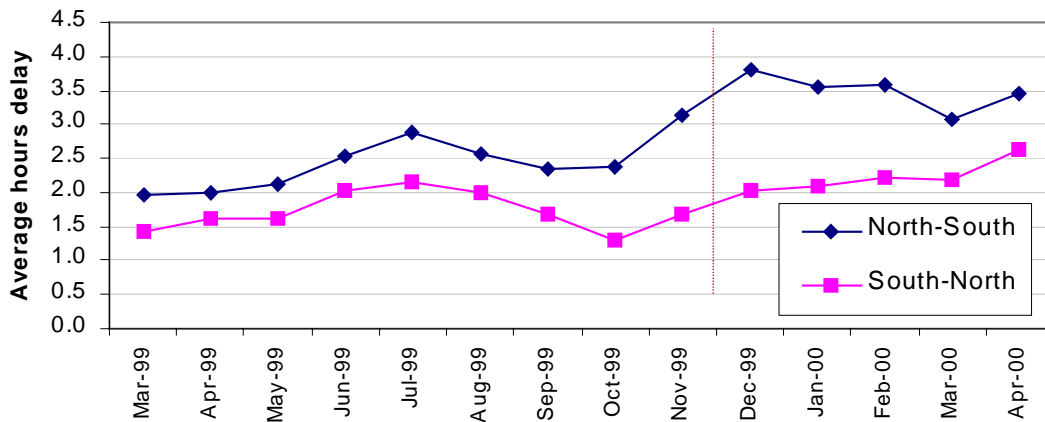
Source: UIRR Statistics, BAH analysis

It is particularly disturbing to note that while the situation in the Modane is improving slightly, the situation in the Brenner continues to deteriorate, as is the case in the Gotthard, after some improvement there as well.

Of further significance is the difference between northbound and southbound quality. Southbound traffic is experiencing significantly higher levels of delay, and consistently so.

**Fig 27**

**Key corridors delay analysis by direction (3-month average)**



When examining the three main corridors in detail we see indeed the same problems of missing traction and staff occurring with some differences in weight.

**Fig 28 Performance Per Major Axis**

|                                    |                                    | Belgium<br>from/to<br>Italy (Modane) | Germany<br>from/to<br>Italy (Brenner) | Germany<br>from/to<br>Italy (Gotthard) |
|------------------------------------|------------------------------------|--------------------------------------|---------------------------------------|--|
| <b>1 Force Majeure</b>             |                                    |                                      |                                       |  |
| 1.1                                | Inclency                           | 1%                                   | 4%                                    | 7%                                     |
| 1.2                                | External causes                    | 1%                                   | 0%                                    | 13%                                    |
| 1.3                                | National Strike                    | 0%                                   | 0%                                    | 0%                                     |
| <b>2 Terminal operator related</b> |                                    |                                      |                                       |  |
| 2.1                                | Crane                              | 0%                                   | 0%                                    | 1%                                     |
| 2.2                                | Overload                           | 2%                                   | 0%                                    | 1%                                     |
| 2.3                                | Various                            | 0%                                   | 0%                                    | 0%                                     |
| <b>3 Railway causes</b>            |                                    |                                      |                                       |  |
| 3.1                                | Anterior delays                    | 1%                                   | 11%                                   | 19%                                    |
| 3.2                                | <b>Missing personnel</b>           | <b>7%</b>                            | <b>20%</b>                            | <b>11%</b>                             |
| 3.3                                | <b>Missing traction</b>            | <b>26%</b>                           | <b>35%</b>                            | <b>14%</b>                             |
| 3.4                                | Railways' strikes                  | 16%                                  | 1%                                    | 8%                                     |
| 3.5                                | Sorting fault                      | 2%                                   | 11%                                   | 1%                                     |
| 3.6                                | Traction damages                   | 1%                                   | 2%                                    | 3%                                     |
| 3.7                                | Works                              | 4%                                   | 5%                                    | 4%                                     |
| 3.8                                | Divers                             | 9%                                   | 9%                                    | 16%                                    |
| <b>4 Various</b>                   |                                    |                                      |                                       |  |
|                                    |                                    | 30%                                  | 2%                                    | 2%                                     |
|                                    | <i>Number of controlled trains</i> | 2,050                                | 4,347                                 | 3,787                                  |
|                                    | <i>% of total</i>                  | 11%                                  | 24%                                   | 21%                                    |

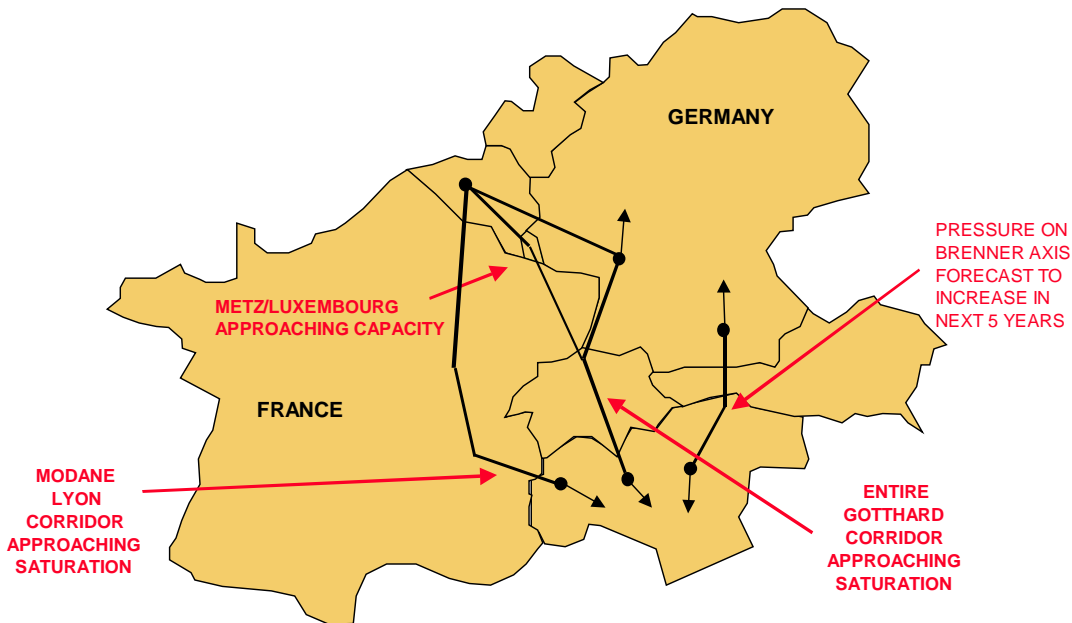
Some of these performance problems are organisational, and some are inherent in the bad weather, and some are incidental to specific situations. We will examine some of the more important operational and organisational issues and developments.

### 6.2 Physical and Operational Bottlenecks

The physical bottlenecks in these corridors are numerous but the main theme recurring in the reports from various UIRR members involves locomotive changeover points, usually coinciding with international borders, and these will be discussed in some detail per corridor.

Some key pressure points can however be seen and, when listening to the parties involved, can be anticipated. Hence, parties indicate the capacity in the Brenner pass will reach its limits in the next five years, and various other corridors are approaching saturation today.

**Fig 29: UIC Assessment of present and future bottlenecks**

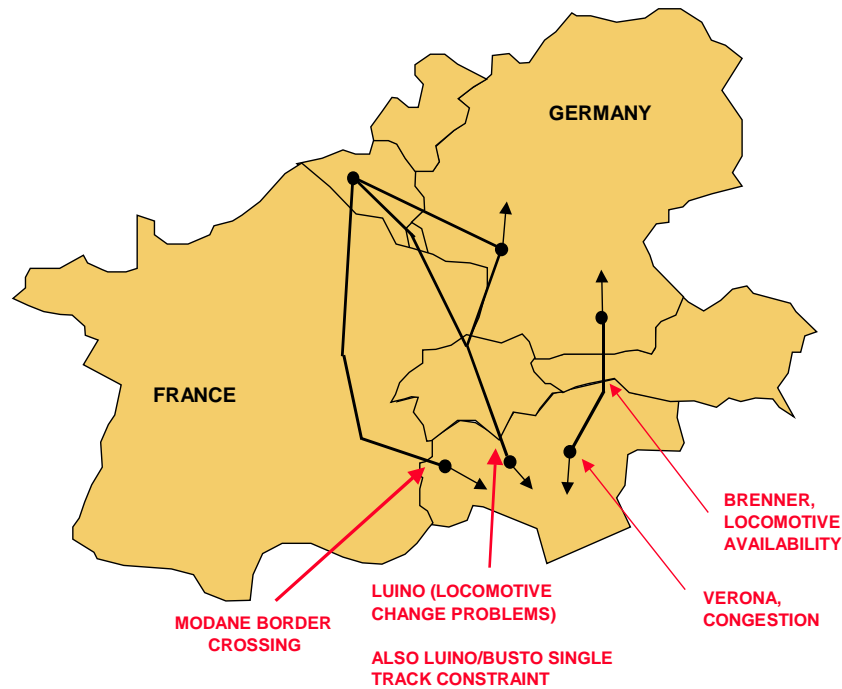


In one specific case, parties report that the change-over schedule at the border is made so tight, that the change-over time is too short. When an incoming train is late the path is sometimes lost and further delays occur as a result.

The primary cause of operational problems can be identified as the diversion of locomotives assigned for CT services to other services (such as passenger and conventional freight) that, in the eyes of the rail operators, sometimes may have higher priority status. Furthermore, non-availability of locomotives can be caused by late arrival of in-bound trains, i.e. by prior delays.



