



Lecture No 7.

COORDINATED DEVELOPMENT OF THE INFRASTRUCTURE OF INTERNATIONAL INTEREST

THE TRANS EUROPEAN NETWORKS & OPPORTUNITIES FOR ENGINEERS

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RECOMMENDED READINGS

- ❖ **REGULATION (EU) No 1315/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** of 11 December 2013 on Union guidelines for the development of the trans-European transport network
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R1315>
- ❖ **DIRECTIVE 2008/57/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** of 17 June 2008 on the interoperability of the rail system within the Community
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:191:0001:0045:EN:PDF>
- ❖ **REGULATION (EU) NO 1316/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** of 11 December 2013 establishing the Connecting Europe Facility
<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1461080245497&uri=CELEX:32013R1316>
- ❖ **COMMUNICATION FROM THE COMMISSION** Building the Transport Core Network: Core Network Corridors and Connecting Europe Facility /COM/2013/0940 final /
<http://eur-lex.europa.eu/legal-content/en/NOT/?uri=CELEX:52013DC0940>



CREATION OF TRANS-EUROPEAN NETWORKS

- ❖ **The Trans-European Networks (TEN) were created by the European Union by Articles 154-156 of the Maastricht Treaty (1993), with the stated goals of the creation of an internal market and the reinforcement of economic and social cohesion**
- ❖ **It makes little sense to dream about a common EU market, unless the various regions and national networks making up that market, were properly linked by modern and efficient infrastructure**



TEN GUIDELINES

- ❖ According with these objectives, the European Commission developed guidelines covering the objectives, priorities, identification of projects of common interest and broad lines of measures for the three sectors concerned: **Transports, Energy and Telecommunications**
- ❖ The *European Parliament* and the *Council* approved these guidelines after consultation with the *Economic and Social Committee* and the *Committee of the Regions*



3 EU NETWORKS

- ❖ **The infrastructure networks defined by the treaty:**
 - ❖ **Trans-European Transport Networks (TEN-T)**
 - ❖ **Trans-European Energy Networks(TEN-E)**
 - ❖ **Trans-European Telecommunications Networks (eTEN)**

- ❖ **A large number of projects of common interest have benefited from financial support of the European Union budget through the *TEN-budget line* as well as the *Structural Funds* and *Cohesion Fund*; the *European Investment Bank* has also greatly contributed to the financing of these projects through loans**



PRIORITY PROJECTS OF EUROPEAN INTEREST

- ❖ A well-running transport infrastructure is essential to maintaining the EU's competitiveness and enhancing economic growth
- ❖ EU's 28 Member States currently have 5 million km of paved roads, 215,000 km of rail lines and 41,000 km of navigable inland waterways
- ❖ The TEN-T policy supports the completion of Priority Projects, representing high *European added value*, as well as projects of common interest and traffic management systems



WHAT IS EUROPEAN ADDED VALUE?

- ❖ **European added value is additional to the value created by actions of individual Member States**
- ❖ **It may result from different factors, e.g. coordination gains, legal certainty, greater effectiveness or complementarities**
- ❖ **It reflects broader European relevance and significance of the action with a view to presenting models and mechanisms which can be applied not only regionally or nationally but also EU-widely**



HOW TO CREATE EUROPEAN ADDED VALUE?

- ❖ **Implementing EU legislation and ensuring that the legislation is correctly implemented**
- ❖ **Economies of scale with the aim of using money more efficiently and providing citizens with better services**
- ❖ **Promotion of best practice in all Member States**
- ❖ **Benchmarking for evidence-based decision-making**
- ❖ **Focus on cross-border impacts in evaluation**
- ❖ **Facilitate free cross-border movements, assuring interoperability of national networks**
- ❖ **Networking as an important tool for disseminating results**



30 PRIORITY PROJECTS (2004)

- ❖ **The European Council designed 14 TEN-T Priority Projects in 1994; this list was amended and extended in 2004 up to 30, to take account of the accession of 12 new Member States to the EU**
- ❖ **Thus the TEN-T comprised 30 priority projects which should have been completed by 2020**
- ❖ **Means & methods of funding Priority Projects were approved in 1994-1995**
- ❖ **Sources: EU budget, Cohesion Fund, European Regional Development Fund, loans of EIB, other under Public-Private Partnerships**



14 TEN-T PRIORITY PROJECTS

(1994)

1. High-speed train/combined transport: Verona–Berlin
2. High-speed train: Paris–Brussels–Cologne–Amsterdam–London
3. High-speed train south
4. High-speed train east
5. Conventional rail/combined transport: Rotterdam–German border
6. High-speed train/combined transport: Lyon–Turin
7. Motorways: Greece
8. Motorway: Lisbon–Valladolid
9. Conventional rail: Cork–Dublin–Belfast–Larne–Stranraer
10. Airport: Milan Malpensa
11. Fixed rail/road link: Denmark–Sweden
12. Road-rail/combined transport: the Nordic triangle
13. Road: Ireland–UK–Benelux
14. Rail: UK west-coast main line

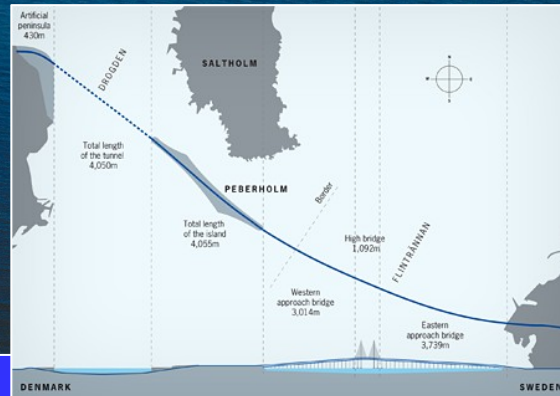
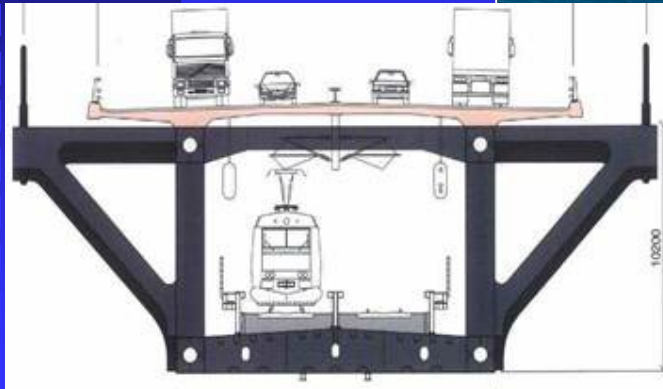




THE ØRESUND BRIDGE



- ▶ The Øresund Bridge runs nearly 8 km (5 miles) from the Swedish coast to an artificial island.
- ▶ The artificial island is called Peberholm and lies in the middle of the link
- ▶ The link is completed by a 4km (2.5 mile) underwater tunnel, called the Drogden Tunnel, from Peberholm to the Danish island of Amager.





