



**Developing Infrastructure and
Operating Models for Intermodal Shift**

<http://www.uic.asso.fr/diomis>

WP24, Geneva, October 2007

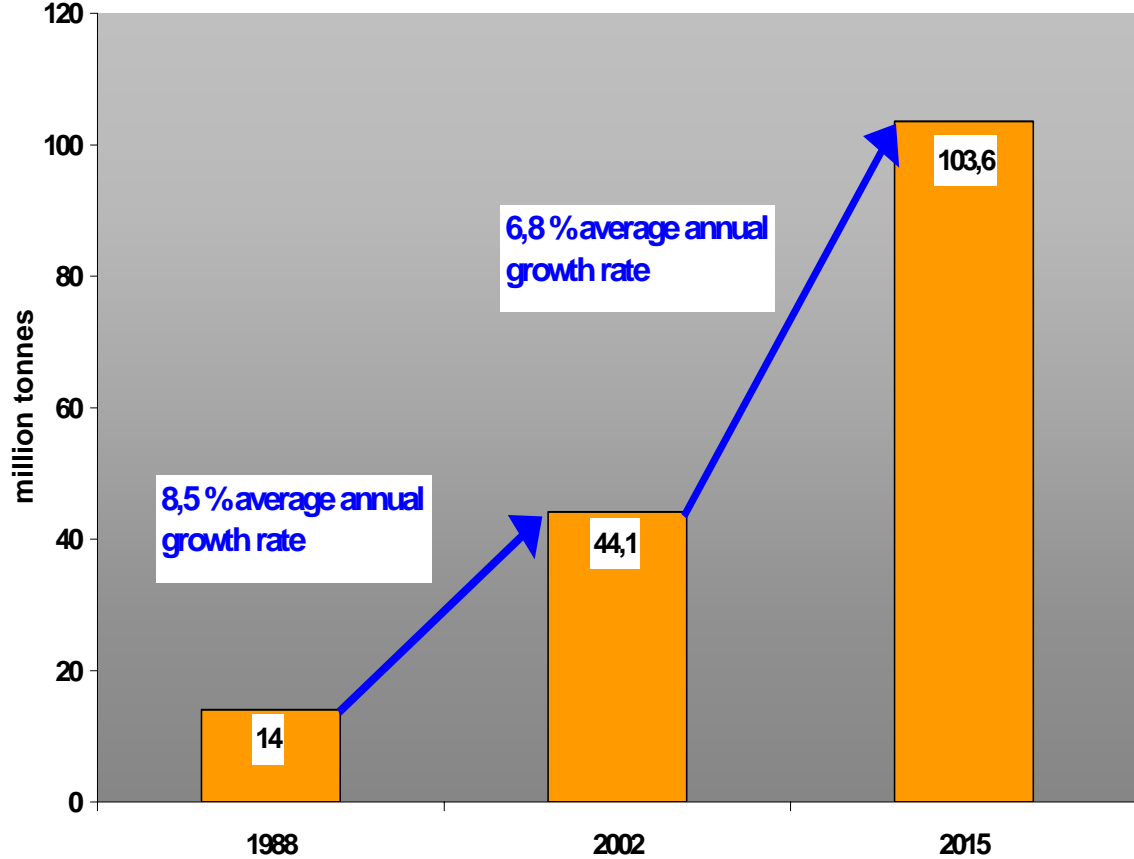
Study on Infrastructure Capacity Reserves at 2015

- “STUDY ON INFRASTRUCTURE CAPACITY AT 2015” (issued 2004) is parent study of DIOMIS
- Study investigated if the capacity of rail network and of intermodal terminals in Europe was going to be sufficient to absorb the growth of international combined transport by the year 2015
- Study sample = 18 European transport axis (O/D) representing approximately 80% of the freight traffic in Europe
- Study carried out by K+P Transport Consultants and KombiConsult

