

Welcome to Rome

Rome, Italy

12 & 13 June 2014

Thematic workshop

High-speed Rail

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1 Agenda

Thursday, 12 June 2014 (Technical visit)

Time	Location
09:00	Meeting at Termini station
09:00–10:20	Visit of Frecciarossa and Frecciargento trains and upgrade works on Termini station
10:20–11:00	Visit of the new Tiburtina Station
11:00–12:30	Visit of Ostienseltalo Terminal and Italo train and presentation of other services by NTV representatives

Thursday, 12 June 2014 (Workshop)

Time	Session
From 10:00	Registration of participants
12:30–13:30	Lunch (at the hotel)
13:30–13:45	Welcome and introduction by Yves Crozet (LET) and Max Reichenbach (KIT)
13:45–14:00	The Italian case study (1) Why is the Italian High-Speed Rail market so special and how did they achieve an on-track competition model?
14:00–15:20	Session 1: High-speed Rail and Intermodality Towards an Integrated Transport System
15:20–16:40	Session 2: Services and attractiveness of rail services Which services to enhance HSR competitiveness?
16:40–17:00	Coffee Break
17:00–18:20	Session 3: Maintaining a dense railway network How to achieve a multi-actors collaborative railway system?
18:20–18:30	Conclusion of the first day
20:00	Dinner on the terrace of the hotel

Friday, 13 June 2014 (Workshop)

Time	Session
08:15–09:30	Session 4: Extension of the HSR network by new investments Existing cross-border HSR lines and levers of financing
09:30–10:30	Session 5: Balancing different strategies HSR models trade-offs and strategies balance
10:30–10:50	Coffee Break
10:50–11:30	The Italian case study (2) Is there an optimum between competition and cooperation?
11:30–11:50	Conclusion of the workshop Antonio Musso, University of Rome
11:50–12:00	Introduction to the technical visit Yves Crozet, LET
12:00–14:00	Lunch (at the hotel)

Friday, 13 June 2014 (Technical visit)

Time	Location
14:00	Meeting at Termini station
14:00–15:00	Technical visit to the control room of the Roma–Napoli High-speed Rail line by Fabio Crocollo from the Italian Ministry of Infrastructures and Transports

2 TRANSFORuM and the workshop in Rome

2.1 TRANSFORuM

The TRANSFORuM project is facilitating a discussion forum of relevant actors and stakeholders about the implementation of and progress towards achieving goals in four areas set in the 2011 European White Paper on Transport:

- Clean Urban Transport and CO₂ free city logistics (goal 1)
- Shift of road freight to rail and waterborne transport (goal 3)
- **Complete and maintain the European high-speed rail network (goal 4)**
- European multimodal information, management and payment system (goal 8)

TRANSFORuM provides a platform for stakeholders of all areas of the European Transport sector to develop a common view and strategies of how four key goals of the 2011 White Paper on Transport can be achieved. Our underlying assumptions are that policy making should be based on an in-depth understanding of all stakeholders' positions and that coordinated action is more effective than solo attempts.

The stakeholder workshop in Rome will focus on the third of these four goals, while other workshops address the remaining three. The final outcome of the TRANSFORuM process is a series of roadmaps and recommendations for achieving the European goals in the four areas.

The workshop in Rome will be built on previous TRANSFORuM events to address the High-speed Rail goal:

- a two day workshop held in Gdansk, Poland, in June 2013, which provided basic identification of key policies, actors, funding mechanisms and trends in regard to High-speed Rail, as well as an identification of barriers, challenges, and ways to overcome them;
- a two day workshop on good practice lessons and on learning processes was held in Lyon, France, in November 2013, including presentations about and a visit to the "Technicentre de Lyon" where part of SNCF's high-speed rolling stock is maintained.
- a two day workshop with a particular focus on cross-cutting issues between TRANSFORuM's four thematic areas which was held in Vienna, Austria, in January 2014. Further, a preliminary roadmap 1.0 was discussed at this event.

2.2 The workshop location: Why Rome was chosen

Competition was a prominent issue during the discussions at TRANSFORuM's previous workshops. Due to its competitive high-speed rail market, Italy was therefore chosen as the location for the second thematic workshop. In Rome, participants will also be invited to visit a site where upgrade works are currently taking place, as well as to Rome Terminus station to explore the Rome/Naples control panel to see how flow management is handled on a competitive line.