**Fig 30: UIRR MEMBER BOTTLENECK REPORTS**



**6.2.1 Brenner Corridor**

Detailed operational analysis undertaken on behalf of Kombiverkehr from June to September 1998 illustrates both the initial delay point and also the cause of initial delay for all Germany/Italy via Brenner CT trains.

*The analysis confirms that border delays are the biggest problem for southbound services, with Verona terminal departure being the biggest problem for northbound services. In each case, lack of locomotive is the usual delay cause.*

**Table 31: Detailed Analysis of Delays, Brenner Corridor, Summer 1998**

|  | Location of initial delay by corridor |                  |                |         | Percentage delay cause* |       |
|--|---------------------------------------|------------------|----------------|---------|-------------------------|-------|
|  | Munich/Verona                         | Nuernberg/Verona | Cologne/Verona | Overall | Lack of Locomotive      | Other |
| <b>Southbound</b>                          |                                       |                  |                |         |                         |       |
| Terminal Departure                         | 3%                                    | 7%               | 2%             | 4%      |                         |       |
| Arrival, Kufstein (Germany/Austria Border) | 3%                                    | 20%              | 5%             | 11%     |                         |       |
| Departure, Kufstein                        | 36%                                   | 15%              | 23%            | 21%     |                         |       |
| Arrival, Brenner (Austria/Italy Border)    | 11%                                   | 9%               | 12%            | 11%     |                         |       |
| Departure, Brenner                         | 47%                                   | 48%              | 58%            | 52%     |                         |       |
| Arrival, Verona                            | 0%                                    | 1%               | 0%             | 0%      | 63%                     | 37%   |
| <b>Northbound</b>                          |                                       |                  |                |         |                         |       |
| Terminal Departure                         | 96%                                   | 83%              | 56%            | 75%     |                         |       |
| Arrival, Brenner (Italy/Austria Border)    | 0%                                    | 2%               | 0%             | 0%      |                         |       |
| Departure, Brenner                         | 3%                                    | 2%               | 5%             | 4%      |                         |       |
| Arrival, Kufstein (Austria/Germany Border) | 0%                                    | 4%               | 4%             | 3%      |                         |       |
| Departure, Kufstein                        | 0%                                    | 0%               | 1%             | 0%      |                         |       |
| Arrival                                    | 0%                                    | 8%               | 33%            | 17%     | 64%                     | 36%   |

Source: Brenner Axis Quality Statistics, BAH Analysis, delay cause % adjusted to remove consequential delay

Table 31 shows that 73% of southbound delays were triggered at border points, with the corresponding figure for northbound services being only 4%. Two thirds of delays in each direction were associated with locomotive problems. Updated analysis for December 1999 shows a remarkably similar outcome, with 67% of all delays being caused by locomotive problems, of which the vast majority (61%) were caused on the Italian network. At the time of this reporting, it has been made known that now some 20 new locomotives are scheduled to be deployed of which six are now operational, and quality improvement has been evident according to Kombiverkehr.

Finally, it should be noted that although the Verona - Innsbruck corridor was not assessed as being close to saturation in 1998, forecasts of increasing rail traffic along this corridor have led UIC's Combined Transport Group to conclude that ***the corridor is likely to be operating in excess of 75% of its theoretical capacity by 2003, with potentially damaging consequences for the operators.***

### 6.2.2 Modane Corridor

The border crossing between Italy and France at Modane has been identified by Novatrans as a pinch-point, although the recent combined efforts of FS and SNCF to expedite CT train movements have also been acknowledged.

The UIC's Combined Transport Group studies have shown that ***the entire Milan - Lyon corridor is close to saturation***, and is forecast to remain in this state at least until 2003 and this has to be seen as an important contributor to the delays noted.

Several in depth attempts have been made to analyse delays, resulting in a number of specific observations regarding the entire Belgium – Italy route, and several measures are or have been taken.

- The combining of wagons from branch lines to trunk lines should not be planned too tightly, as minor delays then result in either shipments being delayed or entire trains missing paths and thereby incurring even more delay
- To compensate for significant delays of certain trains, the SNCF has planned for a reserve stand-by locomotive and driver as well as spare paths, positioned on major routes, after each batch of trains so as to be able to minimise further delays of wagons and trains with missed connections. We note this as an innovative and positive development in the process of trying to address and alleviate the problems
- Explicit discussions have been held between parties to focus on the issue of economic viability of ordering a path, reserving traction, as well as staff, only to have the train cancelled by the CT operators due to insufficient demand

- In depth analysis in 1999 confirms that on a node – by – node analysis basis, the quality deteriorates after Modane on a southbound basis when the train is in Italy, and improves on a northbound basis, after Modane, when the train is in France. After an improvement in quality late 1999, the quality again deteriorated in early 2000, this time noting a distinct problem in the Belgium territory
- In Italy it is recognised that the schedule is extremely fragile due to a saturation of the trunk line Milan-Turin with very dense passenger and cargo traffic. Any deviation of the CT train so as to miss its path means it is very difficult to get on the line at all. This also affects southbound trains needing to connect with the northbound locomotives (see below)
- In Belgium it is noted that already 10% of trains leave with more than 30 minutes delay. This delay is kept relatively steady in France and increases to 25% at the arrival terminal in Italy
- All parties agree that including a “temps régulateurs” into the time table has improved performance, and the entire schedule is to be examined for the ability to put in such extra control time and staff at each critical stop and connection

### 6.2.3 Gotthard

Quality in the Gotthard Corridor has been deteriorating steadily since March 1999. As with the Modane corridor, parties have identified international borders where locomotive changes are required as the key bottlenecks for their operation, with Luino in particular recognised as a problem (*“... quality has reached an unacceptable level which is hurting the business...”*).

Parties also point to the constraint imposed by the single-track section between Luino and Busto as a particular constraint on operations, although the intention by the railways to alleviate this pinch-point through doubling the track is acknowledged.

*However, parties also point to a damaging trend in that reorganisation of the railways, and in particular the tendency towards separate infrastructure and operating business units, is making it increasingly difficult to obtain any meaningful information whatsoever in terms of en-route delay causes. This is not to suggest that separation of infrastructure management from railway operation is in itself damaging to the interests of CT, but rather that it creates an extended communications chain which, if not carefully managed, can result in degradation of information supply to the railway's customers.*

In addition, joint study work undertaken by UIRR and UIC's Combined Transport Group demonstrates that UIRR members contend with a situation in

which ***the primary north/south rail axis between Milan and Basel is already operating in excess of 75% of its theoretical capacity.***

Some improvement in the communication between the parties involved has been established, so parties have reported, and they have agreed in recent meetings to a number of improvement strategies and measures to be taken.

- Improved information flow between railway cargo departments and CT operators
- In depth investigation into the step by step progress of a sample of trains, so as to more specifically define cause of delay
- Development of a short and medium term action plan to deal with specific issues
- Improved staffing by the railway cargo department for better co-ordination with the CT operators

### 6.3 Quality Management

The review of the three corridors has included an examination of the way in which joint quality management is being conducted. All three corridors conduct quality meetings at which operational problems are discussed, and measures to be taken are decided upon as indicated above regarding the Gotthard Corridor.

These meetings typically take place on a quarterly basis and are designed to monitor and improve service quality on each corridor.

Participation includes representatives from both intermodal operators and their railway service providers.

The review of these meetings produced some strong contrasts, with the Brenner Pass group being the most effective.

**Table 32: Comparison of Quality Meeting Effectiveness**

| BRENNER   | COMPARATOR  |
|---|---|
| <ul style="list-style-type: none"> <li>◆ Shared service quality information</li> <li>◆ Shared route"vision"</li> <li>◆ Joint approach to problem solving</li> <li>◆ Joint approach to service design</li> <li>◆ Effective participation from both sides, with 6 railway participants and 2 from UIRR companies</li> </ul> | <ul style="list-style-type: none"> <li>◆ No commonly agreed service quality information, necessitating time-consuming cross-verification</li> <li>◆ Little evidence of commitment to improvement from rail operator</li> <li>◆ Concentration on claim settlement</li> <li>◆ 3 Representatives from 2 UIRR companies versus over-representation of railways (13 people)</li> </ul> |

Some key aspects deserve attention as they are key to the differences between the approaches observed.

- Having the same information on the actual performance of the trains being examined provides a strong basis for a constructive meeting: we observed how in other meetings parties were spending time verifying data on a train by train basis
- Having a common vision must be the basis for deciding quality priorities; we have seen and noted elsewhere the discussion taking place along these corridors on real choices in setting priorities between on-time departure and waiting for the last batch of wagons so as to better serve that last customer. These basic points of departure for designing a service and for directing the staff involved have to be agreed on and should be topic of a good discussion. To do this, both CT operator and railway operator must see the same realities and share the same goals, of improving quality. It was obvious that some railway representatives were not committed to such improvement, and that in these circumstances all discussion broke down
- Parties must have a joint approach to problem solving, by which data questions are solved off line, claims are dealt with in a different meeting, thus allowing the quality meeting to focus on finding solutions to agreed problems
- It was clear that when there is an over-representation of the railway staff and no translation to deal with 15-20 people talking in three languages, the experience is not going to be fruitful, even more so considering that such a meeting actually tries to deal with data, and claims, and has no shared vision as to a common purpose

Clearly the quality of information shared and the joint approach and vision have been key success factors in the Brenner Pass group, although even here the ongoing poor service quality demonstrates that much remains to be done.

Indeed, also at the Modane corridor progress is being made in developing a comprehensive quality approach.