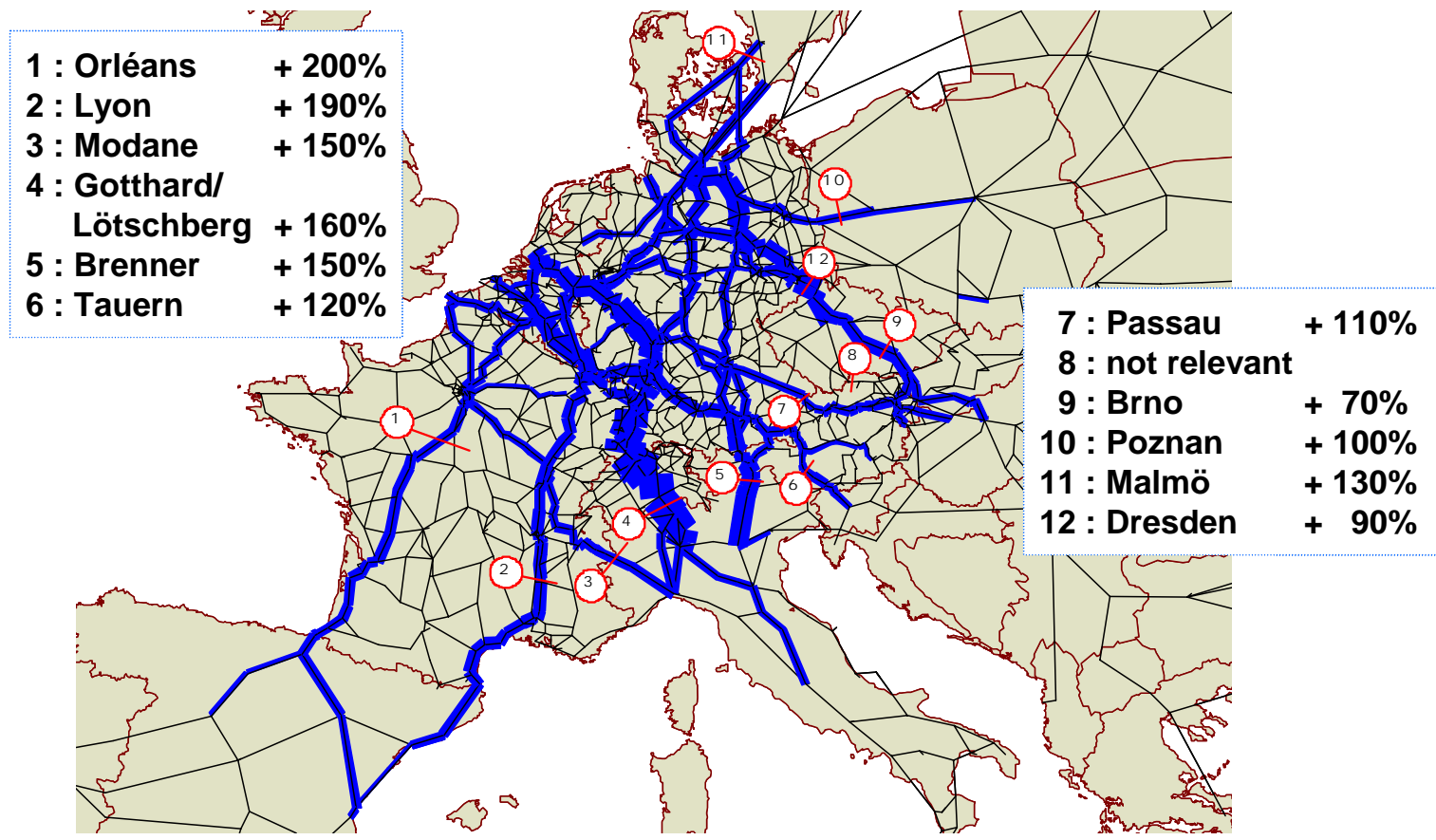
Study on Infrastructure Capacity Reserves at 2015

MAIN ASSUMPTIONS:

- Growth differentiated per corridor but average growth for unaccompanied ICT estimated at 6,8 % per year (less than historical growth of CT)
- Increase of 20% of the productivity in the use of the Infrastructure by Freight trains:
 - 750 m/ 1 500 Gross Tons on all corridors studied
 - 80% use of the available length
 - Internationally integrated railway paths
 - Quality of service back to previous levels (85/90% punctuality)
- All forecast infrastructure investments made by 2015