2.3 Objectives and approach of the workshop

Based on the previous TRANSFORuM events¹ and on literature analyses, some key challenges for the roadmap on High-speed Rail were developed identified and distinct building blocks developed. The interim result is summarised in the **background paper** which you will receive together with the document at hand. The overall aim of the two-day workshop in Rome will be to validate and enrich the material elaborated so far.

The workshop will be structured along different sub-topics of the High-speed Rail theme (see workshop agenda above). These can as well be found in the background paper. During the **first day** of the workshop we will have a general introduction and discuss the level of integration needed by HSR to become part of the targeted Integrated Transport System and levers to facilitate cooperation between multi-jurisdiction actors; and other service-focused levers that could lead to raise the attractiveness of HSR. During the **second day**, we will discuss the required institutional and Member States' organisational conditions for the EC's White Paper goals and which recommendations for EU policy to bring forward. In the following, the main issues for the sessions are listed (more details in the background paper).

- **What measures and levers are to be stressed on in order to make HSR an attractive alternative to road and air and promote efficient intermodal travel patterns?**
 - How far to go from a national to a European vision of HSR?
- **How to ensure an efficient integration of HSR in the existing transport system?**
 - How to guarantee a strong connectivity between HSR, inter- and urban (public) transport networks and major hub airports?
 - What are the key levers of connectivity in transport?
 - Which integration for which regional HSR strategy?

¹ Minutes etc. see <http://www.transforum-project.eu/events.html>

- **How to promote HSR attractiveness through the level and quality of services?**
 - What are the levers to promote HSR in a door-to-door travel scheme?
 - What are the priority innovations to make on on-board and off-board services?
 - How to adapt the targeted market area of HSR?

- **What are the key measures in order to ensure the maintaining of a dense railway network?**
 - What is the optimal equilibrium between HSR and conventional rail network?
 - Are economies of scale possible on the maintenance of both HSR and conventional rail in a mutualised system?

- **Are there still opportunities to attract investments to finance the extension of the HSR network?**
 - What is the financing scheme of HSR networks in Europe, including TEN-T, and is there full convergence between priority projects and national plans?
 - What is the role of European institutions and nations in the decision of HSR planning? How to face strong public resistance to further extensions of the HSR network?

- **What HSR strategies fit with the European objective and which degree of convergence between Member States is to be reached?**
 - Has the HSR rationale to be shared throughout all Member States or is the focus to be put on missing links in order to respect national sovereignty in the HSR network planning?
 - Is there a consensus in the HSR rationale among all stakeholders on which element of HSR to put the focus on between speed, capacity and services?
 - Is there any optimal combination between cooperation and competition to ensure quality of services and efficiency?
 - What are the main and preferable funding sources? Does it have to be mainly tax-payers? Users? Other modes?

2.4 From the draft roadmap 2.0 towards the final roadmap

Together with this briefing document you receive the **draft roadmap 2.0**. It is based on the previous work carried out in the projects and it contains crucial building blocks for the final version of the roadmap. The draft roadmap 2.0 will be the basis for the discussion in the workshop. After the workshop, the results of the discussions in Rome will be used to finalize TRANSFORuM's roadmap on High-speed Rail.

3 Logistical information

Venue

Hotel Mediterraneo, Via Cavour, 13, Rome. <http://www.romehotelmediterraneo.it/en>. The meeting room **Lago Maggiore** is located directly adjacent to the hotel lobby.

Accommodation

Hotel Mediterraneo, Via Cavour, 13, Rome, same as above.

We have made a room reservation for everyone attending the workshop for Thursday night, and for those of you attending the site visit Thursday morning we have also made a room reservation for Wednesday night. TRANSFORuM will cover the accommodation costs. Note that you will not receive any confirmation directly from the hotel.

How to reach the hotel and venue from Rome's airports?