MILANO MALPENSA AIRPORT



Timár, 2016



PBKAL (Paris-Brussels-Köln-Amsterdam-London) RAILWAY AXIS





30 TEN-T PRIORITY PROJECTS

(2004)





TEN-T PROGRESS REPORTS

(2008 & 2010)



Timár, 2016

Priority axis	MSs involved	End of works confirmed by MS	Total cost in M EUR	Total investment before 2007 in M EUR	Total 2007-2013 in M EUR	Remaining investment in M EUR
PP1 Railway axis Berlin-Verona/Milan-Bologna-Napels-Messina-Palermo	AT, IT, DE	2024	47.054,61	22.370,53	14.285,63	10.398,45
PP2 High-speed railway axis Paris-Brussels/Brussels-Cologne-Amsterdam-London	BE, DE, NL, UK	2015	18.848,01	16.954,61	1.857,07	36,33
PP3 High-speed railway axis of south-west Europe	ES, FR, PT	2020	50.656,68	10.556,20	26.782,65	13.317,83
PP4 High-speed railway axis east	FR, DE	2013	5.255,00	4.521,60	590,60	142,80
PP5 Betuwe Line	NL	2008	4.776,40	4.361,00	415,40	0,00
PP8 Railway axis Lyon-Trieste-Divaca/Koper/Divaca-Ljubljana-Budapest-Ukrainian border	FR, HU, IT, SL	2025	60.741,96	7.827,03	10.427,94	42.486,98
PP7 Motorway axis Igoumenitsa/Patra-Athina-Sofia-Budapest	BG, GR, RO	2020	14.928,70	10.051,10	4.727,60	150,00
PP8 Multimodal axis Portugal/Spain-rest of Europe	ES, PT	2017	15.324,54	8.882,71	4.752,97	1.688,86
PP9 Railway axis Cork-Dublin-Belfast-Stranraer (COMPLETED)	IRL, UK	2001	357,00	357,00	0,00	0,00
PP10 Malpensa Airport (Milan) (COMPLETED)	IT	2001	1.344,00	1.344,00	0,00	0,00
PP11 Öresund fixed link (COMPLETED)	DK, S	2001	4.158,00	4.158,00	0,00	0,00
PP12 Nordic triangle railway-road axis	FIN, S	2016	11.746,37	4.364,40	5.705,37	1.676,60
PP13 UK-Ireland/Benelux road axis	IRL, UK	2015	7.526,44	3.285,65	4.057,80	182,99
PP14 West Coast Main Line	UK	2009	12.629,24	10.896,37	1.732,87	0,00
PP16 Freight railway axis Sines/Algeciras-Madrid-Paris	ES, PT	2020	8.899,04	48,80	1.100,34	7.749,90
PP17 Railway axis Paris-Strasbourg-Stuttgart-Vienna-Bratislava	AT, FR, DE, SK	2020	13.563,29	3.528,68	6.779,69	3.254,62
PP18 Rhine/Meuse-Main-Danube inland waterway axis	AT, BE, BG, DE, HU, NL, RO	2016	2.103,28	45,29	1.075,55	982,44
PP19 High-speed rail interoperability on the Iberian peninsula	ES, PT	2020	41.770,45	5.236,30	33.194,37	3.339,78
PP20 Fehmarn Belt railway axis	DE, DK	2018	7.930,70	36,72	2.680,50	5.213,48
PP22 Railway axis Athina-Sofia-Budapest-Vienna-Prague-Nürnberg/Dresden	AT, BG, CZ, DE, GR, HU, RO	2020	12.641,80	465,36	5.618,52	6.557,92
PP23 Railway axis Gdansk-Warsaw-Brno/Bratislava-Vienna	CZ, PL, SK	2017	6.159,17	1.384,42	3.296,22	1.478,53
PP24 Railway axis Lyon/Genoa-Basel-Duisburg-Rotterdam/Antwerp	BE, DE, FR, IT, NL	2020	22.647,29	2.103,69	5.421,19	15.122,41
PP25 Motorway axis Gdansk-Brno/Bratislava-Vienna	AT, CZ, PL, SK	2017	6.845,96	1.063,50	5.782,46	0,00
PP26 Railway-road axis Ireland/United Kingdom/continental Europe	IRL, UK	2020	6.242,82	2.356,39	2.473,43	1.413,01
PP27 Rail Baltica axis Warsaw-Kaunas-Riga-Tallinn-Helsinki	EE, LT, LV, PL	2020	3.198,19	50,00	1.556,19	1.592,00
PP28 Eurocaprail on the Brussels-Luxembourg-Strasbourg railway axis	BE, LUX	2013	1.183,19	18,76	1.083,23	81,20
PP29 Railway axis if the Ionian/Adriatic intermodal corridor	GR	2019	4.308,00	81,00	1.074,00	3.153,00
PP30 Inland waterway Seine-Scheldt	BE, FR	2016	4.422,41	21,31	4.097,70	303,40
Total			397.262,54	126.370,42	150.569,57	120.322,55



TRANSPORT INFRASTRUCTURE POLICY REVISION (2010-2011)



FINAL REPORT
Trans-European transport network planning methodology

Contract TREN/R1/350-2008 lot2

Report for:
 European Commission
 DG MOVE

18 October 2010

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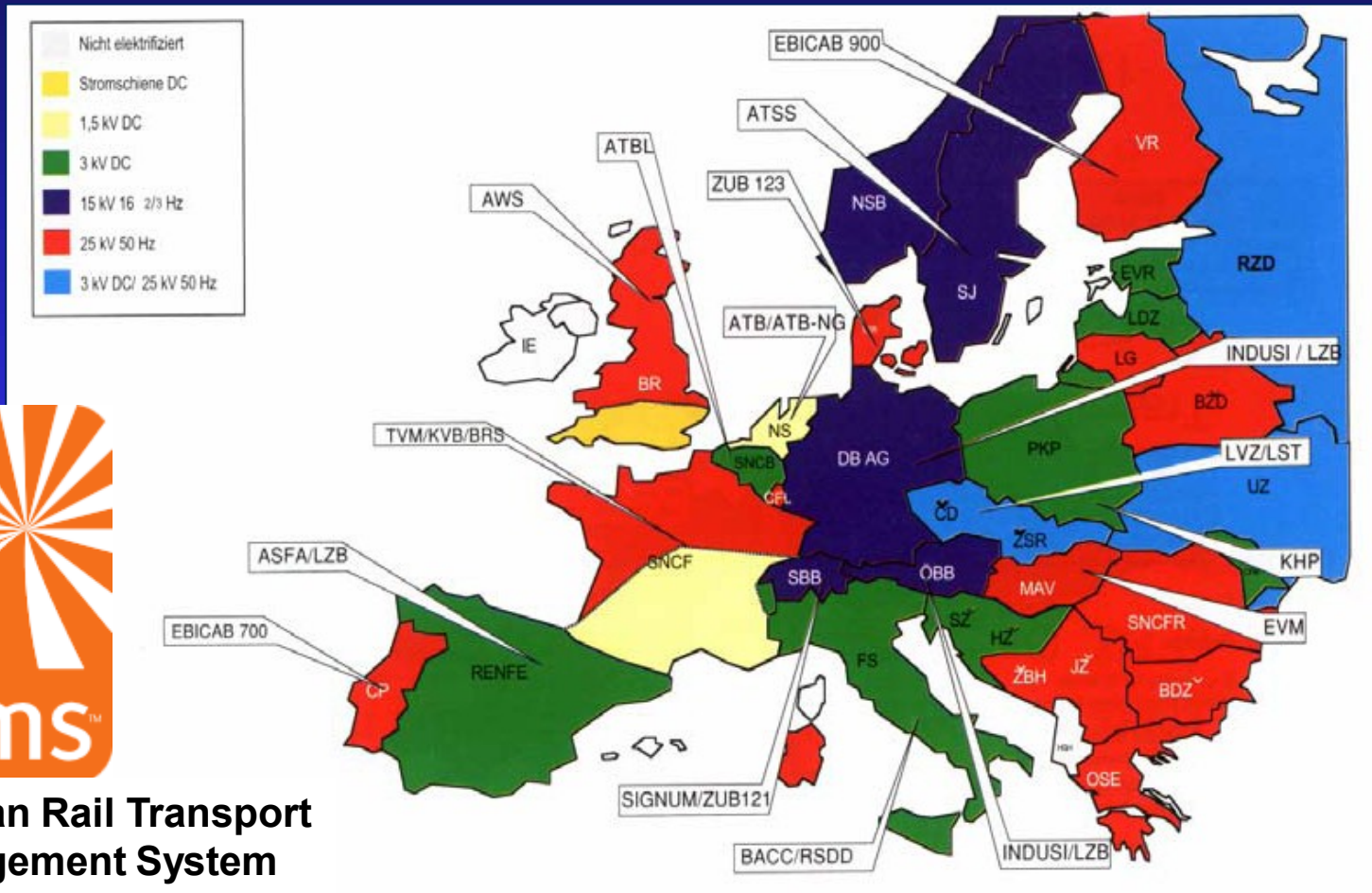
NEW EU TRANSPORT INFRASTRUCTURE POLICY