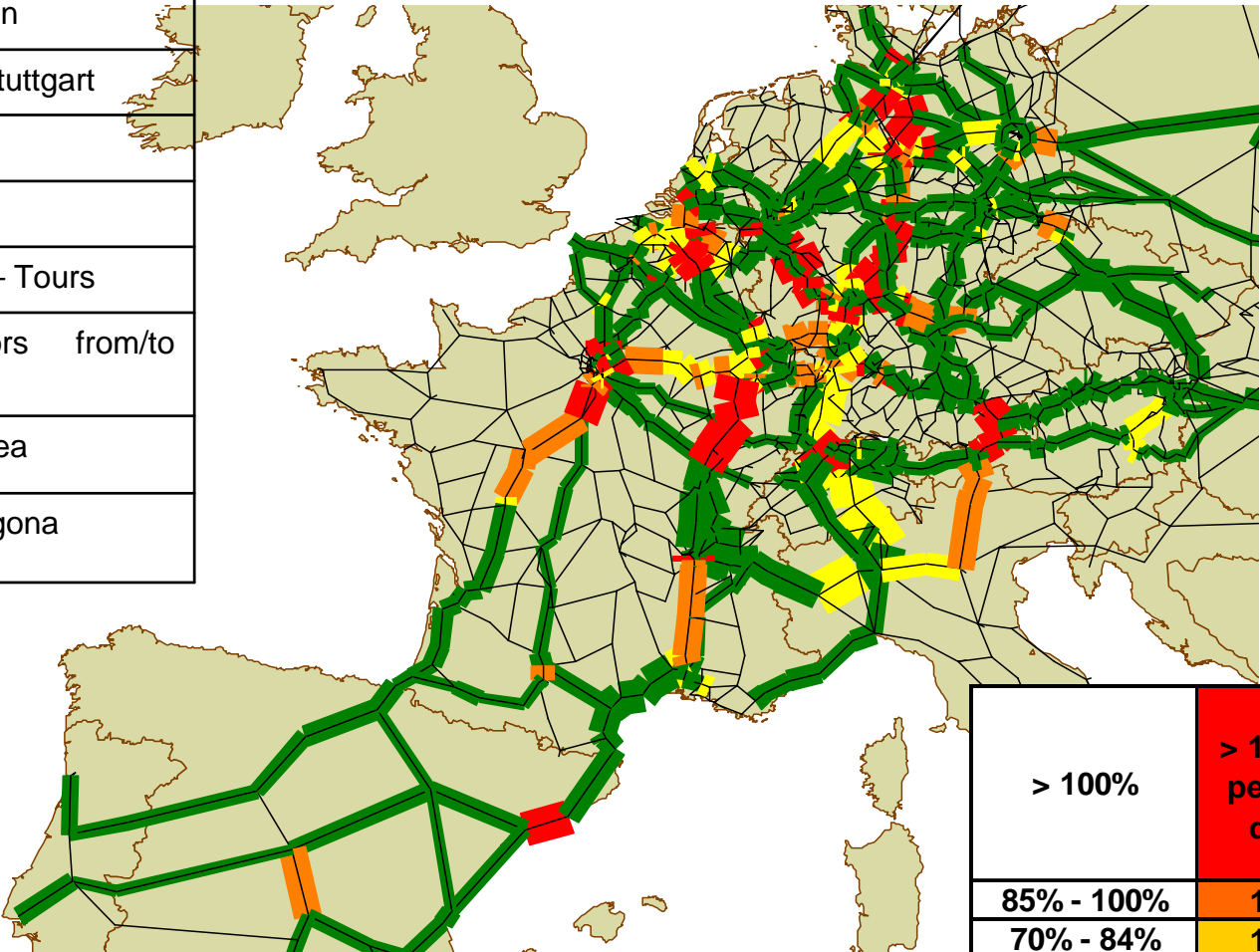


Study on Infrastructure Capacity Reserves at 2015



Result: impact on the rail network showing degree of saturation

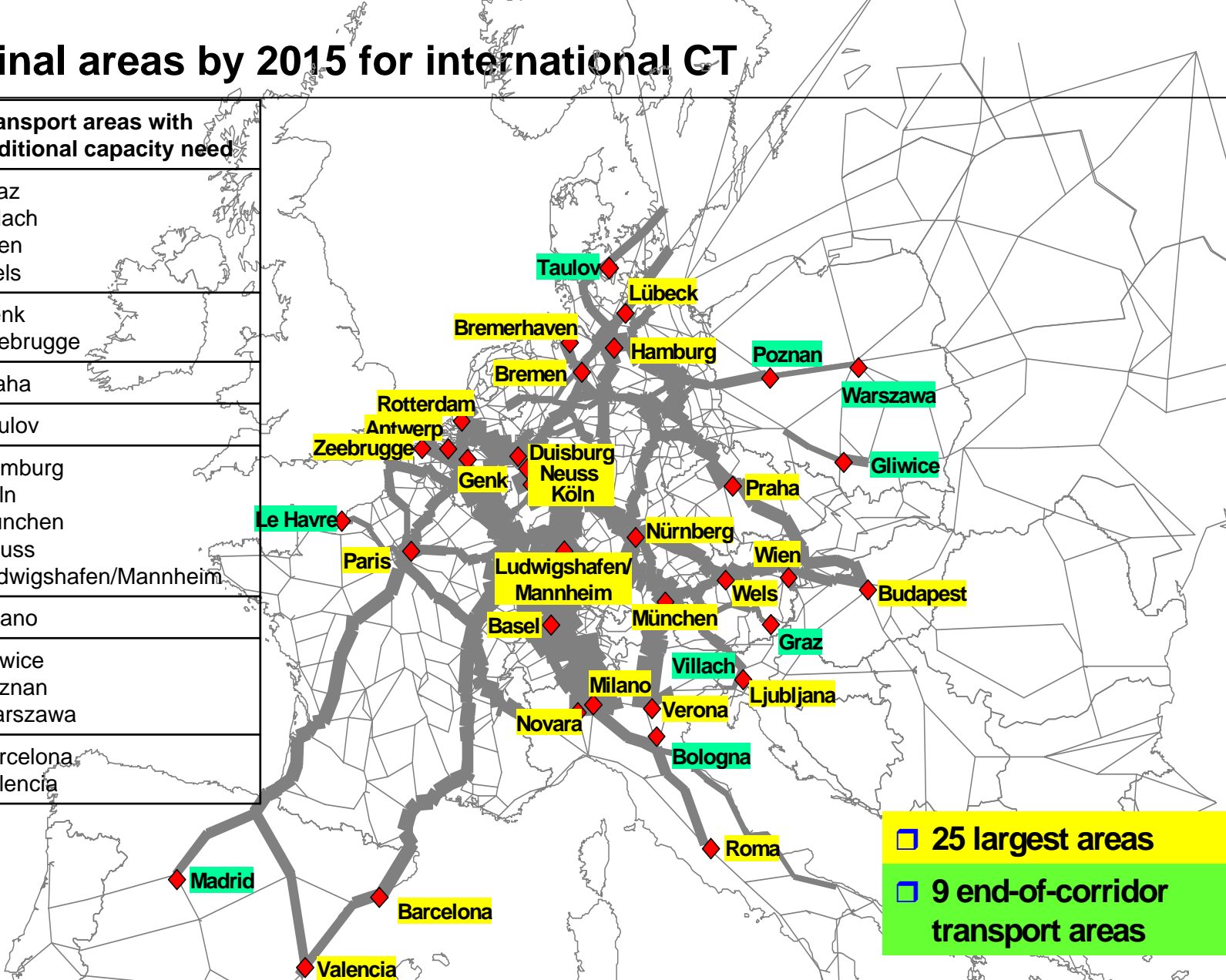
	Main axes with bottlenecks
Germany	Hamburg – Rhein/Main
	Köln – Rhein/Main
	Saarbrücken – Stuttgart
France	Metz – Dijon
	Lyon – Avignon
	Paris – Orléans – Tours
Belgium	Freight corridors from/to Antwerp
Switzerland	Greater Basel area
Spain	Barcelona-Tarragona



> 100%	2015: > 173 trains per day and direction
85% - 100%	147 - 173
70% - 84%	103 - 146

Top 25 terminal areas by 2015 for international CT

	Transport areas with additional capacity need
Austria	Graz Villach Wien Wels
Belgium	Genk Zeebrugge
Czech Republic	Praha
Denmark	Taulov
Germany	Hamburg Köln München Neuss Ludwigshafen/Mannheim
Italy	Milano
Poland	Gliwice Poznan Warszawa
Spain	Barcelona Valencia



- 25 largest areas
- 9 end-of-corridor transport areas

DIOMIS: follow-up of the Capacity Study

- Investigating 4 domains :
 - Railway Network Management
 - Railway Operations Management
 - Terminal Management
 - Accompanying Actions