By train from Leonardo da Vinci/ Fiumicino airport to Termini station

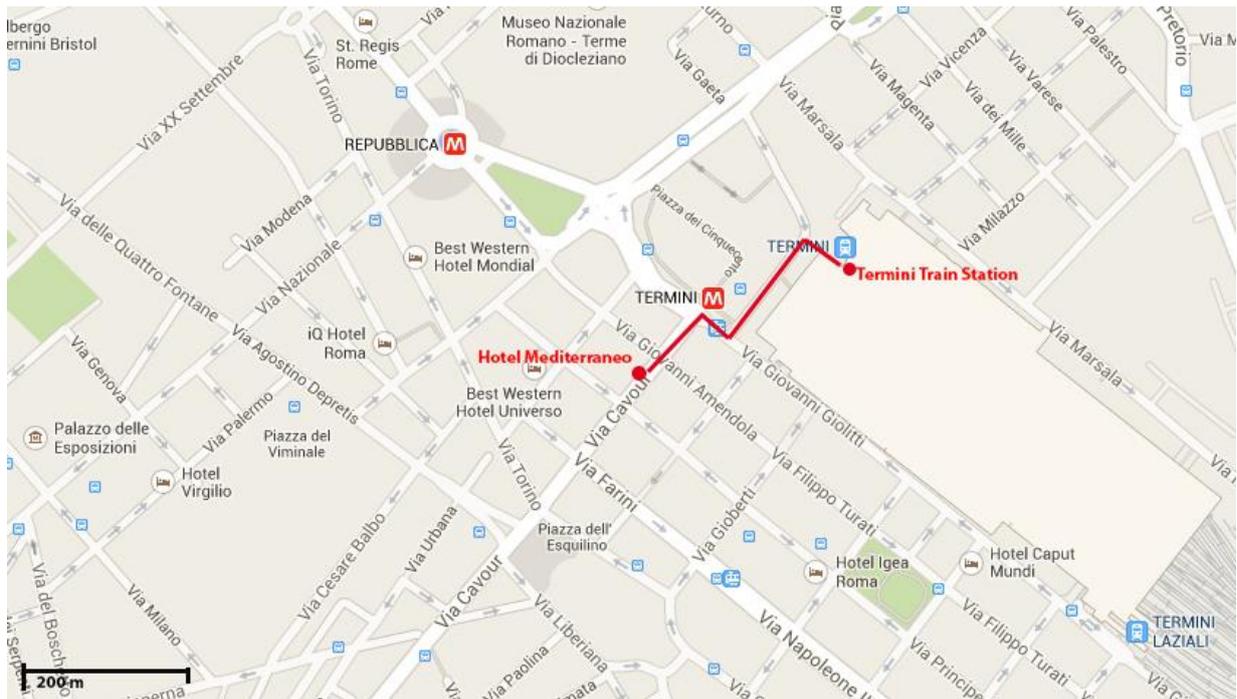
The Leonardo Express is a non-stop train from the airport to the Termini station. The train station is located inside the airport close to the arrival and departure terminal. The train leaves every 30 minutes and the trip takes 32 minutes. A one-way ticket is €14 when purchased at the airport. When arriving at Termini station you will find the hotel Mediterraneo to your left about 200 meter from the train station, see map below. Link to [airport train information](#) and link to [Trenitalia Leonardo Express information](#).

By bus from Ciampino airport to Termini station

The quickest and easiest connection is with the non-stop bus to Termini central station, operated by Terravision. The trip takes 40 minutes and the bus leaves about every 30 minutes. A single ticket is €6 and a return ticket €11 when purchased at the airport. You will find hotel Mediterraneo 200 meters from the bus stop, see map below. Link to [Terravision information](#).

By taxi from Leonardo da Vinci/Fiumicino and Ciampino airports

The city of Rome has introduced fixed fares from the airports to central Rome and the rate to Termini station is at the moment €48 from Leonardo da Vinci/Fiumicino Airport and €30 from Ciampino Airport. The cars for the taxi service of the City of Rome are white and can be recognized by the sign "TAXI" on the car top and by the identifying licence number on the doors, on the back and inside the car.



Travel reimbursement

TRANSFORuM will reimburse your travel expenses up to EUR 500. Please let us know if this is insufficient for your special circumstances. We will cover the travel expenses in accordance to EC rules (economy class on flights etc.).

Unfortunately we are unable to cover per diem rates or working time.

We will send you a reimbursement form ahead of the workshop and it will also be available at the workshop.

More questions?

Please feel free to contact us for any questions at helpdesk@transforum-project.eu or by phone at +46 13 20 43 18, or +46 709 430 437 (for text messages), Ms. Ulla Kaisa Knutsson.