- ❖ **Since January 2014, the EU has a new transport infrastructure policy that connects the continent between East and West, North and South**
- ❖ **This policy aims to close the gaps between Member States' transport networks, remove bottlenecks that still hamper the smooth functioning of the internal market and overcome technical barriers such as incompatible standards for railway traffic**



RAIL INTEROPERABILITY?

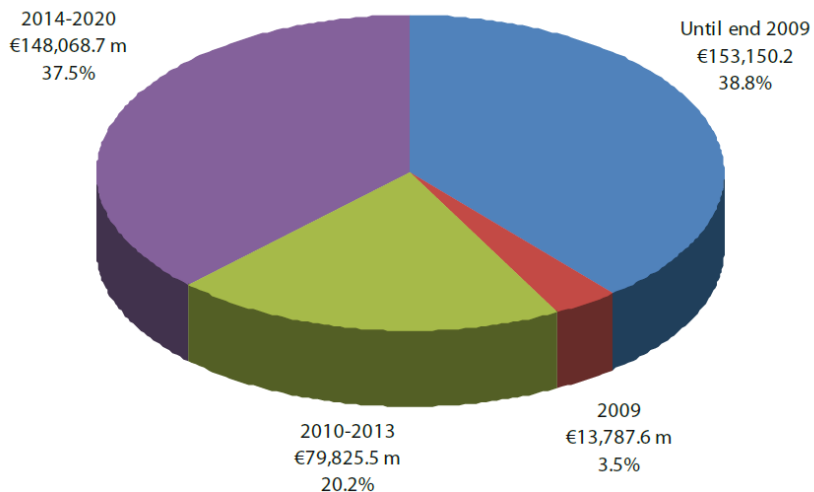
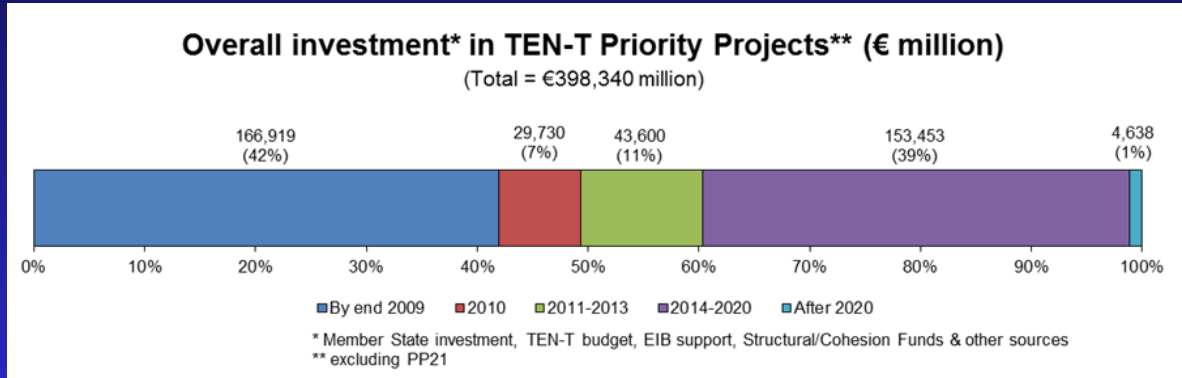
❖ Various railways traction and interlocking systems in Europe



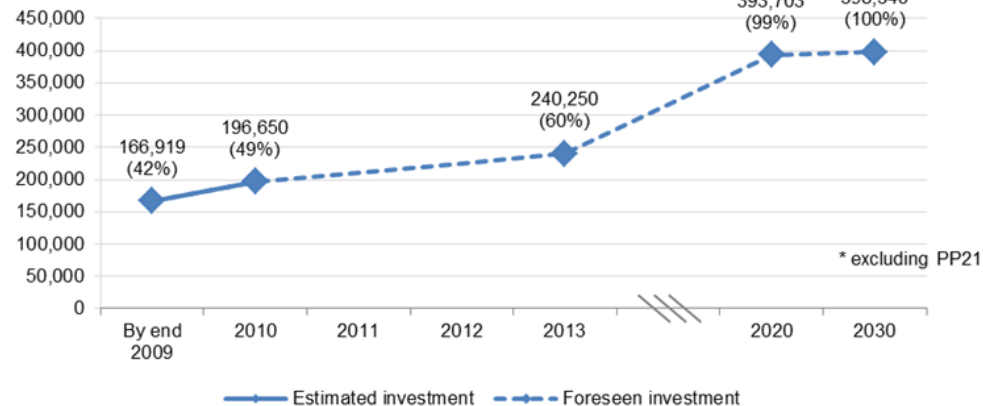
European Rail Transport Management System



FUNDING TEN-T PRIORITY PROJECTS



Overall cumulative investment in TEN-T Priority Projects* (€ million)





KEY ELEMENTS OF THE NEW TEN-T POLICY

- ❖ **Support implementation of Transport Policy defined by the 2011 White Paper, through new infrastructure policy, including:**
 - ❖ **Dual layer approach based on an objective methodology: core and comprehensive network**
 - ❖ **Ambitious standards for all infrastructures**
 - ❖ **Common deadlines to achieve network (2030/2050)**
 - ❖ **Corridors and coordinators for implementation**