- With the objective of :
 - Achieving the productivity gains underlying the conclusions of the Study
 - Encouraging new types of cooperation between all stakeholders in CT
 - Describing and helping to implement optimal capacity management models at terminal level
 - Adapting and improving more effective operating practices in terms of railway operation
 - Describing the benefits of an international approach towards planning and production
 - Integrating the assessments of the IMs
 - Learning to grow Rail Freight traffics on a constrained railway infrastructure

- Culminating into a Combined Transport MASTER PLAN for 2015

DIOMIS: split into modules

CT-Masterplan 2015	12/2007
CT-Wagon technologies	10/2007
CT-Production Forms including long & heavy trains	7/2007
CT-Terminal: Management and Co-ordination	2/2007
Improving the use of available train length	11/2006
Analysis of Domestic CT in selected Countries	11/2006
Report on Combined Transport in Europe in 2005	11/2006

DIOMIS : growth of domestic CT

Total domestic CT volume by country: 2005/2015

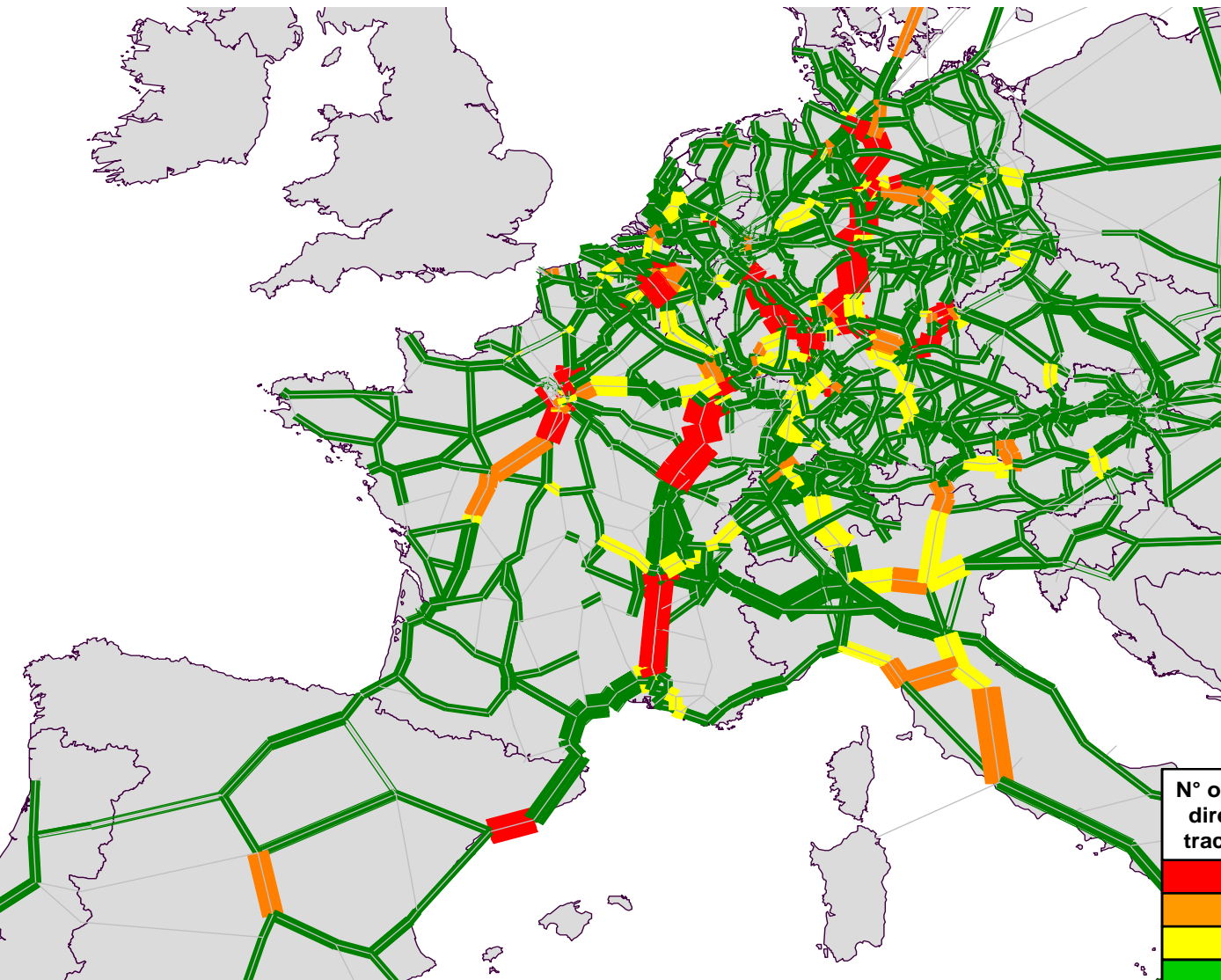
Country	Million gross tonnes		Change
	2005	2015	
Austria	3.12	4.85	55.4%
Belgium	6.40	13.20	106.3%
France	4.63	10.26	121.6%
Germany	19.11	41.71	118.3%
Italy	12.83	26.65	107.7%
Switzerland	4.47	6.16	37.8%

Diomis: growth of domestic combined transport

CT market segment	Gross tonnes	Percentage	TEU	Percentage
Domestic	73.278.700	54,1%	7.393.857	55,1%
International	62.276.800	45,9%	6.027.775	44,9%
Total	135.555.500	100,0%	13.421.632	100,0%