- Introduction of organisational measures both upstream and downstream of Modane such as co-location of load verification and traction allocation activities so as to reduce processing time at Modane
- Provision of Freight Coordinating Centre at Modane to facilitate provision of real time information to customers and to guarantee a proactive control function which can anticipate operational risks on the rail side

Discussions and planning are further aimed at the provision of new infrastructure and ultimately fully interoperable locomotives.

Outside the three corridors we see other developments such as the creation of a joint operational control function (“GOTI”) on the Spanish/French border manned by both SNCF and RENFE staff. This new control function extends to both daily control and co-ordination as well as proposing, planning and implementing improvements to procedures and facilities.

It should also be noted that the quality of co-operation varies according to the specific composition of each group, both in terms of structure and personalities. The same organisation might well fail to add value in one context whilst succeeding quite demonstrably elsewhere.

## 7. Commercial and Operational Strategies

Moving forward, it is critical for the UIRR members to be able to capitalise on the huge and expanding market opportunity that is now emerging at this time of strong economic growth.

This opportunity is now being foregone, at a significant economic cost, as we have indicated.

Moving forward on the basis of lessons being learnt and on the basis of best practices as being demonstrated in the corridor management teams is also critical, so as not to lose the knowledge thus created and so as to capitalise on the experience gained by all participants.

Such knowledge is now not being shared across the industry.

Moving forward will need to result in the capture of the economic opportunity through a sustainable improvement process that builds on the knowledge gained and the success being achieved.

***Realistically, it must also be noted that UIRR members are to a very large extent dependent on the railway and terminal operators as well as the LSP's for the quality of the total product.***

That international rail services in cargo are beginning to acquire a negative reputation is regrettable and also patently unnecessary. Witness the quality of the various ICE and TGV passenger services that function well and apparently have no border delays. That CT services can be reliable is proven by the recent success of various domestic CT networks as shown by the collaboration between DB and Kombiverkehr, whose domestic service is attaining 90% reliability.

Also there have – as mentioned – been recent experiments of putting a cargo railcar behind a passenger train on the route Rotterdam –Milan. Here the cargo by default enjoyed the rights of a passenger train, and arrived without delays.

It has also been the experience that the so-called “accompanied” CT traffic (rolling road concept) enjoys a much better quality than the so-called “unaccompanied” CT traffic.

***Rail traffic and even CT rail traffic is therefore not by definition unreliable: it is a question of priorities and funding to make it reliable and hence competitive.***

The issues we have identified point to long term structural problems as well as to medium term institutional problems, and to shorter term process and procedural gaps and imperfections.

Hence we come to a strategy for CT quality improvement that encompasses three levels.

1. A structural evolution of the CT industry that has a long term effect and a long lead time, which is also largely a political question that will entail the liberalisation of the industry, the introduction of competition and the securing of equal access to paths for both cargo and passenger services
2. An institutional improvement process, which is partially under way in and among the various players involved in the CT product. This improvement process entails the implementation of the required investment and training programs, the re-evaluation of the commercial relationships among the parties, a redesign of the product and of the control structure at the operational level
3. A procedural improvement program, addressing the issues identified above, to the extent that they are under the control of the UIRR members and their operating partners

The goal of the quality improvement strategy must be to enable the parties to attain quality levels which approach those being achieved by the integrators, which entails a 98% on-time delivery rate. Only then can CT transportation claim a strategic role in the global supply chains that are so rapidly evolving and taking shape across Europe.

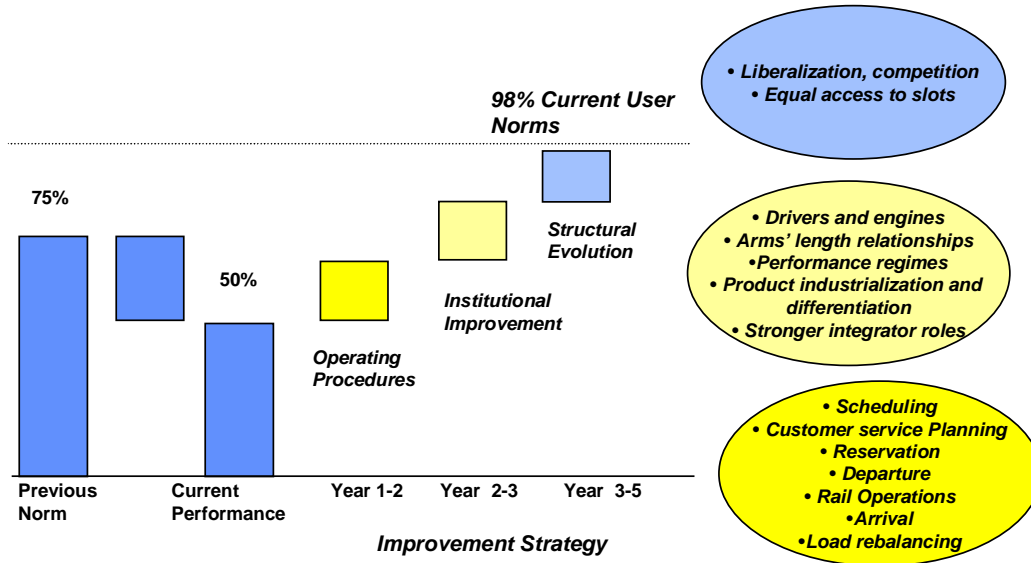
Considering the starting point of a current 50% on time arrival, and a historical on time rate of 75%, such as was the case at the beginning of 1999, the goal of 98% on time must be seen as a phased process, in line with the long, medium and short term improvement programs to be implemented.

The long term, structural evolution is an on-going, political process, which through this investigation can be re-confirmed as to its necessity, as the UIRR maintains already on a daily basis; the UIRR points of view as summarised here will clearly point out the steps to be taken.

We will explore and recommend the actions possible for the medium term and for the short term in some detail, based on the issues identified thus far, as well as on the lessons learnt through the best practices identified among the UIRR members and elsewhere.



**FIG 33: PROPOSAL FOR PHASED IMPROVEMENT STRATEGY**



Lastly, we will recommend certain next steps so as to be able to pursue and facilitate these actions in practice as an industry, involving all parties responsible.

### 7.1 Long Term - Structural Evolution

The CT industry has communicated on numerous occasions the need for liberalization and the development of competitive conditions with equal access to rail infrastructure for all participants. It is indeed the policy of the Commission to create greater dynamism in European rail transport.

Already in 1991, steps were taken to effectuate this. However, as the UIRR also cautions, we have seen thus far a wholly unsatisfactory rate of progress:

*“Although the liberalization of Europe’s railways has already been initiated politically by Directive 91/440 of July 1991, the results so far are somewhat sobering.*

*Despite the Directive’s stipulations of*

- *Separation of infrastructure and operation for rail services, and*
- *Free access to the network*

*a single rail company still dominates the market in virtually every European country.”<sup>5</sup>*

<sup>5</sup> Combined transport and rail liberalisation: from theory to practice. UIRR February 2000

In the point of view of the UIRR, the EU's rail policy is being implemented too slowly :

*“Concrete transitional measures are therefore needed in order to come out of the present crisis and establish an effective transport market that is based around competition.*

*The “railway package” ratified in late 1999 by the European Union’s Council of Transport Ministers creates an opportunity to relaunch the desired policy.”<sup>6</sup>*

Not just the speed, but also the mode of implementing the above Directive deserves attention:

*“...a separation of infrastructure and operation in purely accounting terms is not enough. The risk of discrimination remains too high.*

⇒ *Only complete institutional separation into independent companies can guarantee equal competitive conditions for all rail companies.”<sup>7</sup>*

Indeed, UIRR notes that the Commission has understood the dilemmas encountered thus far whilst, for the same motives, the European Union's Council of Transport Ministers adopted at its session on 9 and 10 December 1999 a series of measures with the following key points:

- the definition of a trans-European rail freight network (TERFN), involving access to ports and transshipment sites,
- a greater separation of infrastructure and operation,
- the creation of a harmonized and transparent allocation system for infrastructure costs,
- free access to the aforementioned network for all licensed rail companies in the territory of the European Union<sup>8</sup>,
- non-discriminatory rules of access to the network,
- a strategy aimed at improving interoperability and eliminating bottlenecks

This is encouraging. However, the pace of real implementation by Member States will be the acid test for ensuring real progress.

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<sup>6</sup> Ibid

<sup>7</sup> Ibid

<sup>8</sup> Previously, this was only the case in international transport for international groupings of rail companies holding a license, between the different countries in which they were based, with transit rights in other European Union countries.

In summary, the UIRR concludes:

*“... A new approach to transport policy based on the market economy must be organized around two main elements:*

- 1. the introduction of genuine competition on the railways, on the legislative basis of Rail Directive 91/440,*
- 2. the creation of fair competition between the transport modes, as introduced by a European Commission Green Paper.”*

Indeed, the issues around liberalisation and competition are complex and all parties understand the dilemmas associated with this issue. There are indeed real issues in wanting to control service levels as a matter of public policy, and wanting to ensure free and profitable enterprises an opportunity to create new services in an industry desperately needing innovation and rejuvenation.

Despite these dilemmas, progress must be made rapidly, and hence choices must be made. In fact the worst-case scenario is not a restrictive public policy, but an unclear policy, such that neither public nor private parties know what their exposure is and neither can afford to commit funds and resources to the services which so desperately need them.

The bottom line is that parties on the ground estimate that liberalisation, privatisation, and the introduction of competition will result in a price reduction of up to 20% in the charges currently being paid to railway operators and infrastructure providers. Such a cost reduction would vastly enhance the attractiveness of CT versus other modes of transport, and would allow the UIRR members and their customers to increase investment in railcar capacity and allow for expansion of the relative market share enjoyed by combined transport in the current modal split.