Looking forward to seeing you in Rome!



Ulla Kaisa Knutsson

4 Informed consent agreement

A conversation about a topic with the strategic dimension of the 2011 White Paper on Transport might, almost inevitably, include sensitive, potentially also controversial issues. Nevertheless, we believe it is not only crucial but also possible to conduct such a conversation in a fair, transparent and open atmosphere if all participants follow some basic rules. We therefore suggest and promise the following:

Every part of the meeting (including the plenary session, the break-out sessions, even meals) will be held under an anonymity rule, which is inspired by the well-established “**Chatham House Rule**” and stipulates:

Participants are free to use the information received, but *must not* reveal the identity or affiliation of the speaker(s) who made a particular statement.

By attending this event you declare that you understand ...

- ... that your participation is **voluntary**, and that you are free to withdraw at any time, for any reason, and without any personal detriment.
- ... that any **information about you personally** will be used only to facilitate the logistical aspects of this event and will not leave the consortium.
- ... that the purpose of the discussions is not necessarily to achieve complete consensus. Try to keep in perspective, whether **(dis-)agreements** are at the level of big concepts and values or at the level of technical details.
- ... that whatever you say gains meaning if you contextualize *why* you are of a certain opinion. In other words, it is always helpful to **disclose your underlying interest**.
- ... that TRANSFORuM may use **anonymous quotations** from statements you make during the event.
- ... that **photographs will be taken** during the event. You agree that TRANSFORuM may publish some of them in print and digital form even if individuals can be recognised on them.
- ... TRANSFORuM will **not record extended video footage** of any part of the event. However, we might record brief video footage and conduct short video interviews with a few individuals and some others might be visible in the background.
- ... that this event is financed through public funds, which comes with certain **restrictions about reimbursable costs**. For example, where TRANSFORuM provides catering no extra subsistence costs should be claimed.

5 List of participants

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Crocollo	Fabio	Ministry of Transport	Italy
Dancoisne	Jean-Michel	SNCF, Société Nationale des Chemins de fer Français	Belgium
Giuricin	Andréa	NTV, Nuovo Trasporto Viaggiatori	Italy
Holden	Robert	High-Speed 1 Ltd.	United Kingdom
Loubinoux	Jean-Pierre	UIC, International Union of Railways	France
Marty-Gauquié	Henry	EIB, European Investment Bank	France
Mazzolla	Alberto	FSI, Ferrovie dello Stato Italiane	Belgium
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Members of the TRANSFORuM project team

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June 2014

High-speed Rail

Draft Roadmap 2.0

The White Paper goal:

- “By 2050, complete a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in all Member States. By 2050 the majority of medium-distance passenger transport should go by rail.”

Other White Paper goals implying improvements in HSR:

- *“By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterway system.”*
- *„A fully functional and EU-wide multimodal TEN-T ‘core network’ by 2030, with a high quality and capacity network by 2050 and a corresponding set of information services”*
- *By 2020, establish the framework for a European multimodal transport information, management and payment system.*

What do you think? Could this imply:

- *“By 2020, no service-operating company willing to have access to the wider European rail network will be allowed to own and operate their own infrastructure where other companies can be discriminated. Exceptions will only be possible for small-scale enterprises operating only on their own network.”*
- *“By 2020, formal planning requirements for rail infrastructure projects will mean that operators of other transport modes (e.g. local public transport) and interest groups need to be formally considered and have a say in the decision-making, even if project budgets are affected.”*

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General information

The **Draft Roadmap 2.0** provides material and building blocks for the discussion at TRANSFORuM’s second Thematic Workshop on the High-speed Rail goal in the European Transport Policy White Paper from 2011. The content is based on ideas, inputs and results from previous events and stakeholder conversations in the TRANSFORuM project.

It is recommended to consult the paper in preparation for the Rome workshop, but it needs not be read from end to end. The TRANSFORuM team thanks you warmly for your kind interest!

1 The White paper goal on High-speed Rail

TRANSFORuM's Thematic Group on High-speed Rail (HSR) deals with the respective goal no. 4 from the European Commission's 2011 Transport White Paper:

By 2050, complete a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in all Member States. By 2050 the majority of medium-distance passenger transport should go by rail.