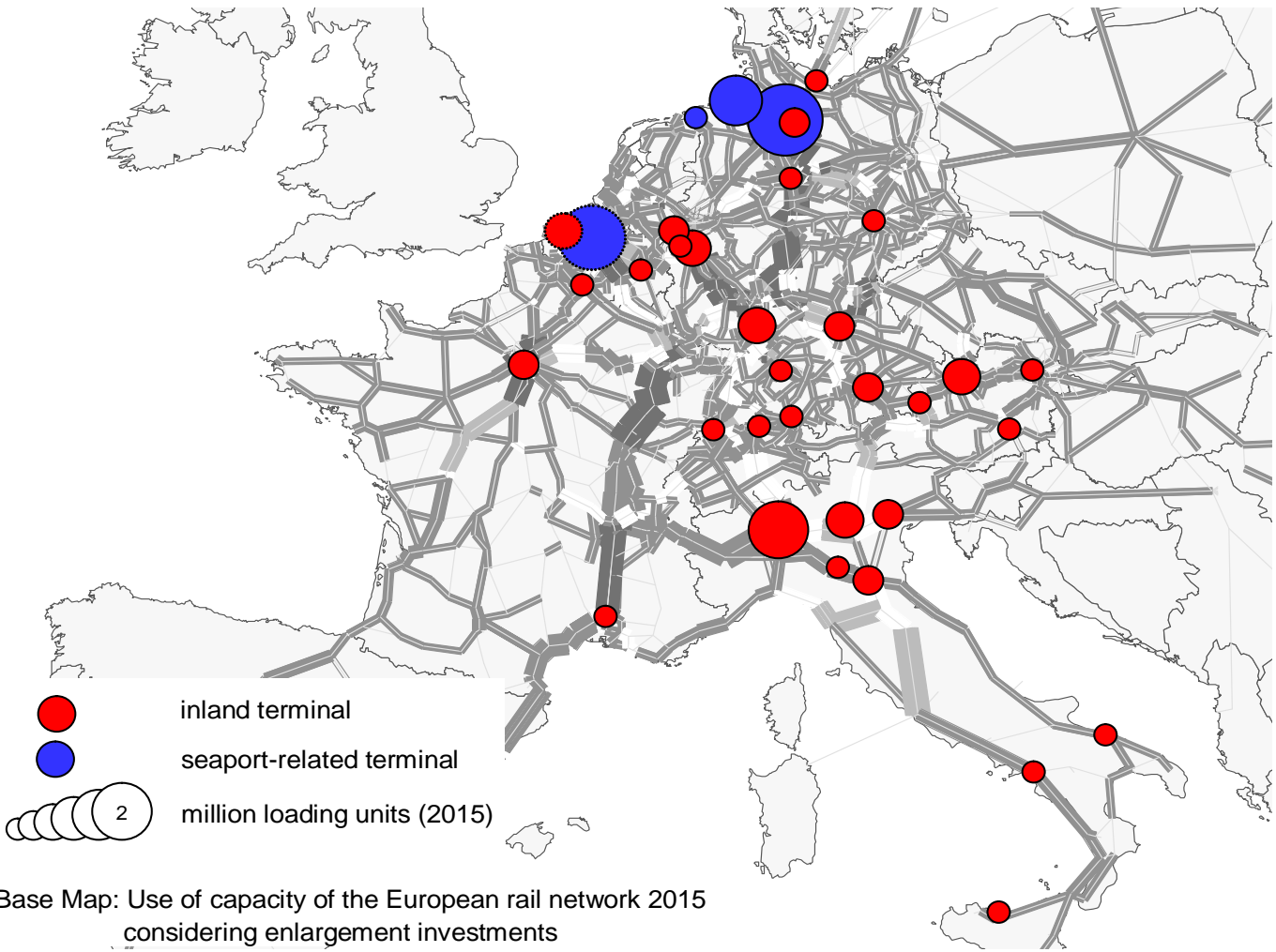
- Domestic CT important (>50% mainly due to the port hinterland traffic)
- Unaccompanied CT is the main growth segment

DIOMIS: domestic growth impact on network by 2015



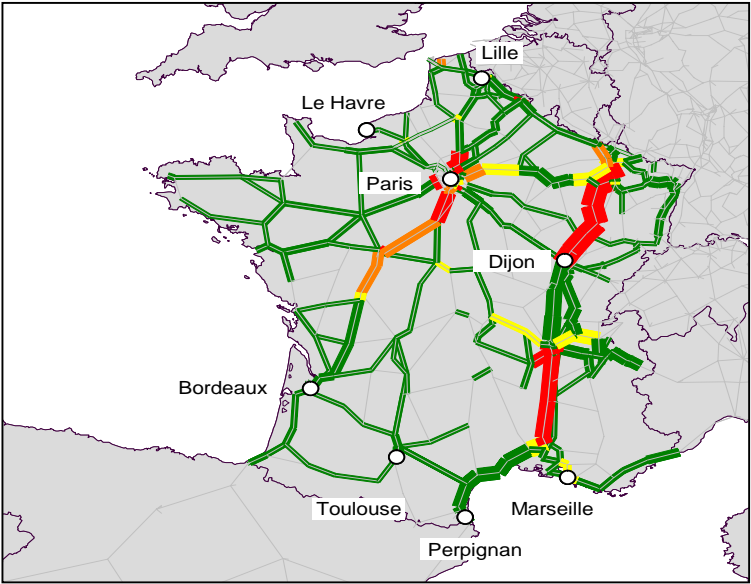
N° of trains per day and direction on a double tracked electrified line	Rate of employment
> 173	> 100 %
145 - 173	85 - 100 %
121 - 144	70 - 84 %
< 120	< 70 %