CORE & COMPREHENSIVE NETWORKS

- ❖ **A core and comprehensive network based on a single European methodology**
 - ❖ **Comprehensive network to ensure accessibility to all regions**
 - ❖ **Core network focusing on strategically most important parts**
 - ❖ **Delegated acts to adapt the comprehensive network according to traffic flows (inclusion/ exclusion of nodes)**



TEN-T DEADLINES

- ❖ **By 2030: replace the patchwork of priority projects by a single European core network**
- ❖ **By 2050: develop the comprehensive network as “ground layer” to ensure accessibility and common standards**
- ❖ **Enhancing & accelerating dissemination of new technologies (fuel cell, hybrid and electric vehicles & ITS-Intelligent Transport Systems)**



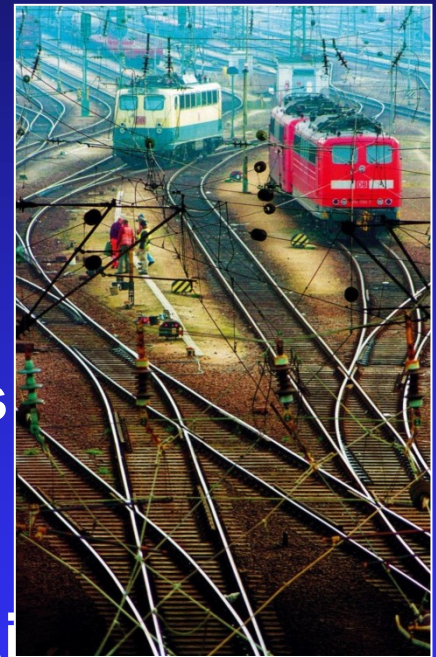
TEN-T STANDARDS - RAIL

❖ *Comprehensive Network*

- ❖ Electrification
- ❖ ERTMS
- ❖ 1435mm gauge
- ❖ Connection with freight terminals

❖ *Core Network* (as above, plus)

- ❖ freight lines (>100 km/h, 750m train, 22,5t axle load)





TEN-T STANDARDS - ROADS

- ❖ ***Comprehensive Network***
 - ❖ High quality roads i.e. motorways, expressways, conventional strategic roads



- ❖ ***Core Network*** (as above, plus)
 - ❖ Rest areas on motorways all 100 km including appropriate parking space for commercial road users
 - ❖ Availability of clean fuels



TEN-T STANDARDS – OTHER MODES

❖ *Comprehensive Network*

- ❖ Implementation and deployment of telematic applications (RIS–River Information system, VTMS-Vessel Traffic Monitoring & Information System, e-maritime services, SESAR-Single European Sky Air Traffic Management System)
- ❖ Connection of airports and ports to TEN-T network



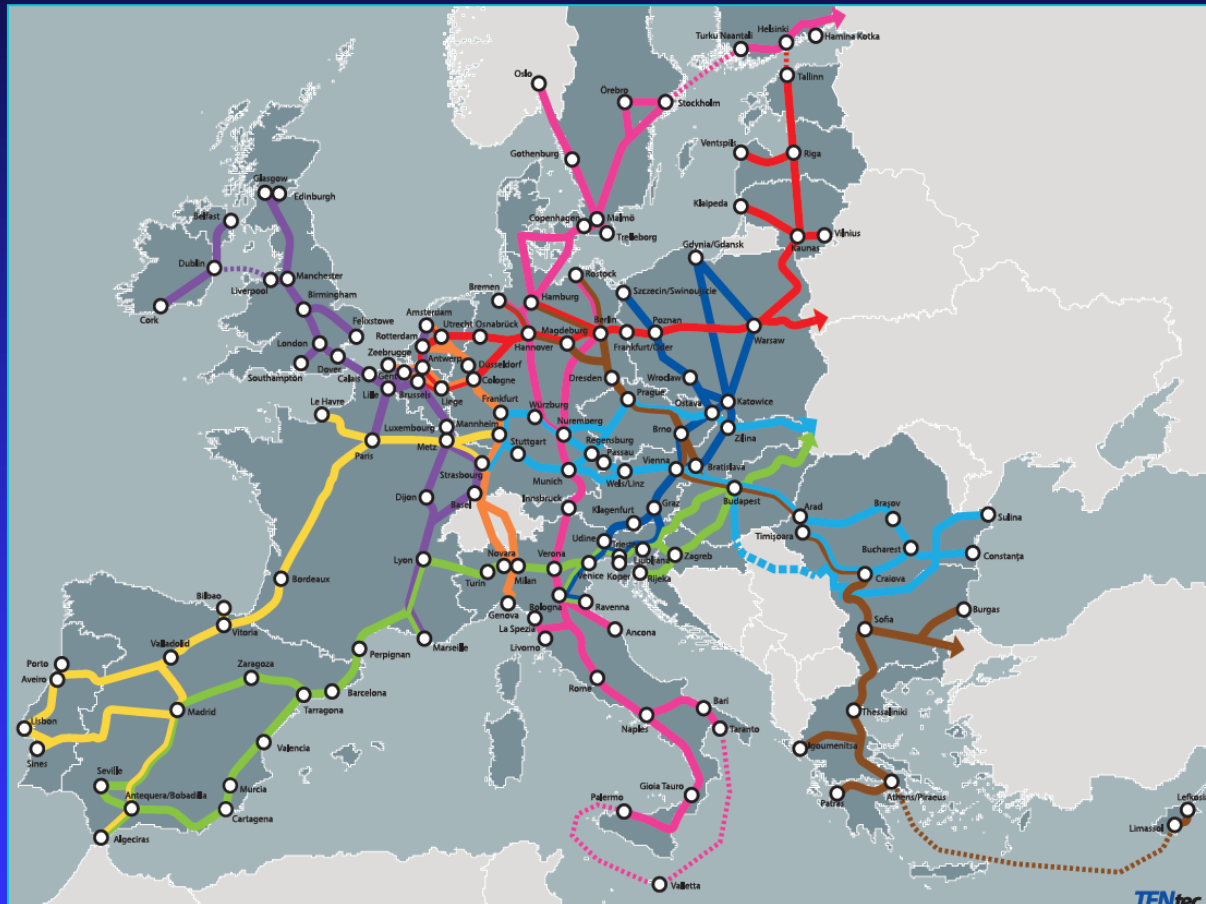
❖ *Core Network* (as above plus)

- ❖ Availability of clean fuels at airports and ports
- ❖ Connection of ports and airports to TEN-T network by 2





