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RETRACK

REorganization of Transport networks by advanced RAil freight Concepts

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TABLE OF CONTENTS

1	Introduction	3
1.1	Background	3
1.2	Objectives and approach	3
2	Fulfilment of EC Policy Objectives	4
2.1	Business objectives	4
2.2	Policy objectives	7
3	RETRACK pilot demonstration train and lessons learned	9
3.1	Pilot demonstration train operation	9
3.2	Overall lessons for future new entrant rail freight service	11
4	Framework for Europe-wide rail freight network	13
5	Extrapolation to modelling input	16
	Annex	18
	References	20

Table of figures and tables

Table 1:	Train movements pilot demonstrator	10
Table 2:	Number of wagons, customers and net tons. Highest and lowest number per train (one-way), and total for all pilot trains	11
Figure 1:	Number of RETRACK train departures (one-way) per month	9
Figure 2:	Transport time (hours) between start- and endpoints in the RETRACK core corridor	10

1 Introduction

1.1 Background

The main objective of the RETRACK project is to develop, demonstrate and implement an innovative and market-tested rail freight pilot service along an East-West trans-European corridor. This axis was planned to be composed of a backbone corridor connecting Rotterdam with the Black Sea seaport Constanza in Romania.

Currently the pilot adopted the operation model between two core hubs for the assembly and dispersal of traffic (Cologne in Germany and Győr in Hungary) and the operation on demand of satellite operations.

One important research activity within RETRACK is the evaluation (WP9) of the test pilot. The purpose of evaluation is to demonstrate performance, discover where improvements have and/or could be made, and to identify good practice and lessons for the future.

For this four main evaluation and extrapolation activities should be covered:

- Assessment of direct business implications, including effectiveness of service provision, costs of origin-destination shipments, and users' and operators' satisfaction with customer services (task.9.2).
- Assessment of how the outcomes from rail service demonstrations in the focal corridor can contribute to identifying business opportunities in other trans-European corridors (task.9.3).
- Assessment of the scope of IP's contribution to fulfilment of EC's policy by increasing interoperability and competitiveness in ways that may reduce the truck and rail freight transport imbalance and related negative socio-environmental externalities (task.9.4).
- Extrapolating input to a strategy for how Europe-wide interoperable railways may contribute to resolution of transportation challenges arising from considerable inflows of Asian imports, the 2004 EU expansion and pending EU accession by further new Candidate Countries. (task.9.5).

1.2 Objectives and approach

This report is part of task 9.4. The purpose of this task is to assess how the RETRACK project contributes to fulfil the European Commissions policy.

The assessment will produce the following deliverables:

- Deliverable 9.2 Assessment of degree of attainment of business and EC-policy objectives
- Deliverable 9.3 Framework for extrapolating the results from specific demonstration to Europe-wide intermodal network, and attainment of the EC's policy objectives
- Deliverable 9.8 Summary of results and input to modelling framework

Main objective of this report is to summarize the results gained in task 9.4, i.e. the assessment of the scope of IP's contribution to fulfilment of EC's policy (chapter 2: contribution to business and EC- policy objectives; chapter 3: pilot results and lessons learned, chapter 4: general extrapolation framework) and the definition of a modelling framework (task 9.5) (chapter 5).

2 Fulfilment of EC Policy Objectives

One important objective of this task is to evaluate the RETRACK pilot freight train service from the degree of attainment of business and EU-policy objectives.

- Business objectives.
Analysis if and how:
 - the RETRACK rail freight service has established itself as ‘As a Commercial Service’;
 - the RETRACK service is offering reliable and competitive services;
 - the RETRACK service is competitive;
 - the RETRACK service has established long-term collaborative relationship among partners and also with customers;
 - the asset utilisation of RETRACK service is on the rise;
 - the RETRACK service is flexible/pragmatic/adaptive enough to cope with the different market demand/situation circumstances;
- Policy objectives.
Analysis if and how:
 - the RETRACK service contributes to the development of the EU sustainable transport policy;
 - the extent to which EU open non- discriminatory access freight transport policies contributed or was helpful to RETRACK as a commercial service;
 - the extent to which the RETRACK service has been able to divert or shift cargo from other modes, in particular from road to rail; and the extent to which the RETRACK service is profitable.