DIOMIS : domestic growth impact on terminals

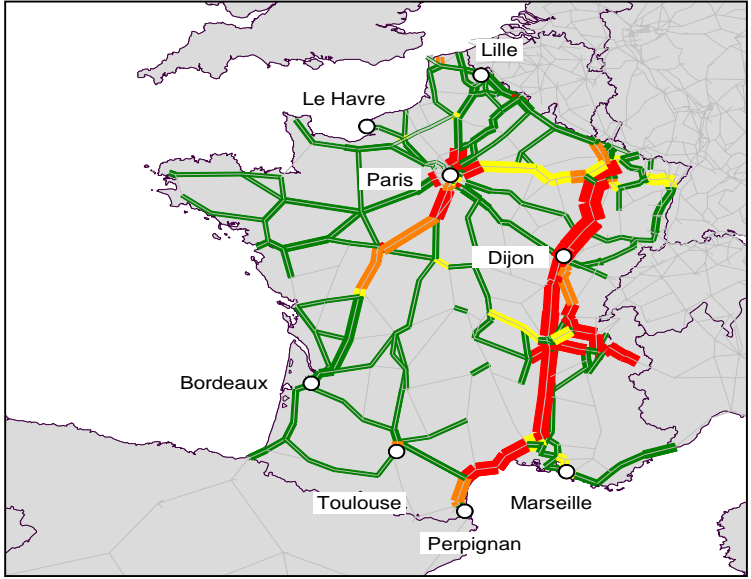


DIOMIS : domestic growth impact in France

Domestic combined transport Market	Volumes 2005 (million tonnes)	Volumes 2015 (million tonnes)	Percent age change
Maritime market	2,170	4,659	+114.7%
Continental market	2,459	5,600	+127.7%
Total	4,629	10,259	+121.6%



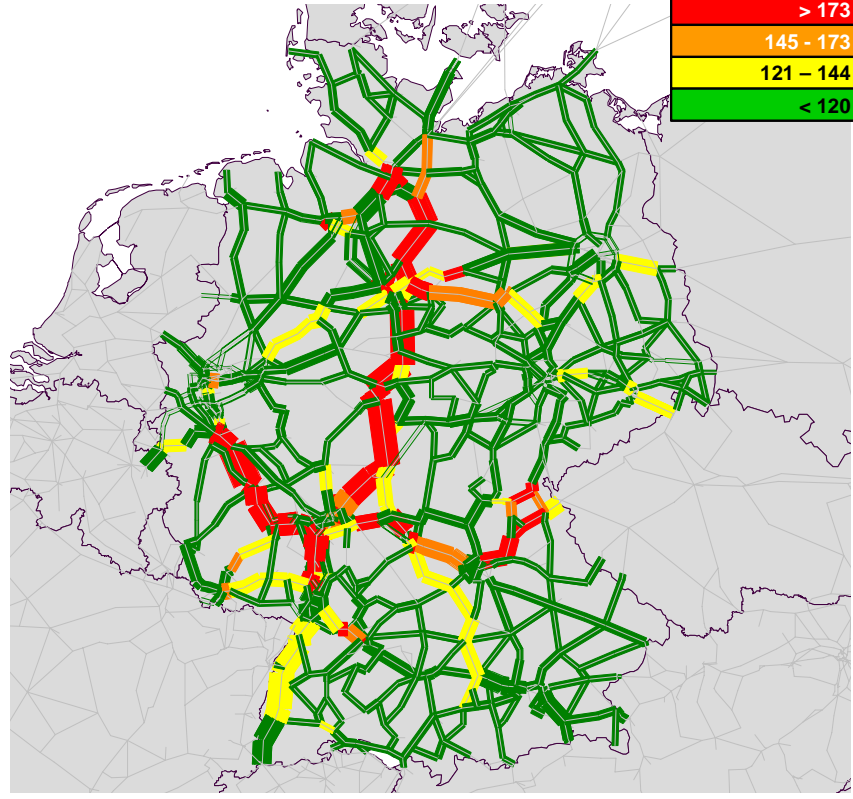
Network load with investments at 2015



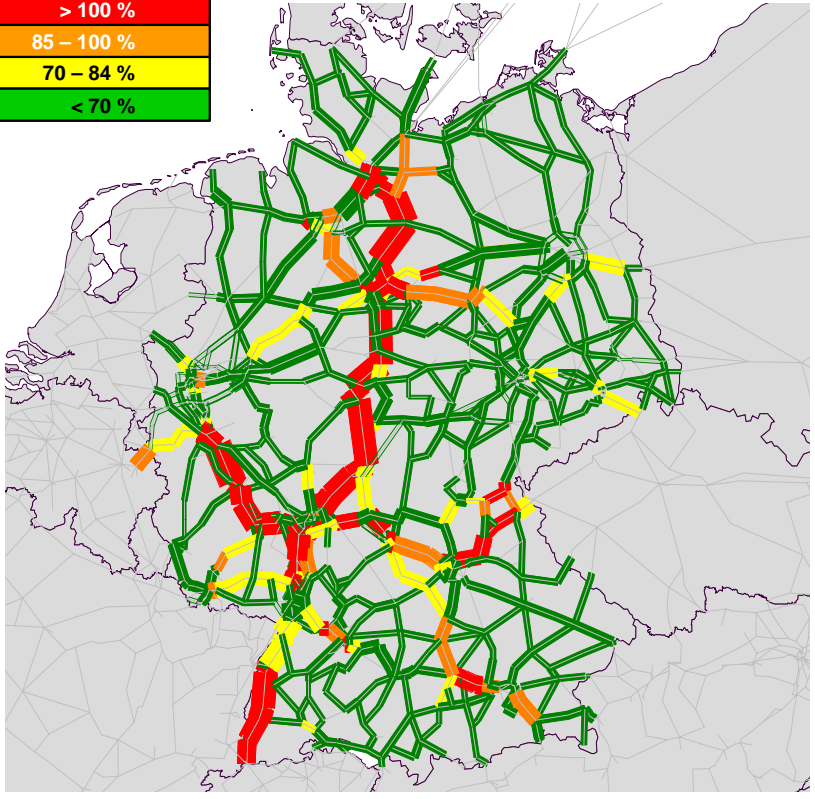
Network load without investments at 2015

DIOMIS : domestic growth impact in Germany

N° of trains per day and direction on a double tracked electrified line	Rate of employment
> 173	> 100 %
145 - 173	85 - 100 %
121 - 144	70 - 84 %
< 120	< 70 %