Indeed, when we examine UIRR's findings, we should be concerned at the political will to create conditions necessary for the economic viability of CT.

## **7.2 Medium Term Context – Institutional Development**

The medium term institutional improvement process is indeed already partially under way in and among the various players involved in the CT product.

This improvement process entails the implementation of a number of programs, which we suggest should be continued and strengthened.

### **7.2.1 Investment and Training**

Of real urgency is the need for investment and training so as to alleviate shortages in locomotives and drivers.

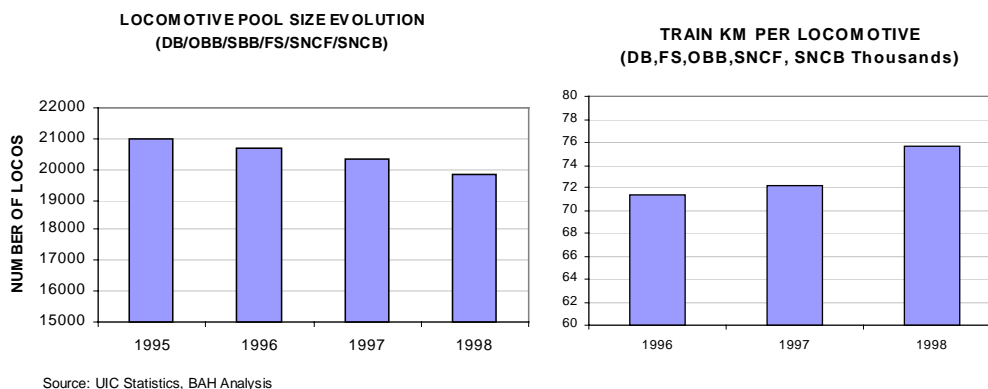
Several railway operators have already indicated they recognise this need

and have hired literally hundreds of new drivers. The reality is however, that a large proportion of these drivers will go to replace drivers who will retire, such that the net impact of such recruiting is much reduced. Also it must be remembered that a locomotive driver also requires extensive training before becoming fully operational. Furthermore, there is a need for investment in locomotives. This becomes clear when one examines the locomotive fleet size evolution across a number of railway companies.

Whilst the overall picture regarding investment in Europe's rail infrastructure is by no means clear, it is apparent that investment levels have in some cases failed to keep pace with traffic evolution. Structural changes in Europe have diverted resources away from existing trunk routes. For instance, German reunification has led to expenditure bias towards East German reconstruction. Elsewhere, the development of the European high speed rail network has absorbed significant resources, perhaps to the detriment of other traffic types such as conventional passenger and freight services. Nor should it be forgotten that continuing pressure on public finances in the European Union has in some cases restricted the finance available for rail investment.

One demonstration of the results of these pressures is the reduction in the pool of available locomotives for the industry, and a concurrent increase in train Km per locomotive (with average utilisation increasing by nearly 6% between 1997 and 1998 alone). Such increases would indeed suggest attractive efficiency increases, but also suggest a reduction in the slack needed in the system to absorb peaks and breakdowns.

**Fig 34: Evolution of Fleet Size & Utilisation**



Hence the first building block to some improvement potential has to be the continuation of the hiring and the intensification of the investment program in assets, particularly locomotives, although a shortage of wagons is also quoted.

In this respect particularly it is important to invest “smartly” as exemplified by the procurement of multi-voltage locomotives. These will be capable of crossing borders – both political and technical – and will improve the ability to provide seamless service to customers. Among recent examples is SNCF's decision to buy 60 tri-current electric locomotives capable of operating into

Italy and Belgium. A further 30 tri-current dedicated freight locomotives will be able to operate into Germany.

A careful consideration must be made before deciding what constitutes “smart”. Multi-voltage locomotives are probably more expensive than single voltage or diesel. We have seen in the high quality domestic CT networks and integrated CT networks that run internationally in different countries that it is not the changing of locomotives per se that causes problems. It is when two organisations have non-aligned asset pools and unreliable schedules that problems occur. Having an expensive locomotive obviously solves the problem, but it might also be solved by having more and cheaper locomotives available for the total pool so as to create back up capacity and flexibility. The service must after all remain cost-competitive as well.

### **7.2.2 Arms’ Length Relationships**

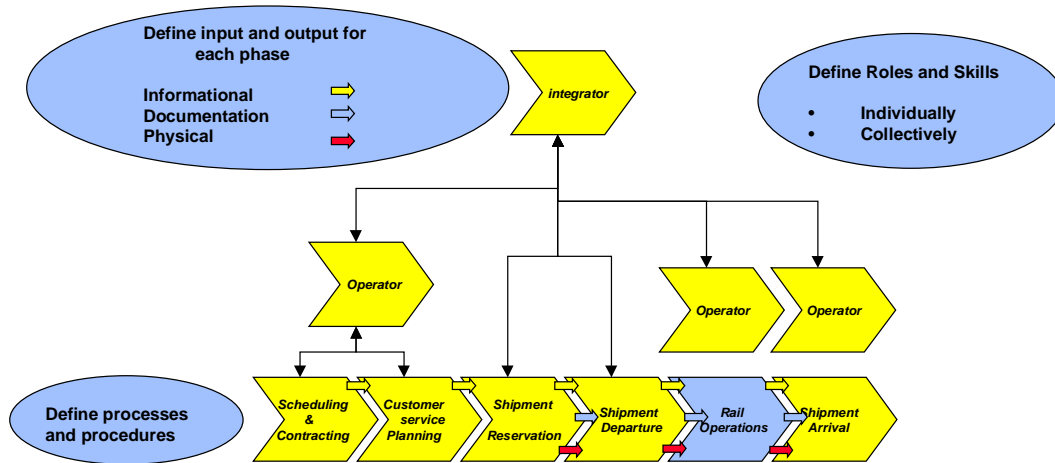
We have seen early on in our investigation how the relationships among the various players in the CT product delivery process have built in some potentially serious conflicts of interest. Railway operators who provide traction to the UIRR members are also its shareholders, whilst LSP’s who are the clients of the UIRR members are shareholders as well.

When both client and supplier are shareholders the UIRR member management cannot complain about service and cannot complain about price without undue risk. Hence some way must be established to create arms’ length relationships such that the supplier requirements can be met and the customer requirements remain rational.

This can be achieved to some extent through increasing the objectivity in the relationship, and this is done by:

- Defining the processes and procedures in the product delivery, indeed as we have done in defining the business model for our issue analysis
- Defining the inputs and outputs for each phase in the process, in three dimensions being, information, documentation and in terms of the physical goods; implicitly we have indicated in the issue analysis where there are gaps and imperfections already, and where the inputs and outputs might be improved
- Defining roles, and skills required for each player in the process individually and collectively, so that player knows what is expected of him and of others, and has the skills and authority to do this

**Fig 35: Attaining Objectivity Through Arms' Length Relationships**



Together these definitions provide a level of objectivity that will allow the parties to create a more neutral playing field, and in fact the analysis at hand has been structured to do that to some extent already.

***What is required is for each UIRR member to embark on this process from the ground up, for themselves and their immediate trading partners, including the railway operators, engage those trading partners in a dialogue in these same terms, and develop and drive the issues from there.***

In this respect it is worthwhile mentioning the deal under which Novatrans and its partners FNTR, SNCF and GNTC agreed in March 2000, a quality Charter stipulating responsibilities and roles with the common goal of achieving a high quality service and strong growth in CT traffic at the same time. A mutual commitment is for a 95% reliability and a 20% growth in traffic to be generated by the CT operators through the hauliers.

The Charter also stipulates mutual responsibilities in the operational processes to ensure shipments are made available for carriage on time. The partners have further agreed on a set of specific indicators by which to measure the utilisation and quality of the service at each phase of its execution.

**7.2.3 Performance Incentive Regimes**

A robust performance regime between UIRR's members and its railway suppliers should be considered as a strong instrument through which to enhance service quality.

In practice, however, where these mechanisms have been implemented by UIRR members and their railway operator trading partners, to date they have had mixed results:-

***Performance contracts between UIRR's members and the railways have, in the case of Kombiverkehr, already been rejected by the railways as being too risky.***

***Where performance contracts do exist, they are too loose. For instance, the performance framework between CTL and its railway suppliers provides for compensation in the event of a delay to the trunk leg of the journey, but not to distributor legs (e.g. north of Wembley in the UK). Strikes and force majeure are also deemed to be grounds for non-payment of compensation.***

Also in the UK, where performance mechanisms in contracts are more advanced due to privatization, experience has been mixed.

The Passenger's Charter, which was inaugurated three years before privatization, provided for compensation *to passengers* in the event of delay above set thresholds, and also *obliged the train operator to publish service performance data* at stations. This initiative incentivised the operators to improve train performance, such that between 1989 and 1993 all the four passenger divisions of British Rail recorded improvements: Inter City's on-time performance went up from 84% to 91%.

On separation of the infrastructure from operations, financial incentive frameworks were developed between the infrastructure authority (Railtrack), the passenger train operating companies, the freight companies and the infrastructure engineering contractors.

Some key lessons to be learned by UIRR members included:-

The natural tendency to avoid risk resulted in Railtrack receiving transition payments (so called "Access Charge Supplements") in order to provide some protection from performance payment risk in the early years of its existence. This can be considered by each member country authority as a way to ease the introduction of the regime, but must not be so generous to eliminate all pain.