9 CORRIDORS OF TEN-T CORE NETWORK

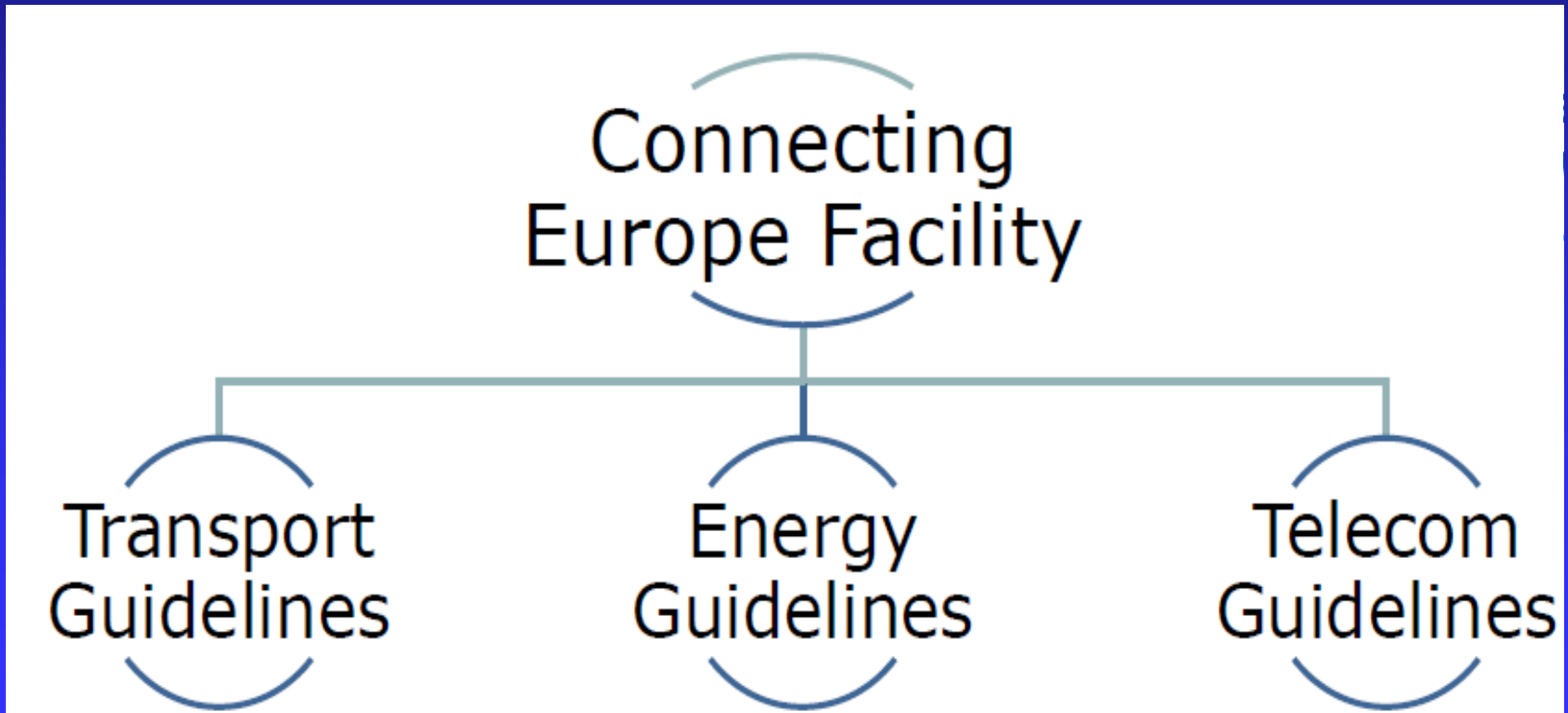


- BALTIC - ADRIATIC
- NORTH SEA - BALTIC
- MEDITERRANEAN
- ORIENT / EAST-MED
- SCANDINAVIAN - MEDITERRANEAN
- RHINE - ALPINE
- ATLANTIC
- NORTH SEA - MEDITERRANEAN
- RHINE - DANUBE



CONNECTING EUROPE FACILITY - CEF

❖ One financing instrument for 3 networks:





CEF BUDGET

- ❖ **€33.2 billion in current prices**
 - ❖ **€26.250 billion for transport (vs ~€8 billion for 2007 – 2013)**
 - ❖ **€14 945 million for all 28 Member States**
 - ❖ **€11 305 million for the Member States eligible to the Cohesion Fund**
- ❖ **€1.141 billion for broadband and digital services**
- ❖ **€5.850 billion for energy infrastructure**



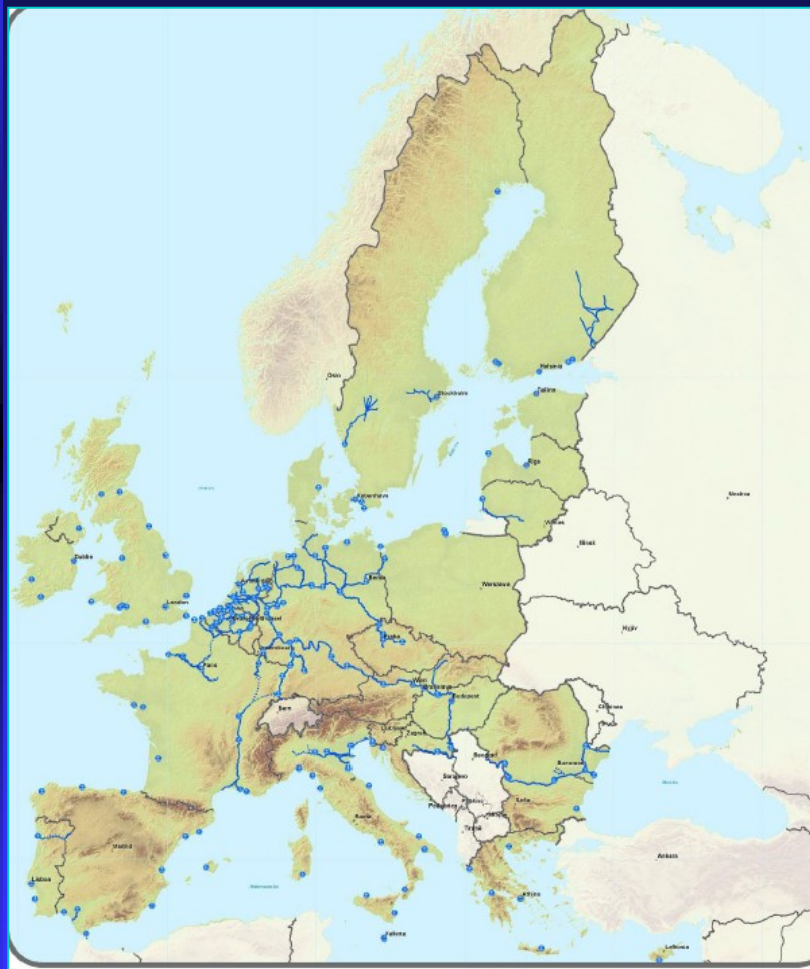
€11.3 BN TRANSFER FROM COHESION FUND TO CEF

- ❖ **Exclusively for transport projects in Member States (MS) eligible for the Cohesion Fund**
 - ❖ **Aim: to finance difficult projects that the Member States would not finance with the Cohesion Fund**
 - ❖ **Projects of high EU added value**
 - ❖ **Rail and Inland Waterways, cross-border (including road) and main bottlenecks on main European routes**
 - ❖ **Road: max. 10% of the budget**
 - ❖ **Only for projects approved earlier and projects on the Core Network**
 - ❖ **Common project pipeline for Cohesion Fund and CEF, in line with the transport strategy**
 - ❖ **Need to ensure network effect, notably on Core Corridors**