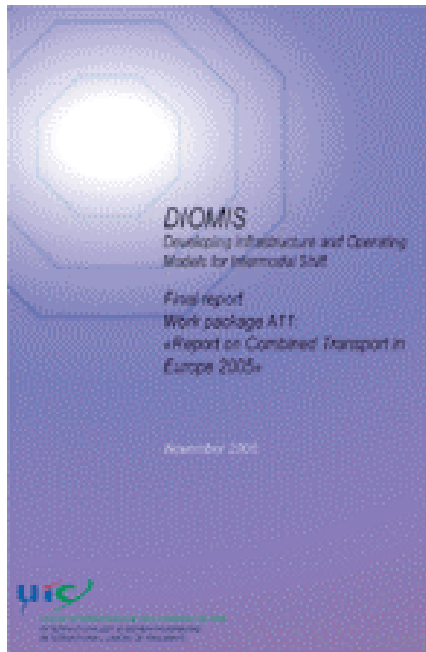
Capacity load of the network by 2015 after investement



Capacity load of the network by 2015 before investement

DIOMIS : other available reports

Report on Combined Transport in 2005

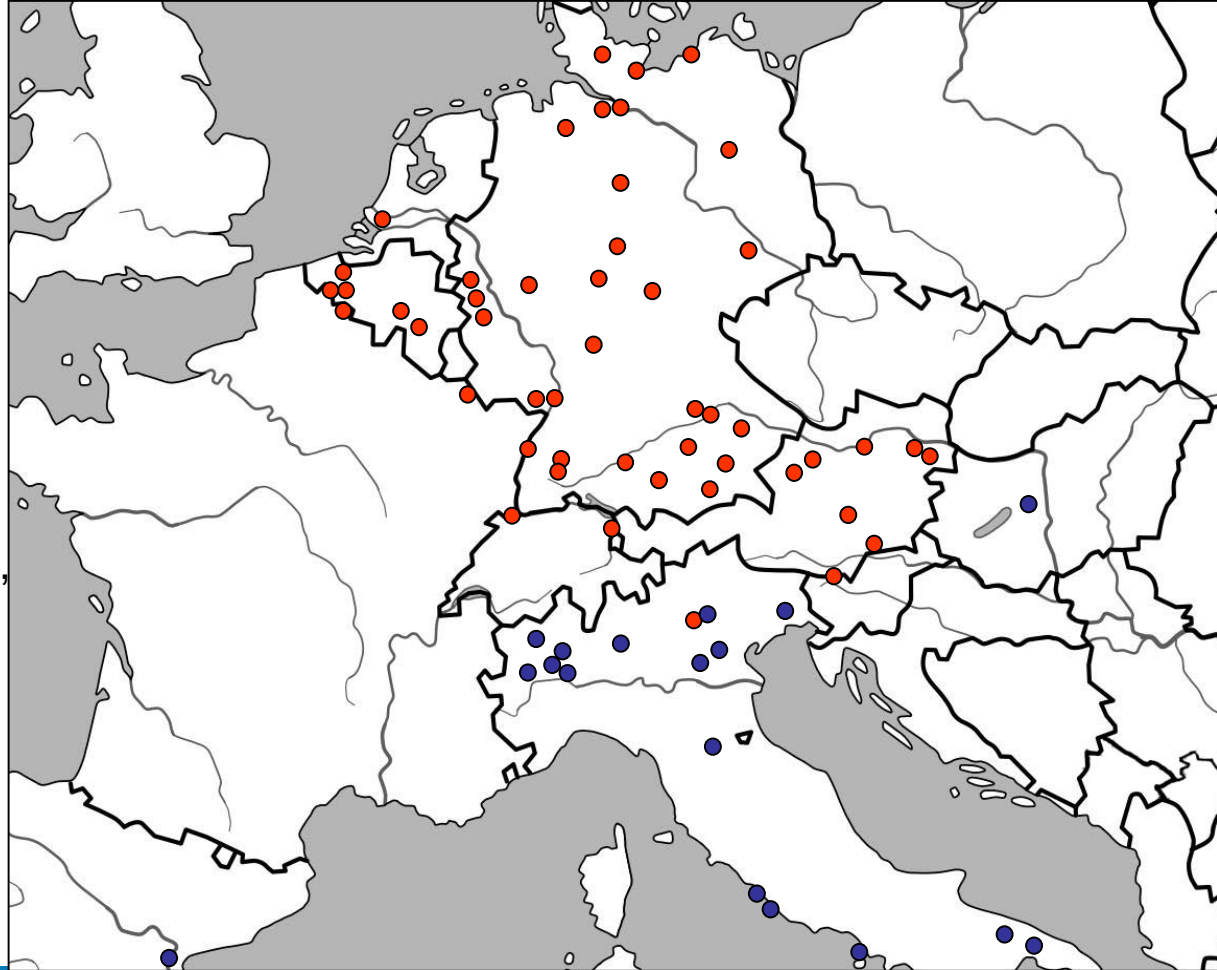


- Description & explanation of the market
- Statistical data
- Evolution of market structure
 - Size of the market
 - Market positioning of operators
 - Scope of services
 - Level of competition
 - Employment by the sector
 - Revenues from the sector
- Etc.