Calibration of the payment scale must be appropriate in order to incentivise truly high quality performance levels. In the UK case, the benchmarking was undertaken in a year characterized by many exceptional circumstances which, taken together, depressed the benchmark. This meant that Railtrack easily managed to improve in year 1, but the small incentives to improve further meant that effectively only minimal further progress was made in subsequent years. Nevertheless, the net result was that the train operating companies continued to pay Railtrack substantial sums relating to performance better than the benchmark level. Accordingly, measures are now in hand to re-benchmark performance levels and to re-calibrate the payment mechanism to better reward performance improvement towards the top end of the performance scale.

Clear back-to-back lines of responsibility must be developed for such a complex industry with a large number of actors ***Thus, if one train operator delays the services of another, two back-to-back performance payments will be invoked, with the guilty party paying Railtrack, and Railtrack in turn paying the affected train operator(s).*** There are parallels, and also some differences here, with the environment in which UIRR operate. There is a complex industry model with infrastructure providers, multiple rail operators competing for access and resources, with the potential for one operator's delay to impact on many other operators. ***On the other hand, UIRR's members must deal with multiple infrastructure owners, who are frequently operators and shareholders as well.***

Elsewhere in Europe, performance contracts are being developed in recognition of the growing trend to separate infrastructure management from rail operations, although the use of performance payment mechanisms is still in its infancy and by no means universal. But clearly, for a performance mechanism to work effectively, the following preconditions must exist:-

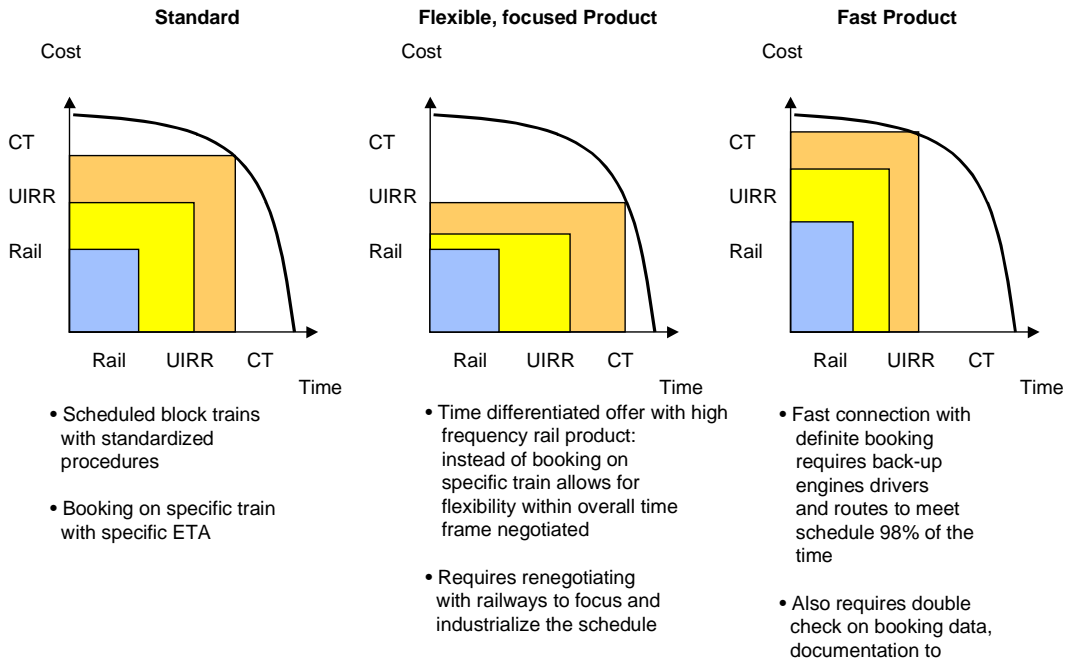
- Willingness from the railway companies to accept responsibility and performance risk
- Sufficient positive and negative incentives for all parties to improve quality to a high level, with appropriate sharing of risk and reward, avoiding the error of creating rewards for simply doing what was contracted
- Similar performance relationships between infrastructure owners and other operators to ensure that, where appropriate, risk can be assigned appropriately in a back-to-back manner
- A performance framework which applies to the whole product rather than to just parts, and which embraces all risks which are controllable by the railways

#### **7.2.4 Product Development**

We have indicated some gaps and issues around product definition and consistency under the commercial issue analysis. Thus far the discussion has focused on what is necessary for UIRR members to deliver a reliable standardised product across the industry. The recommendations that follow will have this as point of departure as well.



**Fig 36: Product Differentiation**



The standard product is what we are here trying to define and stabilise as to being a reliable terminal to terminal rail product. This is a scheduled block train with standardised procedures such that hauliers can book on a specific train at a specific time and a specific schedule will define its expected time of arrival (ETA) at destination.

At the same time, thought should be given to what alternative product strategies might be desirable, from both a commercial and operational point of view.

- The first alternative product strategy is to consider a two-day product in which the various existing services may be concentrated along key corridors, allowing for a relatively high frequency, such as 1 train per 4 hours

Then customers do not necessarily book on a specific train, but rather give an availability time and a dead-line, such that the UIRR member has the flexibility to balance the total load across all the possible departure solutions; this still requires that each train function at the highest levels of reliability, but allows the shipper to be late and allows the UIRR member to reduce peak loads

- The second product strategy is to reduce the number of terminals and concentrate the traffic on a smaller number of key corridors chosen for their reliability and subjected to a high degree of management attention and support. Concentrating the traffic on a reduced number of

terminals and corridors also increases the traffic there and allows for increased number of departures as suggested above

*One UIRR member TRW reports considerable progress on the Genk-Novarra block train in this respect.*

- *A reliable corridor Aachen-Basel-Luino-Novarra was chosen*
- *A single terminal Genk is the starting point, instead of four as in the past, when also Antwerp, Rotterdam, and Koln were used*
- *All trucking is controlled from a single point in Genk, reducing empty kilometres*
- *The load factor of the block train is up significantly which is a pre-requisite for increasing the frequency*
- *Equipment turns have risen by 20% due to the reliable corridor and high utilisation*
- *A tripartite agreement was closed between Ewals Cargo Care, the railways and the CT operators, in which roles and responsibilities of each party were defined, and which has resulted in significant quality improvement*
- *Critical performance indicators were defined and are being tracked daily.*

*Also DB and Kombiverkehr report considerable progress as well in building their Kombi-Netz 2000+. This is a scheduled, terminal to terminal set of block trains in a network of 26 trains. Here Kombiverkehr takes all the commercial risk and makes the complete train available, so that DB only has to provide traction. This has indeed resulted in clear volume increases, and a 90% reliability was indeed achieved.*

*The concept of a shuttle train where the CT operator takes all the commercial risk is increasing in popularity and strength. Clearly this has resulted in improved quality and service, but in taking the commercial risk, the CT operator takes risk away from the railway and this should be reflected in the price of traction and services.*

- The third product alternative is to create a fast product for perishable/express and consolidated goods, as has recently been experimented with by Railion in conjunction with national railways and major clients. A cargo wagon was hitched on to a passenger train and hence was able to go from Rotterdam to Milan in 18 hours. A similarly fast slot for cargo trains should technically and legally be possible, and will require back up equipment and staff and double-checking of booking data and documentation, but hinges also on the ability to obtain the same quality slots as passenger trains are able to obtain

**Clearly the standard product as we know it today should have top priority in establishing the norm and the basis for all other products. Above all the notion of a product must be clearly established as being more than a booking and more than a set of common standards, but encompassing information, deadlines, documentation, confirmation, workflow standards and the physical service aspects.**

### 7.2.5 Integrator Model

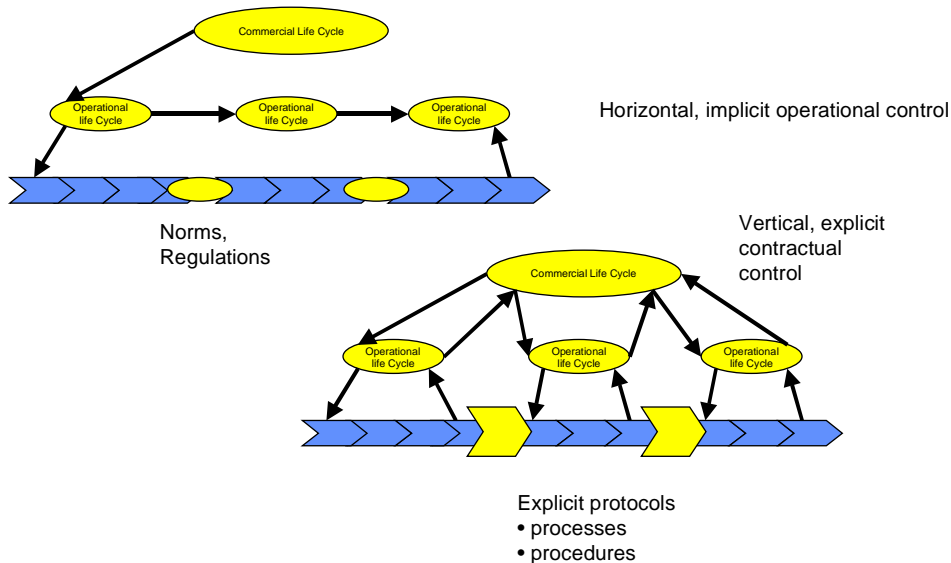
Another critical institutional development path to take is the adoption of more explicit management structures. Today, the various parties in the transport chain hand over the shipment and the information in more or less traditional and *implicit* manners. We have seen how this leads to missed documentation, vague norms and expectations.

The *implicit, horizontal model* is also well known and dominant in the air cargo industry where forwarders and airlines work together based on common industry norms and traditions, rather than on explicit contracts.