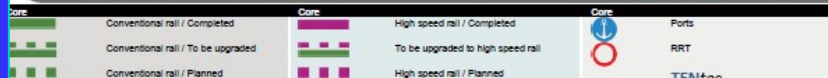
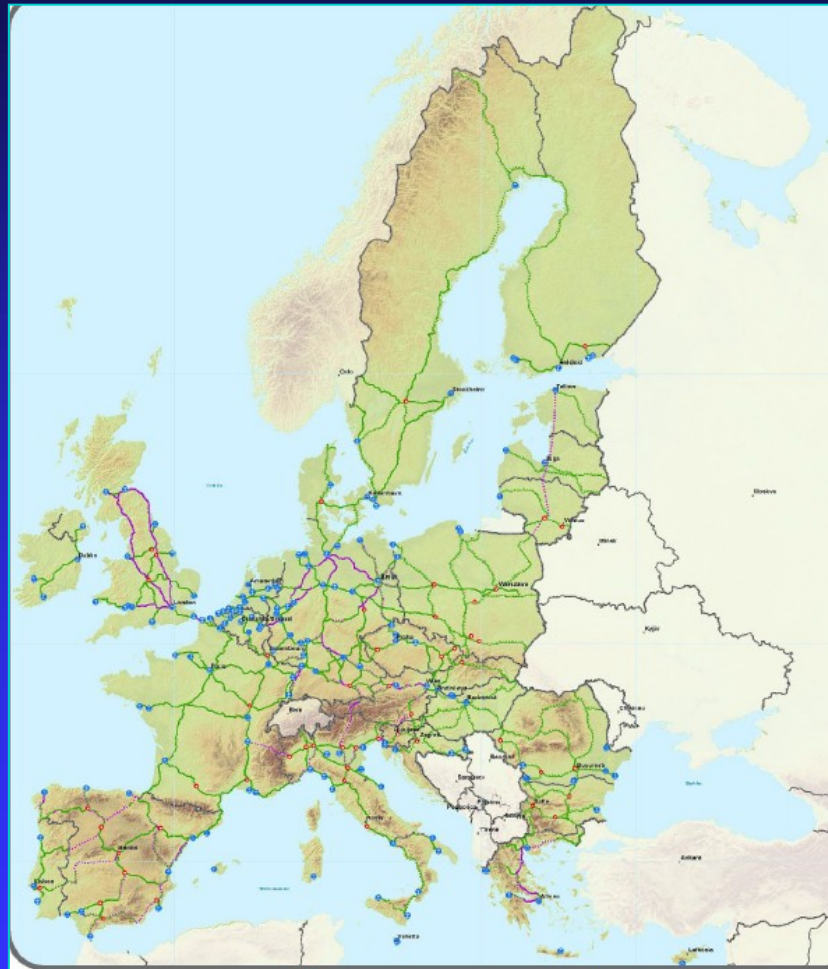


TEN-T CORE NETWORK 2015 1

INLAND WATERWAYS AND PORTS



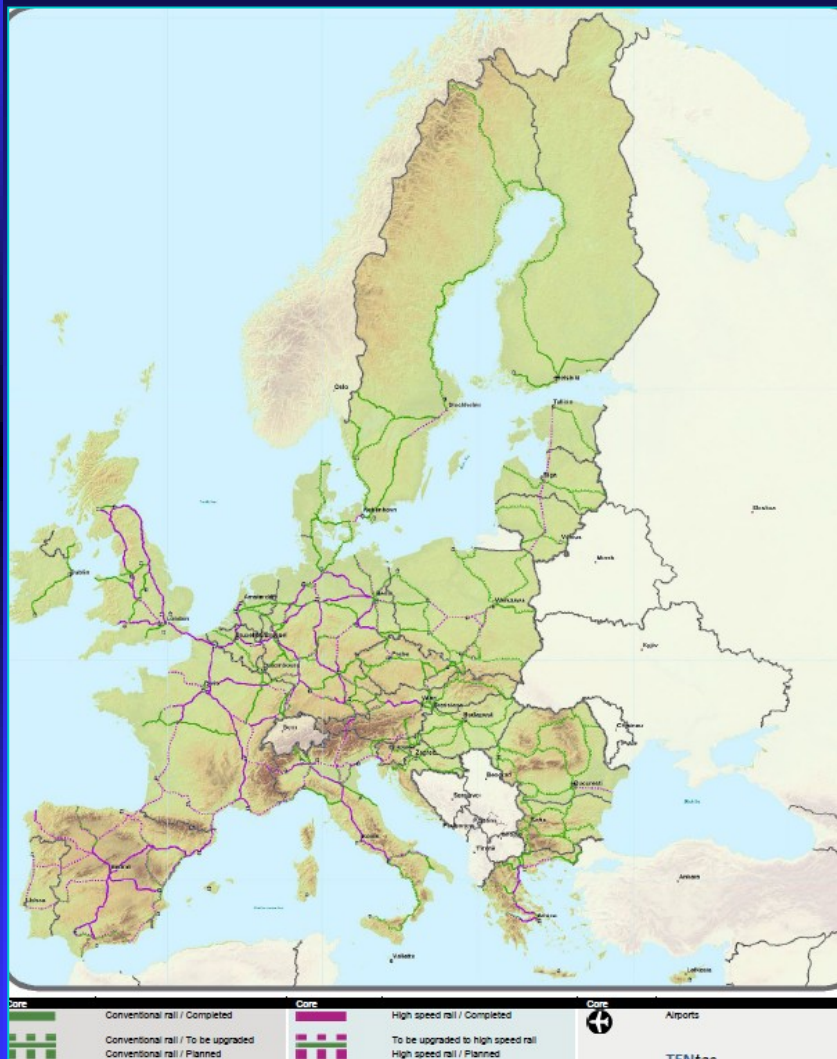
RAILWAYS (FREIGHT), SEAPORTS, RAIL/ROAD TERMINALS