DIOMIS : other available reports

Report on best practices in terminal management

- Survey of “best practices” for CT terminal management in selected European countries – through workshops (sample = 79 terminals in 8 countries – No participation of France!)
- Recommendations on “soft” management measures using existing capacity in an optimum way, or increase capacity without major investment
- Foster exchange of capacity management knowledge between European intermodal terminal operators



Report on how to optimise the use of available train length

- Providing examples of methods and features (good practices), which enable an improved use of train capacity

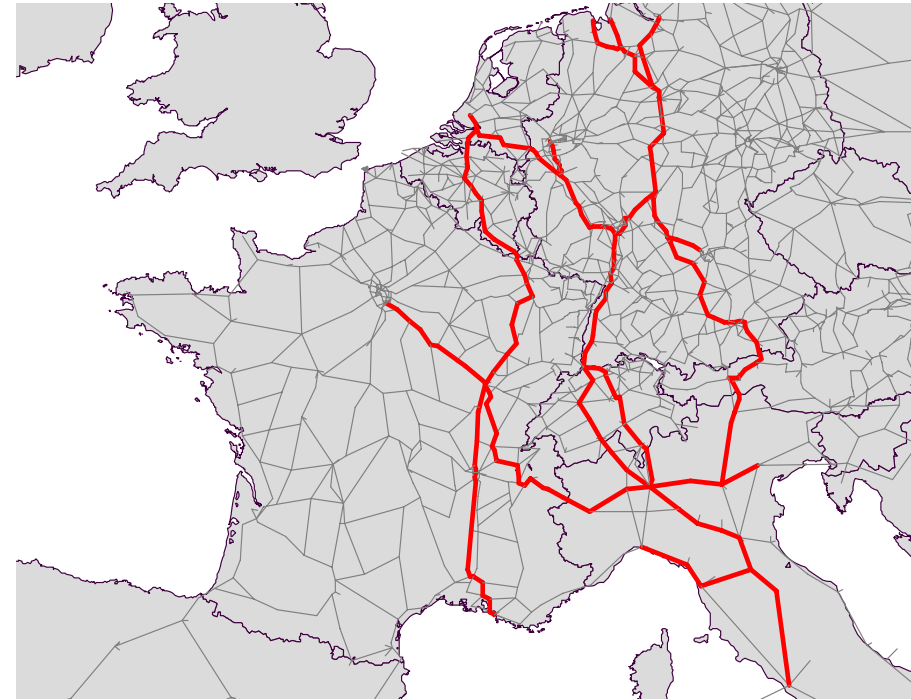
- Interviews of intermodal operators/railways/shippers re:
 - Actual use of capacity
 - Factors, which determine the use of capacity
 - Good practices to improve the use of train capacity

- Measures assessed in terms of their applicability, transferability and impact on the network

DIOMIS : soon to be published

Intermodal production systems

- Identify production systems enabling CT stakeholders to:
 - bundle volumes
 - transport more volumes
- Assess the impact of coping with limited rail infrastructure capacities
- Assess the impact of those schemes on rail's ability to capture the forecast growth



Corridors likely to be suitable for longer and heavier trains due to demand and bundling

International coordination in terminal development

- Any capacity constraint on one end of an international link could impede the establishment of a new CT service or impair the quality of an existing service
- Show how international coordination could alleviate capacity constraints and facilitate the implementation of international CT services

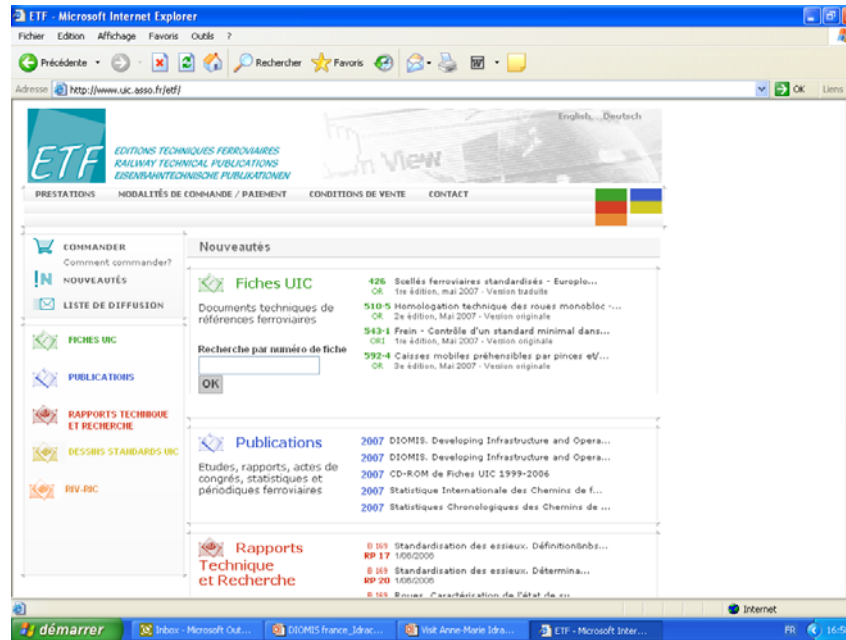
Assessing new technologies in the wagon field

- The rail industry has combined transport (CT) wagons and technologies on offer which have not yet been properly referenced in terms of their technical potential or limitations with respect to the relief of infrastructure bottlenecks.
- An inventory of existing wagons together with an analysis of the key features of each type of wagon will be carried out.

DIOMIS: Communication & Dissemination

a) Website: <http://www.uic.asso.fr/diomis>

b) Publications



c) Workshops with all stakeholders: 12 October 2006, 1 February 2007 (next December 2007)

DIOMIS: next steps

- a) Put the recommendations on the agenda of decisions makers so that they are included in medium term strategies

- b) Expectations towards IM:
 - Acknowledge the main bottlenecks
 - Assess the Infra measures proposed
 - Assess the cost of relieving the bottlenecks
 - Common understanding of the infrastructure requirements
 - Awareness of the urgency of the problem
 - Integrated international approach for planning the train paths
 - Long(er) trains : at least 750 m on the selected corridors
 - Review the priorities between Freight and Passenger trains

- c) Follow-up study focusing on Central/Eastern European Countries and on the third parameter of capacity constraint: the wagon