To investigate whether or not and to what extent the RETRACK service meets these public and private policy objectives opinions were sought in the form of question and answers from the existing RETRACK operating partners. These interviews were homogeneous in response and therefore this summary has been written synthesising all responses, taking into consideration both the customer survey and the RETRACK operators’ opinions:

2.1 Business objectives

RETRACKs contribution to EU sustainable rail policy objectives

RETRACK has contributed by researching, developing and implementing a scheduled international rail freight service between the Benelux countries, Germany, Austria, and Hungary with links to Romania. As a result a wholly new rail freight service sponsored by private rail entities using the new open access rules is in operation. RETRACK has contributed to an increasing level of service between the Benelux countries and Hungary via Germany & Austria. For this the EU is funding the introduction of a new service and underwriting the costs of operation to 2012.

The RETRACK rail freight service (conforming to the EU co-modal policy) competes with road to secure a modal shift. The RETRACK service is also competing with existing rail and water transport services. The services using rail have a lower carbon footprint compared to

road based traffic. The services are operated using electric trains with a key CO2 advantage together with the ability to use electrical power generated from a variety of inputs.

RETRACK established itself as a commercial service

The RETRACK project has introduced a new freight service concept based on wagon load groupings between key concentration points. It has secured base load business (grain) and other accounts including single or small wagon groups and has been able to develop the latter in a very positive and profitable way. From the RETRACK pilot operations we can say that SWL traffic can be operated to positive commercial gain and not be dismissed as a commercially unattractive option. RETRACK has worked because of the availability of railway sidings and spurs where rail wagons can be loaded and delivered to maximise payload and minimise any intermediate handling. The evolution of satellite points served from the main network has also been a useful option.

The progressive move from one train rotation to three per week on a reliable scheduled basis has given shippers options beyond a reliance on the services provided by the incumbent train operators. The operation is moving towards commercial viability (cash flow) and would have achieved this earlier without the grain wagon issue in the Summer 2010, winter weather delays, shunting problems in Cologne. It is possible that the project, had it started earlier, would have been in profit by now.

RETRACK as a reliable service

It has grown to three round trips per week with a dedicated loco. This schedule is a good fit to maximise the locomotive's productivity commensurate with requirements for maintenance and servicing. On average RETRACK's on-time service performance is ~90%. Reliability in the delivery of train services has been good and at least comparable to other services provided by other operators. There have been issues of on-time performance and delays induced by winter weather, derailments etc. but this has also applied to other rail service providers.

RETRACK as a competitive service

The RETRACK service is seen as competitive by customers and other rail operators. RETRACK service is offering higher flexibility to the shippers with equal or lower transit time. Customers value it as a superior service to other offerings and RETRACK service is also seen as a reliable and available service beyond that provided by the incumbent state railways. The move to a three times per week service rotation indicates that there is market demand for this sort of service. Although RETRACK provides a faster transit time for shippers compared to existing services, it does not charge premium cargo rates. Because of this advantage, some road based commodity flows and some water based flows have been switched to RETRACK rail.

RETRACK developed a long-term relationship with customers

Good and long term relationship with customers is very important for rail freight services. This is primarily a TransPetrol role with some limited marketing support from LTE. Some long term business relationships have been developed including Ford for car component business (eastbound) and Glencore for grain traffic (westbound). The core traffic comes from about 10-12 shippers. Some other shippers have also used the train services on a routine basis.