By contrast we see how the integrators, such as UPS and Federal Express work by *explicit, vertical contractual controls*, and by equally *explicit hand over protocols* between phases in the process.

In the Integrator Model we see as a result a great deal more control moments and control reporting. Each phase is steered by an explicit life cycle plan, and if there is a disruption, all the subsequent phases of the life cycle are adjusted so as to maximise control over the outcome. Typically, when there is a disruption in the traditional, horizontal model, it is often the customer who discovers the delay before the responsible parties at the beginning of the process even know about it, or are able to do anything about it.

**Fig 37: The Integrator Model from the Air Cargo Industry: Explicit Life Cycle Management**



***We note with some concern how in the USA domestic air cargo market the traditional forwarders, working with airlines in traditional, horizontal control models, have lost 90% of the market share to the integrators in a period of 10 years.*** Similarly, if the intermodal, combined transport model in Europe cannot make the traditional model work, it too will continue to lose market share.

***The more explicit management forms must be examined and adapted to the CT needs and circumstances to ensure more explicit control over the process.***

### 7.3 Operating Procedures

Parallel to the progress to be made in the long-term structural – political – evolution, and the medium term institutional development, the UIRR members and their partners must undertake to improve their operating processes and procedures. While each step of the program being proposed may yield only a few percentage points performance improvement, together they will make a significant difference.

***Above and beyond the concrete short term improvement to be obtained, the actual process of entering into dialogue with its partners in these terms will lay a foundation for creating a learning environment and a learning framework by which improvement will be a continuous process.***

We note progress is already being made in such a comprehensive manner through the “95/20” program being undertaken by Novatrans and the SNCF. Novatrans and the LSP’s as clients of Novatrans are due to deliver a 20% growth in business volume while SNCF is due to achieve a 95% punctuality in services. This is clear demonstration that the parties are aware of the benefits of addressing the shortcomings jointly and have agreed to address them jointly so as to take advantage of current market opportunities.

These efforts – as focused on the short term operating processes and procedures – revolve around the commercial and operational issues identified during the course of this investigation:

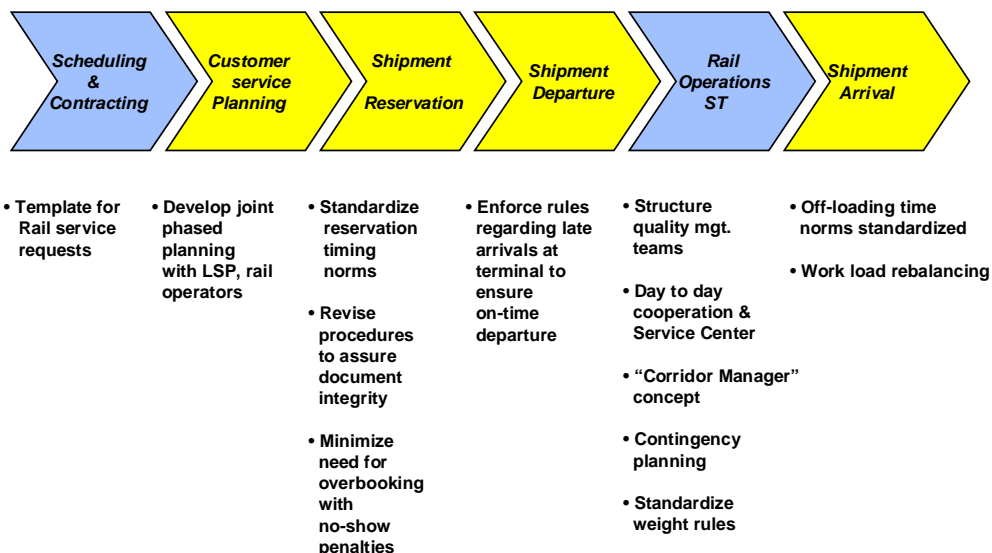
- ***Improved planning procedures between UIRR members and the railway operators, using common service request templates and joint, phased planning procedures***
- ***Clear and common booking rules and procedures to address timing norms, overbooking and late acceptance issues***
- ***Enforcement of existing procedures in accepting late arrivals so as to avoid late departure of trains and revised procedures to assure document integrity***

- **Establishment of corridor quality teams and corridor service centres, using best practice problem resolution approaches as demonstrated by the parties themselves, particularly on the Brenner Pass**
- **Appointing a lead carrier as corridor manager on each corridor so as to provide a clear and accountable interface to the UIRR members**
- **Development of back up and contingency plans in the operations, so as to be prepared for inevitable service breakdowns**
- **Redefinition of technical standards such as weights and rounding off rules so as to avoid off loadings and unnecessary disputes**
- **Rebalancing workload across the system throughout the day to reduce peak loads**

These major recommendations are outlined herein and require a follow up over the next year, dove tailing with the institutional and structural developments to be achieved concurrently.

**Fig 38: Operating Procedures Improvement**

In the short term, operating procedures can significantly improve quality as a basis for medium and long term strategic repositioning



### 7.3.1 Scheduling and Contracting: Service Request Template

Despite long lead times needed for service requests, considerable uncertainty apparently occurs as to service being requested and service being promised.

Parties should define in a quick workshop a common format to be used by all UIRR members and all railway operating companies involved, when ordering capacity. Such a template has been suggested by one railway operator and can be a simple one page form in which the service and the key service elements such as route and desired schedule and capacity are defined, along with a space for recording negotiation status.

**Fig.39 Template for Rail Service Requests**

|                           |                      |                    |                      |                              |                      |                             |                                     |
|---------------------------|----------------------|--------------------|----------------------|------------------------------|----------------------|-----------------------------|-------------------------------------|
| Requesting party          | <input type="text"/> | Date of request    | <input type="text"/> | Date of Confirmation receipt | <input type="text"/> | Responsible Account Manager | <input type="text"/>                |
| Days                      | <input type="text"/> | Start of service   | <input type="text"/> | End of service               | <input type="text"/> | origin terminal code        | Departure time <input type="text"/> |
| waypoints en route        | <input type="text"/> | Capacity in Wagons | <input type="text"/> | Capacity in Weight           | <input type="text"/> | arr dep                     | <input type="text"/>                |
|                           | <input type="text"/> | Supplier of wagons | <input type="text"/> | Supplier of traction         | <input type="text"/> | arr dep                     | <input type="text"/>                |
|                           | <input type="text"/> | Number of trains   | <input type="text"/> | number of wagons used        | <input type="text"/> | arr dep                     | <input type="text"/>                |
|                           | <input type="text"/> | Price agreed       | <input type="text"/> | slots confirmed              | <input type="text"/> | arr dep                     | <input type="text"/>                |
| destination terminal code | <input type="text"/> | date of agreement  | <input type="text"/> | valid until                  | <input type="text"/> | Arrival time                | <input type="text"/>                |

We have suggested here a version that incorporates some elements as discussed with various parties involved. *The point here is – as it is in all following recommendations – that it is not important to adopt this specific model, but it is important to adopt a model that parties all agree to use.*

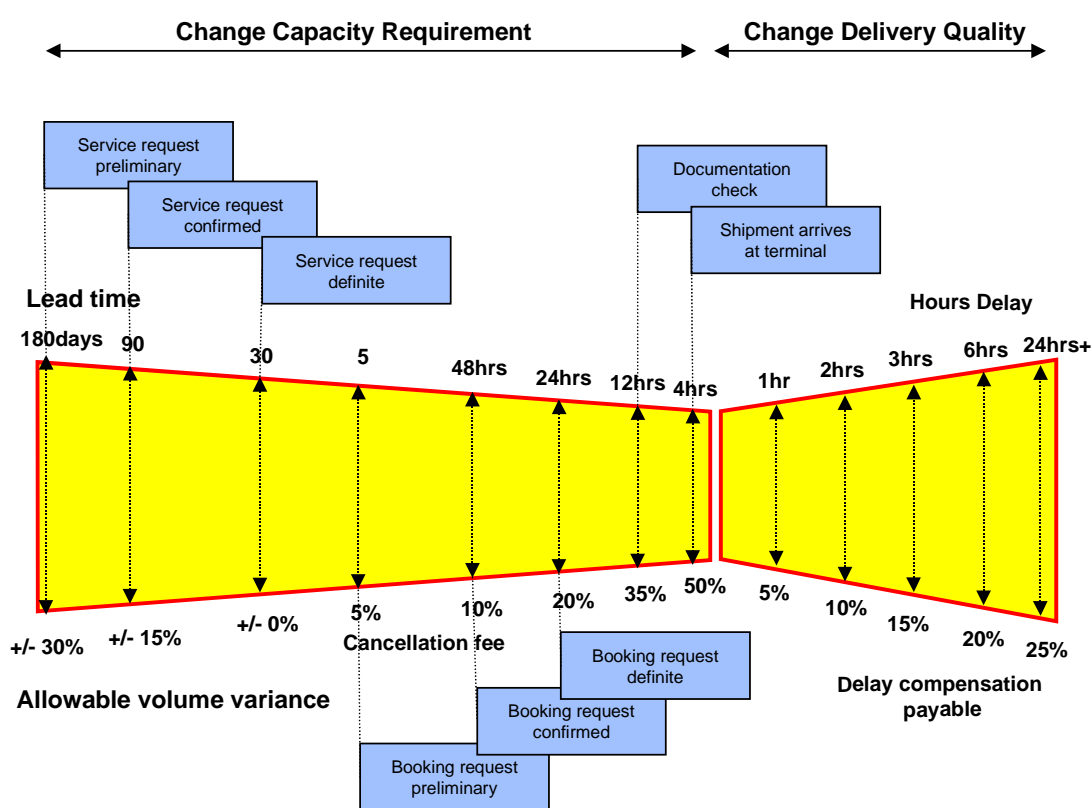
Further, it is eminently logical to develop a common format on paper, while considering at the same time a way to set up a common infrastructure by which to request and negotiate for service on-line through the Internet, if possible of course using CESAR as basis.