TEN-T CORE NETWORK 2015 2

RAILWAYS (PASSENGERS) & AIRPORTS



ROADS, PORTS, RAIL/ROAD TERMINALS & AIRPORTS



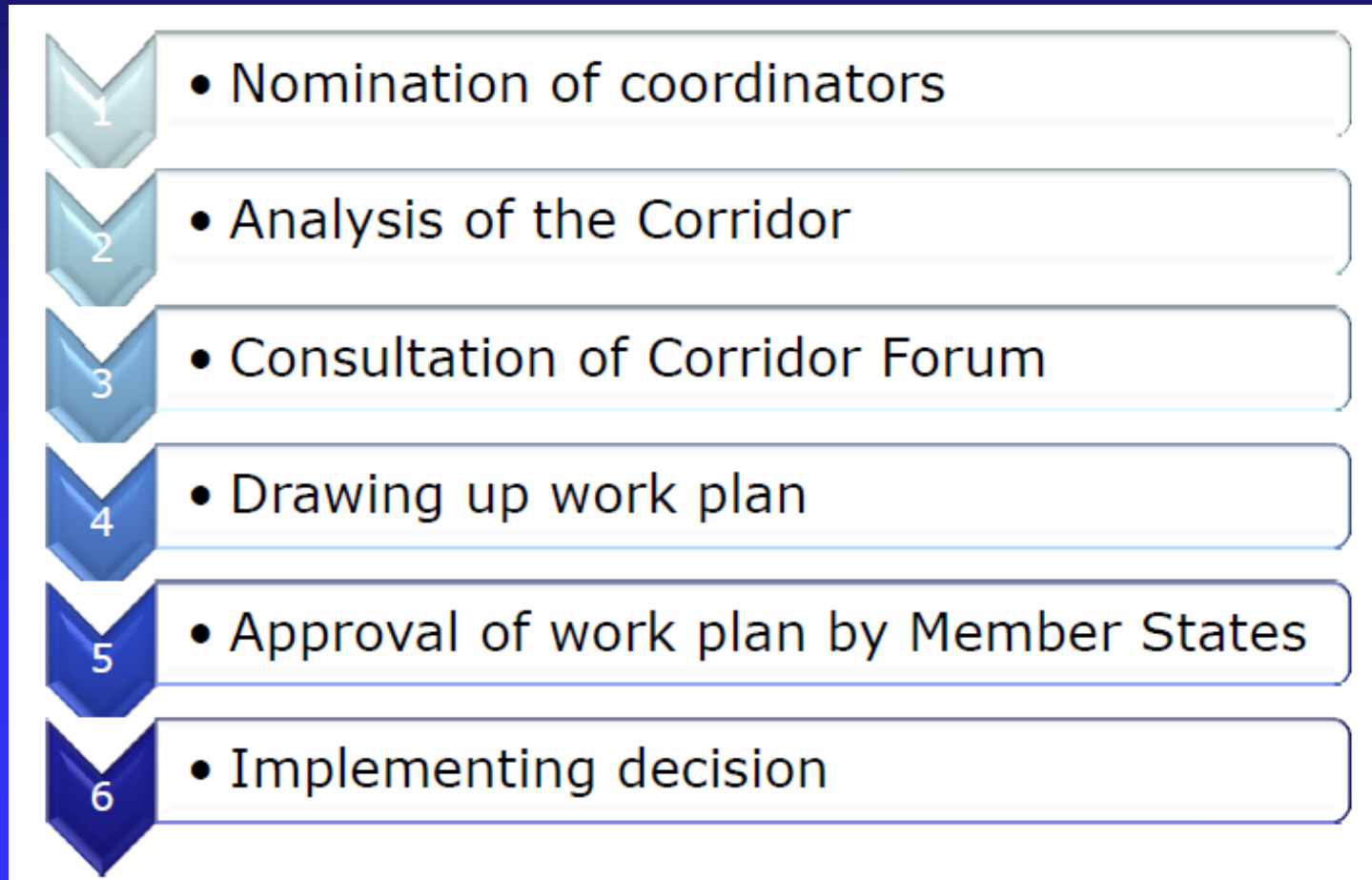


THE IMPLEMENTATION TOOLS

- ❖ **Coordinators and Core Network Corridors**
 - ❖ **9 Core Network Corridors defined until 2020**
 - ❖ **Support the implementation of the core network**
 - ❖ **Synchronise investments in order to optimise network benefits**
 - ❖ **Multimodal, involving at least 3 Member States**
 - ❖ **Flexible governance structures**
 - ❖ **Involvement of stakeholders**
 - ❖ **Core Network Corridors are aligned with Rail Freight Corridors (RFCs)**
 - ❖ **Coordinators for ERTMS and Motorways of the Sea**



HOW TO MAKE A CORRIDOR?





TEN-T AT THE SERVICE OF TRANSPORT POLICY

- ❖ **Unique framework for the promotion of the whole European transport system**
 - ❖ TEN-T Guidelines and CEF set a strong basis for EU funding of a broad range of transport policy actions
 - ❖ Other EU funds may also support TEN-T *and* transport policy objectives
 - ❖ **Opportunities for far more than funding:**
 - ❖ identifying and spreading "best practices" along corridors
 - ❖ "marketing corridor brands"; highlighting the complementarity of all types of actions; communicating overall benefits; promoting the political value of the corridors
 - ❖ stimulating sustainable services for passengers and freight
 - ❖ making corridors the forerunners of transport policy objectives



MAIN OBJECTIVES

- ❖ **New funding framework:**
 - ❖ **Exploitation of cross-sectoral synergies**
 - ❖ **Stronger concentration of financial support on EU added-value projects**
 - ❖ **Higher emphasis on the use of innovative financial instruments**
 - ❖ **Flexibility: midterm revision of amounts between three sectors based on performance and absorption of funds**
 - ❖ **Complementarity (and not duplication) with other EU instruments**



EU CO-FUNDING RATES

Types of Projects		All Member States	Member States eligible for Cohesion Fund
(a) Studies (all modes)		50%	85%
(b) Works on			
Rail	Cross border	40%	85%
	Bottleneck	30%	85%
	Other projects of common interest	20%	85%
Inland waterways	Cross border	40%	85%
	Bottleneck	40%	85%
	Other projects of common interest	20%	85%
Inland transport connections to ports and airports (rail and road)		20%	85%
Development of ports		20%	85%
Development of multi-modal platforms		20%	85%
Reduce rail freight noise by retrofitting of existing rolling stock		20%	20%
Freight transport services		20%	20%
Secure parkings on road core network		20%	20%
Motorways of the sea		30%	85%
Traffic management systems	SESAR, RIS, VTMS (ground/onboard)	50/20%	85%
	ERTMS	50%	85%
	ITS for road	20%	85%
Cross border road sections		10%	85%
<i>New technologies and innovation for all modes of transport</i>		20%	85%



MULTIANNUAL WORK PROGRAMMES

<i>Priority</i>	<i>Specific objective concerned</i>	Min - Max for 14.9bn (in million EUR)	Min - Max for 11.3bn (in million EUR)
Major Projects on the Corridors	<i>bottleneck, missing links, cross-border and rail interoperability</i>	4,000-5,000	10,000-10,000
Other projects of the Core Network and its corridors, incl. rail interoperability, inland connections to ports & airports	<i>bottleneck, missing links, cross-border and rail interoperability</i>	3,500-4,500	
SESAR	<i>integration - interoperability</i>	2,000-2,500	300-500
ERTMS	<i>bottleneck, missing links, cross-border and rail interoperability</i>	600-700	200-400
Other TMS, including ITS for road, RIS and VTMS	<i>integration - interoperability</i>	250-400	
Motorways of the Sea (incl. LNG projects and development of ports)	<i>integration - interoperability</i>	400-600	100-300
New technologies & innovation	<i>sustainability - innovation</i>	200-300	50-100