RETRACK developed a long-term relationship among the RETRACK partners

Working in a collaborative and cooperative way is vital for any transport chain operations. The RETRACK freight train operates along the transport chains. It has developed long term relationships among partners in particular the train operators. There is a clear distribution of responsibilities as to who does what. For example LTE provides traction under contract for the trains between Cologne & Győr (the main service axis). CER provides supervision of rail operations in Hungary. TransPetrol performs the planning, human resources, commercial and marketing aspects of the operation. Neither LTE nor CER conducts major commercial or marketing support. This is largely performed through TransPetrol. According to the agreed roles and responsibilities, the cost and revenues are shared among the operating partners.

Rising loading factor and/or utilisation

The move from one round trip per week to three round trips per week has demonstrated the availability of traffic to fully utilize the train service and capacity. This has resulted in higher asset utilisation (locomotive, crew and other equipment). The base load traffic volume has been westbound grain but is being matched by growing levels of eastbound traffic. But still there are serious operational constraints such as planning the grain wagon round trips and be able to offer space to other type of cargo customers. Train planning is undertaken by TransPetrol in terms of the build up of train profiles and the assembly of trains at the key nodes to maximise both revenue and payloads.

Status of RETRACK in regard of profitability

The RETRACK train service is approaching the point of commercial profitability (in terms of operating income exceeding operating costs). The current position suggests RETRACK is at the 75-80% mark of cost recovery stage and could be into profit by early 2012. RETRACK may by now have been in profit had it started earlier and not experienced major technical issues in 2010. The availability of the EU funding to start up the service is probably best seen as working capital without which the service would probably not have been feasible. The RETRACK model might give support to other private rail operators to secure commercial funds to develop new services.

Flexibility of the RETRACK service

The RETRACK pilot train service started with one train rotation per week. Over the months the service developed to gradually higher frequency level to the current three rotations per week which suggests that the RETRACK service is wholly flexible/pragmatic /adaptive. This also suggests that there is market volume that could be attracted to rail on the basis of pragmatic service availability and reliability together with attractive rates for wagon groups and individual wagons. The core concept of operating wagon groups between concentration points is not new and not even cutting edge. It represents a service and business model that has been proven in the context of available traffic, service times and route options. Responding to the market demand, the RETRACK train has been operated at different levels of traffic ranging from very low levels of traffic (single wagon) to full length and weight limits. This business model demonstrates adaptability to accommodate varying loads. The move to three rotations per week generates benefits in terms of asset utilization (locomotive and other equipment). The adoption of the satellite concept for traffic served to points not directly on the main line also demonstrates some pragmatism, adaptability and flexibility in terms of commercial and operational response.

2.2 Policy objectives

RETRACKs contribution to the development of sustainable transport policy

RETRACK has been able to contribute to the development of EU sustainable transport policy by exploiting rail's inherent generic advantages and specifically by the development of a faster competitive service with higher frequency and reliability. The use of rail for freight secures advantages in terms of energy efficiency, GHG and CO₂ together with a reduction on inter-urban road congestion by attracting traffic from road, reducing traffic accident potential and minimising the impact of freight traffic on urban and rural domains.

Development of a cross-country pan-European operation of commercial rail freight service

The RETRACK service operates along the major West to East corridor connecting ports, industrial conurbations, major cities and agricultural production areas and has been able to tap into traffic. Regular and routine services are operated between the Benelux countries and Hungary with additional satellite services to specific traffic origins/destinations. The services are being operated across multiple international borders from the Benelux countries through Germany, Austria, and Hungary & to and from Romania/Turkey. It has been an attractive service for small wagon groups and single wagon load (SWL) traffic offerings and demonstrated that this traffic type can be accommodated profitably if managed properly.

Shifting cargo from road, waterways and rail to RETRACK freight service

The RETRACK freight service has been able to divert or shift cargo from road, waterways to rail. The grain traffic was previously carried in part by water so there is a move to rail for this (>35%). The aluminium oxide traffic for Austria is a direct transfer from road to rail. Other traffic is partly won from other freight train services or is wholly new traffic.

The availability of the EU funding to start up the service is probably best seen as working capital without which the service would probably not have been feasible. The RETRACK model might be an example for support to other private rail operators or such initiatives to secure commercial funds to develop new services.