### 7.3.2 Customer Service Planning: Joint Phased Planning

While it is important to clearly define the terms of the service request, it is also clear that market requirements change and UIRR members may want to change the service requested. This would bring uncertainty also to the railway operators if it were not properly accommodated.

Hence we suggest a joint, phased planning process by which parties develop a common view as to the market over a period of time, progressing to ever smaller margins of allowable variance in the service volume requested as the moment of service commencement comes closer.

**Fig 40: Establishing joint planning with reducing change flexibility over time**



For instance, a request for 10 trains of 20 wagons each in a particular month may be placed some 6 months before service is to commence. We might suggest that this request may still be adjusted by 30% up to 3 months ahead of service commencement, and up to 15% of the then agreed amount up to 30 days before service starts. Subsequently the contract is fixed and the UIRR member then also guarantees the capacity to his customers.

Thereafter, if a UIRR member wants to cancel part of the service, a sliding scale of cancellation fees would apply. If for instance, 48 hours before departure a UIRR member (CT operator) wants 10 wagons instead of 20, the CT operator would pay a 10% cancellation fee for not using these 10 wagons.

The variability in this relationship could also be extended to the moment of service delivery, whereby failure on the part of the rail company to deliver an agreed level of punctuality would trigger a sliding scale of compensation payment.

This relationship could be placed back-to-back with a similar relationship between UIRR's members and their customers, as outlined below in the section on Shipment Reservations.

*Westrail, a rail operator based in Western Australia, is providing an example of this. Significant improvements in business results were achieved by improved customer liaison combined with advanced data processing tools. For a major grain haulage contract for instance, a planning model was developed jointly with the client. The model enabled Westrail to optimise rolling stock by precisely calculating resource requirements while enabling the client to balance stock levels and movements.*

### **7.3.3 Shipment Reservation: Clear and Common Booking Rules**

In the same vein, indeed, shippers have uncertainties as to their needs, and these uncertainties need to be accommodated as well while protecting the interests of the UIRR members.

Hence we suggest, in the same framework suggested above, that customers also be given room to adjust their booking volumes with only a 30% cancellation fee up to 10 days before departure. Similarly, the closer to departure, the higher the cancellation fee should be, up to and including a 100% no show fee if the shipment is cancelled within 24 hours of departure or if it is late for loading. This will reduce the need and tendency to create overbookings, which again creates the risk of non-quality.

Again, it is *not* suggested that the framework presented is the framework to be adopted: it *is* suggested that a framework be developed by the UIRR members and their customers and decide in their product definitions what risks to share and what risks to take through overbooking.

### **7.3.4 Shipment Departure: Enforce Existing Rules**

No matter what rules might be developed or might exist; staff on the ground are permanently under pressure from customers to allow late arriving shipments to be loaded on the train, even after the deadline has passed.

This is more a cultural problem than a technical problem. Operational staff will always be confronted with their "best customer", arriving late, often for good reasons, and often in the form of a person they will know well after many years of collaboration on getting things done. These staff members will have



great difficulty enforcing such close out rules as might already exist or such as will be developed. Indeed, the same phenomenon exists in the airline industry where it is indeed difficult to say no to your best customer, knowing the urgency of the parcel to be flown, and the value to the airline of the revenues generated by the shipment; traditional values such as customer care and flexibility are being supplanted by the laws of the system being managed for all the other customers who have their processes in place as well.

The message must be to strict but reasonable, and to try to accommodate the shipment but without risking a delay of the train; this last condition is probably the aspect to be strengthened as a 15 minute delay at departure can well result in a day's delay later on, and this is probably not always fully appreciated by the staff at the terminal.

**Fig 41: Shipment Departure Procedures Require Strict Enforcement, Within Reason**

Principle:

*Be strict but reasonable*

Practice:

- *No guarantees if shipment arrives too late*

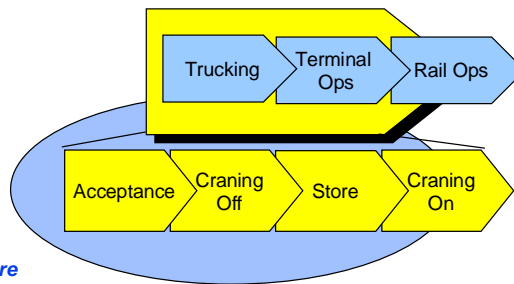
BUT

- *Try to accommodate*
- *Do not endanger on time departure*

AND

- *Develop Late Acceptance product*

- requires explicit schedule for craning off and craning on
- late acceptance product allows for late slot in craning on schedule



### 7.3.5 Rail Operations: Quality Teams, Service Centres and Leadership

While the rail operations themselves are the core of the CT product they are also the most dependent on railway companies' long term structural changes and institutional development progress being made. Nevertheless, there are best practices to be adopted from among the UIRR membership and there are simple but effective procedural changes to be adopted that can improve the service quality by preventing breakdowns and by alleviate the damage when a service failure does occur.

## 1) **Establishment of Corridor Quality Teams**

As witnessed in the Brenner Pass axis, regular problem solving meetings can help assure high service quality standards, or at least create the conditions to facilitate this.

The effectiveness of the meetings, we have seen, will depend on a number of factors:

- a) A shared commitment to improvement demonstrated by senior management involvement
- b) An effective agenda and meeting structure
- c) Balanced and stable representation from UIRR members and railways
- d) Effective communication, supported by professional interpreters if necessary
- e) Separation of claims settlement from problem solving
- f) Effective project management tools and mechanism to follow up agreed actions perhaps provided in a support role by the UIRR

*Several North American railway companies have been struggling with the same challenge of improving their joint service offering. Some railway companies worked well in co-ordinating their interline moves, while others did not know what happened to their cargo after dropping their cargo off at the interchange, making it difficult to establish commitments to customers.*

*It was concluded that their operating plans did not align well between carriers, resulting in poor asset utilisation and poor customer service. To address this, these North American railway companies agreed to work more closely together as business partners by:*

- i) Agreeing to the exact details of their common operating plans*
- ii) Establishing a measurement process (as is being done through the UIRR)*
- iii) Conducting daily post trip failure analysis and establishing clear corrective action procedures*
- iv) Establishing communication exchanges for determining ETA's in a proactive traffic management mode; agreeing to communicate to partners before changing plans through a single point of contact*

*These actions have led to increased operating efficiency, increased asset utilisation and improved car cycle days, allowing customers to order only the number of cars actually needed.*

## 2) **Permanent Service Centres**

While setting up and improving quality meetings as suggested above according to UIRR members' own best practices is recommended, this will be strengthened further if supported by a permanent service centre.

In practice this mean co-location of service staff from both UIRR members and railways at critical points in the corridors.

In and through this centre, a few things can be realised better than without such support:

- a) Shared access to real time operational data allowing for swift identification and rectification of problems
- b) A build up of shared in-depth understanding of operational problems in the corridor or section being managed
- c) A better awareness of each party's concerns and issues and a joint approach to problem solving

This is already being done in several places, and again it is UIRR members' own estimations of best practices which best serve to illustrate what is needed on a larger systematic scale. For instance, UIRR members themselves report that on the route Koln-Aarau-Birrfeld the resource planning at the border crossing between Germany and Switzerland is good and effective and hence UIRR members like HUPAC report that no serious delays are occurring there.

*In this sense we are only advocating continuation, strengthening and expanding some of the best practices currently on-going at various border crossings.*

- i) Already since 1997 through a PACT facility supporting efforts by FS and SNCF considerable progress is being made at Modane*

*This effort was aimed at simplifying border crossing procedures and improving throughput time. To date, handling time at Modane has been reduced to 1:30 hrs. This has been achieved by a review of the procedures, the technology and the organisation. Changes included:*

- Creation of the "Centre de Coordination Merchandise de Modane", the CCM Modane. This acts as a common tracking and tracing centre providing real time information to customers, and as a centre for the better management of production resources*

- *Combining in a single location the activities involved in both load verification and traction management*
- *Ensuring data links between various systems, so as to facilitate receipt of the transportation contracts in advance for commercial and administrative pre-clearance of shipments*

*ii) Also at Irun/Hendaye, a centre for common organisation – GOTI – was established with the support of the PACT program. This serves to optimise production, improving flow through the terminal, and which supports the growth of CT traffic between the Iberian Peninsula and the rest of Europe*

*GOTI has an office at the railway station staffed by 3 RENFE and 3 SNCF staff-members; numerous language and informational barriers had to be overcome in this process*

*GOTI has achieved some significant progress in a number of dimensions:*

- (1) Better information available on shipment location and status*
- (2) Better quality service, more regular execution of the schedule*
- (3) Better co-operation, resulting also in the development of a terminal management system based on the existing RENFE and SNCF systems*

*iii) At Port Bou/Cerbere the PACT program has supported a number of focused activities for process improvement*

*A common organisation – MUM – has been established with 7 SNCF and 7 RENFE staff-members, which is open 7 days a week*

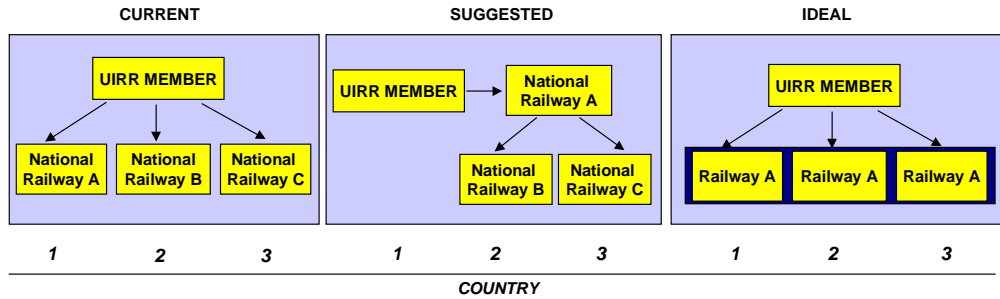
*Data links between all systems involved are available to be better able to manage and adjust schedules in response to and in anticipation of possible incidents*

*The MUM has resulted in a 40% percent improvement in efficiency and a 20% improvement in reliability through a better setting of priorities and allocation of resources, as well as a better understanding of the root causes of irregularities, and hence, more effective and immediate interventions at irregularities as they occur*

### 3) Lead "Corridor Manager"

The above can best be achieved if it has the benefit of leadership provided by a single entity. While a full integrator model may not be feasible under current legal and institutional frameworks, a lead corridor manager might be feasible.