ANNUAL WORK PROGRAMMES

<i>Priorities</i>	<i>Specific objective concerned</i>	Min - Max for 14.9bn (in million EUR)	Min - Max for €11.3bn (in million EUR)
Projects on the comprehensive network (cap of 5%)	<i>bottleneck, missing links, cross-border, rail interoperability</i>	600-1000	
Projects to connect the trans-European transport network with infrastructure networks of neighbouring countries	<i>bottleneck, missing links, cross-border...</i>	50-100	
For freight transport services	<i>sustainability - innovation</i>	150-200	
For actions to reduce freight noise	<i>sustainability - innovation</i>	200-260	
Financial instruments	<i>All</i>	1,300-2,400	
Programme support actions		150-150	110-110



TEN-T LINKS TO NEIGHBORING COUNTRIES

Directorate-General
for Mobility
and Transport

EUROPEAN
COMMISSION

2010.05

Drawing up the EU Core network for an integrated, efficient and environmentally friendly European transport system

Final Report

ZARAGOZA 8-9 JUNE 2010

Extension of the major Trans-European Transport axes to the neighbouring countries

Canarias
Santa Cruz de Tenerife
Las Palmas

Azores

Madeira
Vila do Porto Santo
Funchal

NORDIC DIMENSION

EURO-ASIAN TRANSPORT CORRIDORS

TRACECA

TRANS-MEDITERRANEAN TRANSPORT NETWORK

WESTERN-BALKAN (SEETO)

TURKEY (TINA)

Multimodal axes

- Trans-national axis
- Axis towards other countries
- Inland waterway axis
- Motorways of the sea
- Motorways of the sea port
- Northern axis
- Central axis
- Western Balkan main corridors
- South Western axis
- Traceca corridors

TEN-T priority axes

- Inland waterway priority axis
- Railway priority axis
- Road priority axis

TENtec



SCHENGEN AGREEMENT 1

- ❖ **The free movement of persons is a fundamental right guaranteed by the EU to its citizens**
- ❖ **It entitles every EU citizen to travel, work and live in any EU country without special formalities**
- ❖ **Schengen cooperation enhances this freedom by enabling citizens to cross internal borders without being subjected to border checks**



SCHENGEN AGREEMENT

2

- ❖ In 1985 when cooperation between individual governments led to the signing in Schengen (Luxembourg), of the Agreement on the gradual abolition of checks at common borders
- ❖ It was followed by the signing in 1990 of the Convention implementing that Agreement
- ❖ The implementation of the Schengen Agreement started in 1995, initially involving seven EU States
- ❖ The Schengen provisions abolish checks at the EU's internal borders, while tightening controls at the external borders
- ❖ Joining the Schengen Area is not merely a political decision: countries aiming to join must also fulfil a list of well defined pre-conditions



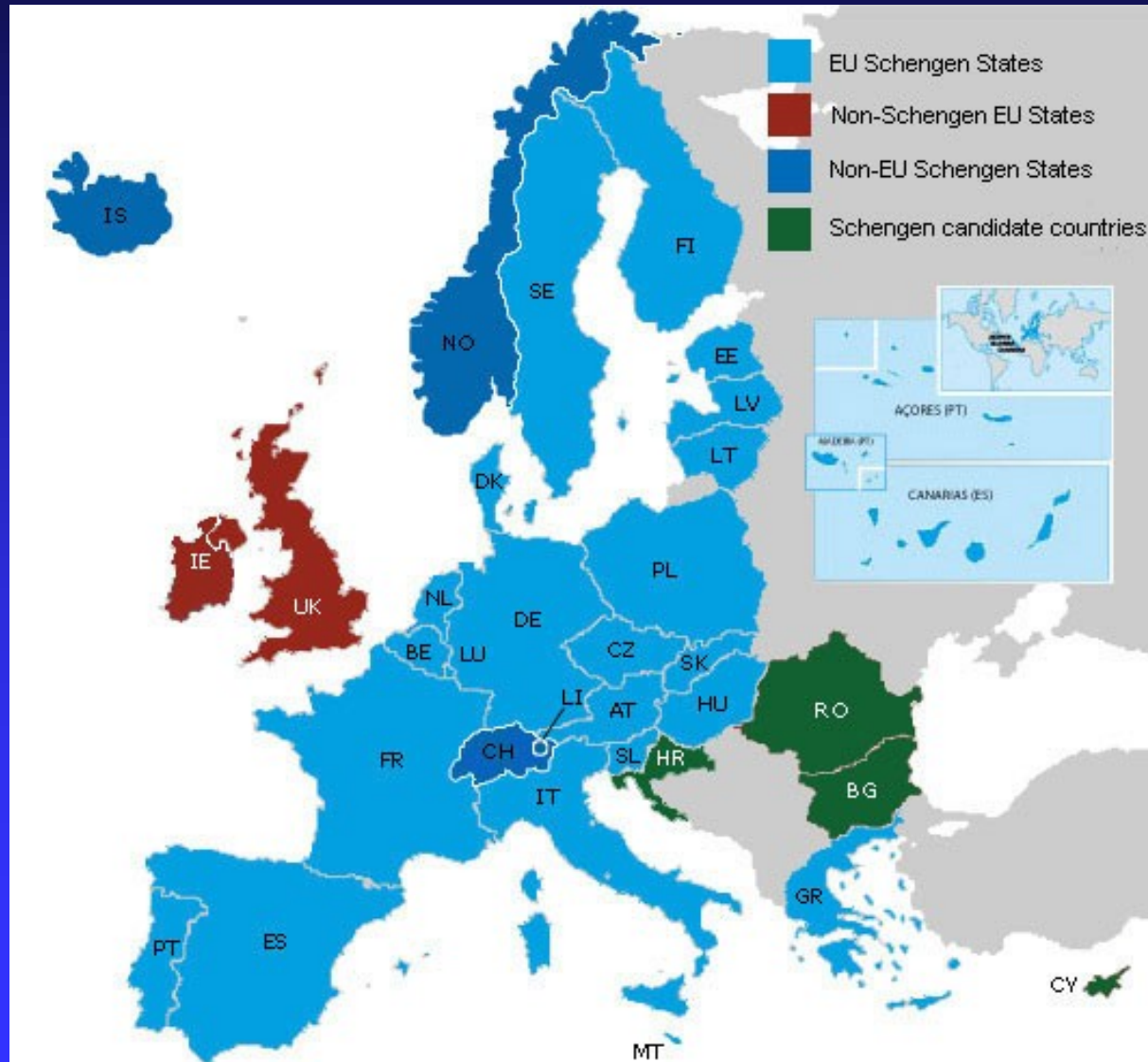
SCHENGEN AGREEMENT

3

- ❖ **Today the Schengen Area encompasses 23 EU Member States, except for Bulgaria, Croatia, Cyprus, Ireland, Romania and the United Kingdom, plus 4 non-EU States: Iceland, Norway, Switzerland and Liechtenstein**
- ❖ **If there is a serious threat to public policy or internal security, a Schengen country may exceptionally temporarily reintroduce border control at its internal borders for, in principle, a limited period of no more than thirty days**
- ❖ **The mass of refugees arriving from war zones caused serious troubles in the implementation of the Schengen provisions in 2015-2016**



SCHENGEN AREA IN 2015





EUROPEAN TREATIES

2015