EU open non-discriminatory access freight transport policy is helpful to the running of RETRACK as a commercial service

The EU open non-discriminatory access freight transport policy contributed to the intention to run the RETRACK train as a commercial freight service. The new framework provided an opportunity with EU final support to demonstrate the potential viability of a new pan-European rail freight service. It is a significant contextual change in that it supported the development of new commercially provided open services compared to those offered by the incumbents. The model as operated is significantly different to that envisaged at the outset of the project. The current RETRACK freight train operations has been maintained adapting to the changing economic and traffic conditions and the identification of a core traffic base. This can be seen as a positive move (like road hauliers) by the RETRACK operators.

Further steps to be implemented by EU/Member state to make rail service more effective

The Member States need to ensure that the incumbents do not retaliate on pricing (e.g. with zero pricing bids) to drive away the new competition out of the market. There are residual issues that constrain the development and implementation of new services. For example, the regulatory regimes along the line of route are not consistent. There are also technical and driver related issues to do with border crossing protocols/inspections/documentation that need to be resolved.

The Member States need to honour their commitments to the railway reform package and allow new entrants to be able to operate non-discriminatory services on a routine and unrestricted basis. Several have failed to do this but are also failing to modernize their services and systems together with their commercial, operational, technical and managerial models to take full account of the new freedoms.

The Member States need to take proactive actions so that rail operators become efficient in terms of productivity and reducing the unit cost of production by significant amounts to compete with other modes (in particular road).

Through research the RETRACK consortium identified different issues (e.g. direct or indirect discriminatory access, path allocation process, technical issues, driver issues, language issues, multi-electric locomotive issue) that constrain international commercial rail freight service development. The research recommended different actions to make the non-discriminatory access policy into reality. As a result RETRACK rail freight service has become a reality despite much scepticism. Now the RETRACK service is up and running as a scheduled international rail freight service between the Benelux countries, Germany, Austria, Hungary and with links to Romania. However there are more issues that should be addressed to make non-discriminatory policy more effective.

3 RETRACK pilot demonstration train and lessons learned

The RETRACK pilot demonstration train service began operation in February 2010 and experienced a lot of different phases.

In the following a summary overview of an empirical analysis of the demonstration run will be shown and issues of the implementation that can be lessons for other existing or future new rail freight services will be evaluated.

3.1 Pilot demonstration train operation

In the following a first summary of the empirical analysis of the RETRACK pilot demonstration train service will be shown¹.

The basis for that are the pilot data diaries from February 2010 till November 2011.

Periods with more or less in- and decreasing volumes can be seen in the operation of the demonstration train service. But overall there is a clear and constant evaluation of the pilot demonstration train.

The RETRACK pilot demonstration train service began operation on a single rotation per week basis. Figure 1 and table 1 displays the number of train movements per month and in total over the period from February 2010 to November 2011. This has now been increased to three rotations per week. About 15% of the planned train movements have been cancelled due to different reason, most of the between east- and westbound balanced roundtrips have been operated between Cologne and Győr (70% / 64%).

The average duration time on the main leg (Cologne – Győr) is 28 hours (eastbound) and 33 hours (westbound) with high ranges (between 20 and 140 hours eastbound and 17 and 172 hours westbound.).

The number of customers varied in this period between 1 and 7 as also the number of transported wagons varied between 1 and 46 with a range of payload between 0 and 1.800 tons.