**Fig 42: Lead railway to act as "Corridor Manager"**



There are a number of benefits to acting as if one party were indeed fully responsible, in terms of acting as single interface to customers on behalf of the other parties (railways) involved. It would provide to the UIRR member a clear party responsible for the entire service, even though other railways may execute the service. Possibly such a lead corridor manager can indeed take full contractual responsibility for the service, but at least the leadership role should be assessed, perhaps on a rotating basis.

### 4) Back up or Contingency Plans

In many industries a disaster is defined as when a part of the system breaks down. And when the system breaks down, the consequences are often unacceptable. These industries, be it energy suppliers, airlines, and military organisations will have in place back up assets and plans that are activated in case of such a disaster.

We are suggesting that system breakdowns will continue to occur and therefore parties should have contingency plans in place that solve the problem or mitigate its effects.

This is expensive and involves reserving and paying for back up drivers and locomotives, back up wagons and staff, alternative routing and the paths to use it, and finally alternative modes of transport to deliver the goods as requested. This might mean using trucks instead of trains, if that will avoid the delay being experienced.

Developing contingency plans involves a number of key steps:

- a) Definition of standard process and procedures, as we have advocated here on several instances
- b) Definition of possible failures, in specific failure scenarios, as indicated here and to be kept under ongoing review
- c) Definition of means of detecting such failures and alerting the responsible people through email, phone or fax
- d) Definition of alternative processes, assets and routes to activate under each of these specific failure scenarios and allocating responsibilities, roles and tasks and tools as discussed above
- e) Periodic role playing to test the scenarios, perhaps at each of the service centres advocated

## **5) Redefinition of Technical Standards**

Certain delays, we have noted, are caused by key technical parameters not being fully defined or not being defined consistently across UIRR members and the railways.

These can indeed be very subtle aspects such as the rounding off rules when defining the weight of a train. Such very minor discrepancies have resulted in wagons being off loaded to comply with such rules that apply these rounding off standards.

It would be eminently useful and require no more than one day for parties to sit in a workshop and define these rules and comply with them.

Also, when using substitute locomotives, this can have effects on the maximum allowable weight to be pulled in accordance with a certain speed to be attained. When such substitutions occur all parties must be notified – regardless of whether the substitution was justified – so as to be able to mitigate the effects.

### **7.3.6 Rebalancing Workloads**

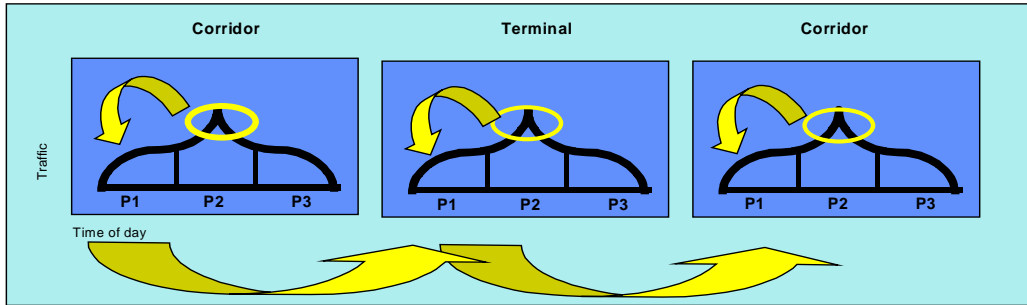
We have seen how for many historical reasons peaks form in the workloads at terminals. Customer locations are not open all night and working rules often also preclude using night hours.

***The potential positive impact of creating greater flexibility in the system to smoothen out the workload across the system is of such significance***

**however, that we believe explicit attention should be paid to revisiting such barriers.**

**Fig 43: The need for re-balancing of peak demand**

- *Optimize total system load on a step by step shifting of work packages*
- *Use slot price mechanism to self select priorities:  
lower cost to encourage shift to off peak times*
- *Extend to pax and cargo simultaneously for optimal economic allocation of capacity*
- *Requires all infrastructure providers to set realistic slot prices*



The goal is to optimise the load across the system, understanding that peaks in one element of the system cause peaks in prior and subsequent elements. We suggest examining quite fundamentally the option of path pricing to encourage use of less busy off-peak times in the system. This implies a complete separation between infrastructure and railway operators as well as fair and transparent competition between all actors. This would have to include both passenger and cargo demands and would require all infrastructure providers to set realistic and comparable slot prices.

This is a fundamental shift in working rules and methods, requiring little investment other than an investigation as to the potential and the barriers. There is the option of an all encompassing top down system optimisation, but we would recommend bottom up operational testing of the ability to shift peaks through direct discussion with parties – customers, terminal operators, infrastructure providers – to jointly create the mutual motivators to instigate the change.

## 8 Next Steps

The situation around the quality of CT is still extremely disturbing. Losses in the market position of the UIRR members will take a long time to recover. The cost of non-performance by the railway operators and the cost of the malfunctions in the interfaces between all the parties involved in the process is already high, and growing daily as opportunities continue to be lost.

The core value proposition on the table is, however, that there is indeed a great opportunity at hand for CT to blossom and grow as the mainstay of the pan European freight system.

- The economy is booming and the demand for transport cannot be met by road hauliers any more
- Already the road system is so congested that prior advantages of speed enjoyed by the road modality is disappearing fast, and rail and CT become vastly more attractive even on the medium length haul
- With the opening up of Eastern Europe to the EU, longer distance transport will be generated from the new trade flows thus opening up a vast new market
- New technology is rapidly making it easier to connect trading partners and CT partners so as to make the CT transport chain transparent, predictable and more effective

While the persistent problems in quality make it difficult for the UIRR members to capitalise on this opportunity, the starting point is not *all* bad. We have noted a number of success stories and best practices as they are currently being developed and shared among UIRR members, also with the support of the PACT program.

***What is needed today is urgent action on the three levels we have discussed thus far:***

- ***Expedite the structural and political evolution necessary to accelerate privatisation and liberalisation and thus encourage competition in the CT market***
- ***Expedite the institutional development so as to innovate the product and implement required investments and develop new management structures and in the absence of competition, develop new, mutual and balanced contracting types***
- ***Implement the suggested improvements in operating procedures throughout the whole CT chain from planning to execution***



We would hope that UIRR will succeed in playing a stronger role in these processes.

The UIRR link office could be supported in a more structural way to develop the medium and short term improvement programs as outlined here through assisting its members and the railways in:

1. defining specific projects as outlined here
2. setting up working parties to address them
3. building consensus as to the comprehensive direction taken also on these more operational and institutional levels
4. creating links between existing quality groups as identified here and assisting these with project management as necessary

We have seen the value in the knowledge that resides with individual UIRR members as well as with the railway operating companies, but such knowledge is not being shared effectively or efficiently.

We have seen and noted how each of the many initiatives being undertaken by the parties themselves today do require extensive investment in learning to manage improvement projects, learning to work in quality teams and learning to communicate across linguistic and cultural barriers.

We have noted the tremendous value that resides in the statistics being collected by the UIRR and see that these have become the cornerstone of the current quality effort, but we have also experienced the difficulty of gathering structural data on infrastructure problems and bottlenecks and required investments.

We would therefore advise the following actions be undertaken to take the next steps in this process of which the current effort is only the beginning.

One of these is to create a website-supported learning infrastructure in which parties can deposit and extract information, containing:

1. The UIRR quality statistics as they are being collected today, such that all members and contract parties have access to them continuously
2. The description of the evolving problems and issues, within a standardised framework as has been developed here, including infrastructural bottlenecks
3. The experience of best practices as developed by the UIRR members and their railway partners themselves or as seen in other companies or industries

Above all we would encourage the development of a common vision, not only of the long term need to improve and evolve, but also of the institutional and operational options and directions to pursue. The common quality working groups have made huge steps already, but now is the time to consolidate and integrate these efforts to achieve a real transformation.

What no project can do, and no amount of external funding can provide, is the will of the individual parties to work together in reasonable and rational dialogues to achieve a common goal. Where today conflicts of interest or monopoly conditions exist that hinder such progress, they should be addressed, at the political and institutional levels, as advocated here.

On the ground, the flesh and blood of the organisations involved, is where the greatest challenges lie, as the staff members involved – both within the UIRR member organisations and in the national railway operator divisions responsible for CT - will have to manage their frustrations as professionals in order to make concrete progress in achieving limited improvements while also waiting for these structural and institutional changes to be implemented and become effective. They deserve our support and encouragement in the difficult task of capturing the full untapped potential of combined transport.