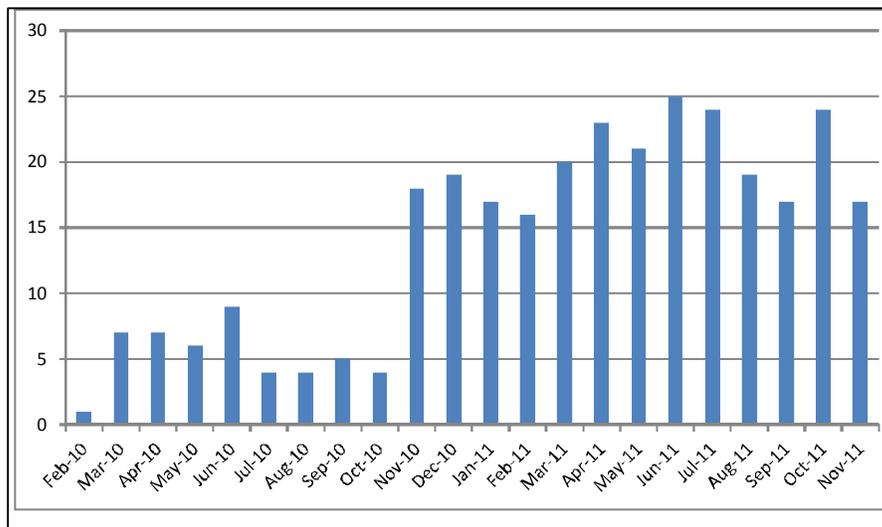


Figure 1: Number of RETRACK train departures (one-way) per month

¹ More detailed analysis can be found in D9.2, D9.3 and D9.4

	Number	%
cancelled	59	15
East-West	153	40
thereof:		
Győr-Cologne	98	64
Hegyeshalom-Cologne	47	31
Passau-Cologne	8	5
West-East	154	40
thereof:		
Cologne-Győr	107	70
Cologne-Hegyeshalom	42	27
Cologne-Passau	5	3
E-W: Only LOCO Positioning	7	2
W-E: Only LOCO Positioning	8	2
Others	4	1
Total	385	100

Table 1: Train movements pilot demonstrator

Start- and endpoint in Retrack core corridor	Mean	N	Std. Dev	Min	Max
Győr - Cologne	33.09	92	15.252	20.07	141.85
Cologne - Győr	27.81	106	15.467	17.07	172.73
Hegyeshalom/Ebenfurth - Cologne	19.74	47	2.407	15.50	25.60
Cologne - Hegyeshalom/Ebenfurth	20.88	42	6.484	15.75	55.83
Passau - Cologne	10.73	8	1.027	9.03	11.80
Cologne - Passau	12.31	4	1.194	11.23	13.97

Figure 2: Transport time (hours) between start- and endpoints in the RETRACK core corridor

	Lowest number	Highest number	Total number
Wagons	1	46	7167
Customers (shipments)	1	7	654
Net tons	0	1756	176323

Table 2: Number of wagons, customers and net tons. Highest and lowest number per train (one-way), and total for all pilot trains

3.2 Overall lessons for future new entrant rail freight service

The RETRACK project has experienced in different phases (research, preparation of the pilot, recession and customer volatility, pilot service, introduction of satellite service etc.) of the implementation a number of issues that can be lessons for other existing or future new rail freight services:

- Relative positioning of new operators in relation to the market dominance (capacity, access to train paths in volume, opaque commercial practices and accounting) of existing operators.
- Market response (i.e. from the existing operators) to the pilot project is very important for any new service. In the case of RETRACK this has been muted to date but could be predatory if key relationships on traffic were threatened by the new competitive services (e.g. automotive traffic) on price, for example.
- The RETRACK pilot did not undercut prices in the market but has been able to offer better flexibility than the incumbents and this has induced traffic interest. Other existing or new services may take this as an important lesson.
- There was some naivety in the project proposal and at the start of the RETRACK pilot in the sense that the market strength of the incumbent operators along the corridor was not correctly assessed in particular in relation to the movement of inter-modal traffic. The project came to life in response to real time cargo opportunities and commercial potential to start up a wholly new service on the corridor with flexible satellite options.
- Exposure of the dominating role of the national incumbent (e.g. DB in Germany), especially in the area of SWL / wagon group traffics. The reality of the regulatory regime and its effectiveness in Germany is still questionable. The position appears to be less extreme in Austria and Hungary.
- The surprising difference in acceptance of the Retrack Service by the incumbent railways in west and east. While DB and its various subsidiaries (Railion Netherlands) are following an absolutely strict policy of non-cooperation with private systems such as Retrack, the incumbent railways in Hungary and Romania are much more open to cooperation, though not through official statements.

- Intra-sector rivalries and positioning at a commercial and technical level still favour the incumbent rail operators despite the pressure from EU rail reforms. Developing cross border relationships, alliances, allegiances for train operations and ownership of railway companies further complicates the position. There has been some evidence of discrimination against the RETRACK new service (e.g. for allocating siding space) and this has led to the use of the parallel rail system to the incumbent that straddles the Austrian/Hungarian border.
- Access to train tracking systems on an unrestricted basis to monitor train activities in transit. TransPetrol's position of now being a railway undertaking through acquisition made this process somewhat easier but could be seen as a barrier to effective market entry if this facility is not freely available to new service operators on pan-European cross-country routes.
- Access to sufficient specialist rolling stock fit for purpose on a sustained basis (a minimum number to be there for the duration of the pilot).
- Retention or displacement of lower paying traffic/commodity flows (for example grain in the case RETRACK) that underpinned the start-up operation.
- The need for a clear equitable basis for cost and revenue sharing agreement in a consortium or the identification of specific contracted partner roles to be remunerated from train revenue. This should include locomotive and rolling stock re-positioning.
- Recognition that short term commercial and marketing positions may have to be adopted as pragmatic measures to formulate, define and support the ultimate emergence of a credible commercial service concept.
- Recognition that RETRACK service now has a strong commercial position to exploit and is approaching a break-even position.

4 Framework for Europe-wide rail freight network

From the RETRACK demonstration a framework for Europe-wide rail freight operation is proposed here. The path to achieve a successful pilot rail freight service must not be seen as an easy task. For this the RETRACK consortium partners conducted research. They have conducted corridor assessment, logistics service requirement and ICT development to prepare for the development of the demonstration phase. But the project had to face unforeseen scenarios such as a major change of rail operating partners, failure to achieve agreement on sharing of roles and responsibilities and final bottleneck to the start of the demonstration in the form of the economic recession which resulted in the loss of anchor customers and freight. From the experience of RETRACK pilot rail freight service it is concluded that there may be need for future project support by the EU to sponsor new rail freight services on other corridor to start ups in the form of repayable working capital or similar facility. A framework for the Europe wide cross-border rail freight service in another corridor is proposed below.

Sustainable rail service as selling point

RETRACK has contributed by researching, developing and implementing a scheduled international rail freight service between the Benelux countries, Germany, Austria, and Hungary with links to Romania. As a result a wholly new rail freight service sponsored by private rail entities using the new open access rules is in operation. RETRACK has contributed in an increasing level of service between the Benelux countries and Hungary via Germany & Austria.

The RETRACK rail freight service (conforming to the EU co-modal policy) to competes with road to secure modal shift. The RETRACK service is competing with existing road, rail and water transport services. The services using rail have a lower carbon footprint compared to road based traffic. The services are operated using electric trains with a key CO₂ advantage together with the ability to use electrical power generated from a variety of inputs.

Development of long-term relationship with transport chain partners

Working in a collaborative and cooperative way is vital for any transport chain operation. The RETRACK freight train operates along the transport chains. It has developed long term relationship among partners in particular the train operators. There is now a clear distribution of responsibilities as to who does what. For example LTE provides traction under contract for the trains between Cologne & Győr (the main service axis). CER provides supervision of rail operations in Hungary. TransPetrol performs the planning, human resources, commercial and marketing aspects of the operation. Neither LTE nor CER conducts major commercial or marketing support. This is largely performed through TransPetrol. According to the agreed roles and responsibilities, the cost and revenues are shared among the operating partners.

Operation as a commercial service

The RETRACK project has introduced a new freight service concept based on wagon load groupings between key concentration points. It has secured base load business (grain) and other accounts including single or small wagon groups and has been able to develop the latter in a very positive and profitable way. From the RETRACK pilot operations it can be identified that SWL traffic can be operated to positive commercial gain and not be dismissed as a commercially unattractive option. RETRACK service has achieved success because of the availability of railway sidings and spurs where rail wagons can be loaded and delivered to maximise payload and minimise any intermediate handling. The evolution of satellite points served from the main network has also been a useful option.

The progressive move from one train rotation to three per week on a reliable scheduled basis has given shippers options beyond a reliance on the services provided by the incumbent train operators. The operation is moving towards commercial viability (cash flow).

Service reliability

The RETRACK service has grown to three round trips per week with a dedicated locomotive. The schedule is a good fit to maximise the locomotive's productivity commensurate with requirements for maintenance and servicing. On average RETRACK's on-time service performance is ~90%. Reliability in the delivery of train services has been good and at least comparable to other services provided by other operators. There have been issues of on-time performance and delays induced by winter weather, derailments etc. but this has also applied to other service providers.

Service competitiveness

The RETRACK service is seen competitive by both customers and other operators. The RETRACK service is offering higher flexibility to the shippers with equal or lower transit time. Customers value it as a superior service to other offerings and RETRACK service is also seen as a reliable and available service beyond that provided by the incumbent state railways. The move to a three times per week service rotation indicates that there is market demand for this sort of service. Although RETRACK provides a faster transit time for shippers compared to existing services, it does not charge premium cargo rates. Because of this advantage, some road based commodity flows and some water based flows have been switched to RETRACK rail.

Development of long-term relationship with customers

Good and long term relationships with customers are very important for rail freight service. This is primarily a TransPetrol role with some limited marketing support from LTE. Some long term business relationships have been developed including Treibacher (Rebes) for aluminiumoxide, Sasol, Grillo and Evonik (eastbound) and Glencore for grain and aluminium slab traffic (westbound). The core traffic comes from about 10-12 shippers. Some other shippers have also used the train services on a routine basis.

Asset utilisation

The move from one round trip per week to three round trips per week has demonstrated the availability of traffic to utilize the train service and capacity. This has resulted in higher asset utilisation (locomotive, crew and other equipment). The base load traffic volume has been westbound grain but is being matched by growing levels of eastbound traffic. But still there are serious operational constraints such as planning wagon round trips and be able to offer space to other type of cargo customers.

Moving towards profitability

The RETRACK train service is approaching the point of commercial profitability i.e. operating income exceeding operating costs. The current position suggests RETRACK is at the 75-80% mark of cost recovery stage and could be into profit by end of the demonstration period i.e. February 2012.

The availability of the EU funding to start up the service is probably best seen as working capital without which the service would probably not have been feasible. The RETRACK model might give support to other private rail operators to secure commercial funds to develop new services.

Flexible/pragmatic/adaptive service approach

The RETRACK pilot train service started with one train rotation per week. Over the months the service developed to gradually higher frequency level to the current three rotations per week which suggests that the RETRACK service is wholly flexible/pragmatic /adaptive. This also suggests that there is market volume that could be attracted to rail on the basis of pragmatic service availability and reliability together with attractive rates for wagon groups and individual wagons. The core concept of operating wagon groups between concentration points is not new and not even cutting edge. It represents a service and business model that has been proven in the context of available traffic, service times and route options. Responding to the market demand, the RETRACK train has been operated at different levels of traffic ranging from very low levels of traffic (single wagon) to extended length and weight limits (720m / 2300 t). This business model demonstrates adaptability to accommodate varying loads. The move to three rotations per week generates benefits in terms of asset utilization (locomotive and other equipment).

The adoption of the satellite concept for traffic served to points not directly on the main line also demonstrates some pragmatism, adaptability and flexibility in terms of commercial and operational response.

5 Extrapolation to modelling input

The objective of the modelling framework is the extrapolation of the results of the demonstrations in order to estimate the potential for resolving the transport challenges in Europe. In other words: to what extent will the competitive position of the railways in Europe improve, based on the pilot results of RETRACK.

For this the determination of the modal split effect calculated for the target year 2030 will be estimated using the TRANSTOOLS model (Tools for transport forecasting and scenario testing) that produces a European transport network model covering passenger and freight, as well as intermodal transport, funded by the European Commission, under the 6th Framework Programme DG TREN.

The consequences of improvement of competitive position based on RETRACK experiences (i.e. modal shift) will be mainly expressed in changes of:

- Service levels
- Time
- Costs
- Kilometres
- Emissions

The main aspect will be the effects of modal shift from road and barge and the extrapolation of this effects to other corridors and rail freight network, e.g. ERTMS/TEN-T Corridors (limited) and other relations (comparable to RETRACK).

The approach for the modelling will be based on freight flows and modal split for the year 2030 gathered out of the on ETIS+ dataset² to compare the situation with and without Retrack service. The main aspects will be to:

- determine the border resistances (in time and costs).
- determine the improvement in level-of-service due to RETRACK innovations in time and costs, at borders but also other improvements that influence the level-of-service.

The following impacts will be analysed:

- transport time
- reliability
- border crossing times
- costs

This will be adopted for 5 scenarios. The following scenario' assumptions will be used for the year 2030:

- Scenario 1: base situation (no changes)
- Scenario 2: 50 % decrease of border resistance
- Scenario 3: 100 % decrease of border resistance

² <http://www.etisplus.eu>

- Scenario 4: 50 % decrease of border resistance in combination with low increase of service level
 - Low increase of service level: e/g 10 % cost reduction and 10 % speed increase
- Scenario 5: 50 % decrease of border resistance in combination with high increase of service level
 - High increase of service level: e/g 20 % cost reduction and 20 % speed increase

First draft input data can be found in the Annex

The detailed approach and results are described in Deliverable 9.9 - Obtaining additional inputs and (from) running of the EC-wide models- and Deliverable 9.10 - Final synthesis and report on evaluation-.

Annex

Border resistance			
RETRACK Corridor	Minimum time 2011	Maximum time 2011	Average time 2011
NL-D	0,5 hours		
D-AT (2)	0,5 hours	21 hours	2,5 hours
AT-H (2)	1 hours	28 hours	6 hours
H-RO (1)	3 hours	30 hours	7 hours

Other borders (4)	Average time 2011
D-PL	4 hours
PL-CZ	n/a
NL-B	0,5 hours
B-F	1 hours
F-ES	4 hours (excluded normal gauge track Lyon-Barcelona: 1 hours)
ES-P	n/a
F-CH	0,5 hours
F-IT	0,5 hours
CH-IT	2 hours
IT-AT	1 hours

Year 2011	ERTMS Corridor A (Rotterdam –Genua)	ERTMS Corridor B (Stockholm- Hamburg- München- Bologna)	ERTMS Corridor C (Antwerpen –Lyon)
Transport time (excl. border crossing) (3)	21 hours	41 hours	15 hours
Year 2011	ERTMS Corridor D (Valencia – Ljubljana)	ERTMS Corridor E (Dresden – Budapest)	ERTMS Corridor F (Aachen – Warschau)
Transport time (excl. border crossing) (3)	33 hours	15 hours	23 hours

Sources:

Border resistance

(1)

IMPROVING THE COMPETITIVENESS OF THE ROMANIAN AND BULGARIAN RAILWAYS
BY INCREASING CROSS-BORDER QUALITY OF SERVICE

By the Association for European Transport and contributors - 2006

(2)

RETRACK Pilot diary data:

D-AT - Passau

AT/HU - Heygeshalom

Analysis of Max, Min, average for all pilot runs in 2011 (till 31 July)

(3)

Railnet Europe –www.me.eu

(4)

Desk research and interview with Ronald Mauck

The main bottlenecks are in general changing of personnel and responsibility (railway undertaking)

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