It is important to underline that the EU support to HSR is one component of a global view in favour of a more sustainable mobility. For these reasons, the White Paper recommends, for freight and for passengers, a modal shift in favour of rail. Therefore it is necessary to increase the rail network capacity but also to improve the quality and the diversity of services. The demand shift towards rail depends on these improvements. Developing the HSR network is part of a global development of the rail sector.

The European HSR network should be integrated in the transport system to promote lower door-to-door travel times and costs, and enable more efficiency in the promotion of HSR (and regional transport) as a powerful alternative for medium and long-distance travel. A concept of seamless transport needs to be discussed. For this, a strong integration in the urban transport network of the major cities and connection with major airports would ensure a cooperation between local and urban transport authorities as well as a better cohesion between the main high-speed lines and the priority TEN-T axes.

By facilitating access to both hubs of international passengers (by linking airports to HSR stations) and commuters of major European economic and urban areas, HSR could perform as being a sustainable and effective alternative to both road and medium-distance air transport.

1.1 TRANSFORuM's understanding of the goal

The increase in mobility addresses two issues to the existing transport system: how to cope with a growing pressure on capacity on the main lines and how to ensure a strong connectivity between HSR and the rest of the transport system? The sustainability of HSR relies on its capability of being included in a global seamless transport system, offering an attractive alternative to more constraining modes.

Since the rationale for speed was driven by the perception of travel time as wasted time and considering the growing use of travel time for productive activities, the need for more efficient transport services doesn't remain as much as it used to be in the commercial speed of the high-speed trains but relies on the experience provided by the on-board and off-board services and efficiency of connectivity. Indeed, the need for speed is now applied to a global journey pattern, namely the door-to-door scheme, leading to a need for improved on-board service enabling work and leisure facilities on trains, for a better connectivity with the urban and international transport networks (airports, intermodal services etc.).

In medium-distance interurban transport, the need for better cooperation between the operators and the local authorities could lead to a better integration of high-speed services into the existing local transport, improving intercity connectivity and inner-city movements, both factors of improvement for a door-to-door travel pattern.

1.2 Stakeholder perceptions regarding the goal

Results of a survey conducted alongside TRANSFORuM's first Thematic Workshop on HSR in Lyon in November 2013 show that not all experts and stakeholders in the field of HSR are aware of the White Paper goal. It is as well only partly perceived as being relevant in the daily work of these stakeholders. Still, all participants of the survey were convinced that the goal is at least partly achievable.

If the goal in itself seems to be accepted, most of the stakeholders considered technical characteristics as major factors in the development of a European High-speed Rail network, mainly the need for interoperability and compatibility of rolling stock and infrastructures in order to overcome national barriers and specificities and widen the access to networks to operators from neighbouring countries. The results of the survey also showed that national governments should be less financially supportive and stick to the regulatory function in order to enable competition or at least cooperation to reach goals of effectiveness and harmonization of the European rail network; though monopoly situations in many European countries were not firmly considered as a barrier for such interactivity in the European HSR network.

This perception of the White Paper goal can be related to the attitude of many stakeholders that the focus of future HSR developments and the respective policy measures should be rather on capacity extensions of the railway system and a user-oriented perspective on excellent service – instead of mere infrastructure extension. **This is to say that improved HSR services are seen as desirable but that these do not necessarily require thousands of kilometres of new HSR lines.**

2 Pathways towards the goal: general ideas

The European Commission's White Paper goal points out a final target that cannot be achieved without intermediate supportive measures, all part of one single strategy leading to an increase in the modal share of rail and high-speed rail. In order to identify the most appropriate intermediate steps to pass in order to achieve the White Paper goal, TRANSFORuM defined three action levers – with the help of all stakeholders involved during the previous workshops. These levers are far from being exclusive and need a strong cooperation in order to combine measures by defining a priority order and a clear resource allocation.

The first two action levers respond to a need for a rise in rail traffic, its attractiveness and offer availability by developing capacity through incremental or radical measures (e.g. ERTMS or new HSR lines). The third lever seems more theoretical but provides the essential keys of comprehension for designing an appropriate model of HSR in Europe. All sub-steps are intertwined with each other; highlighting the complexity of HSR as it responds to a systemic organisation.

This pathway (illustrated in Figure 1) is supposed to give an overview of what the White Paper's challenge relies on, and to define which actor to involve at which step of the process, and according to the HSR strategy pursued in Europe.

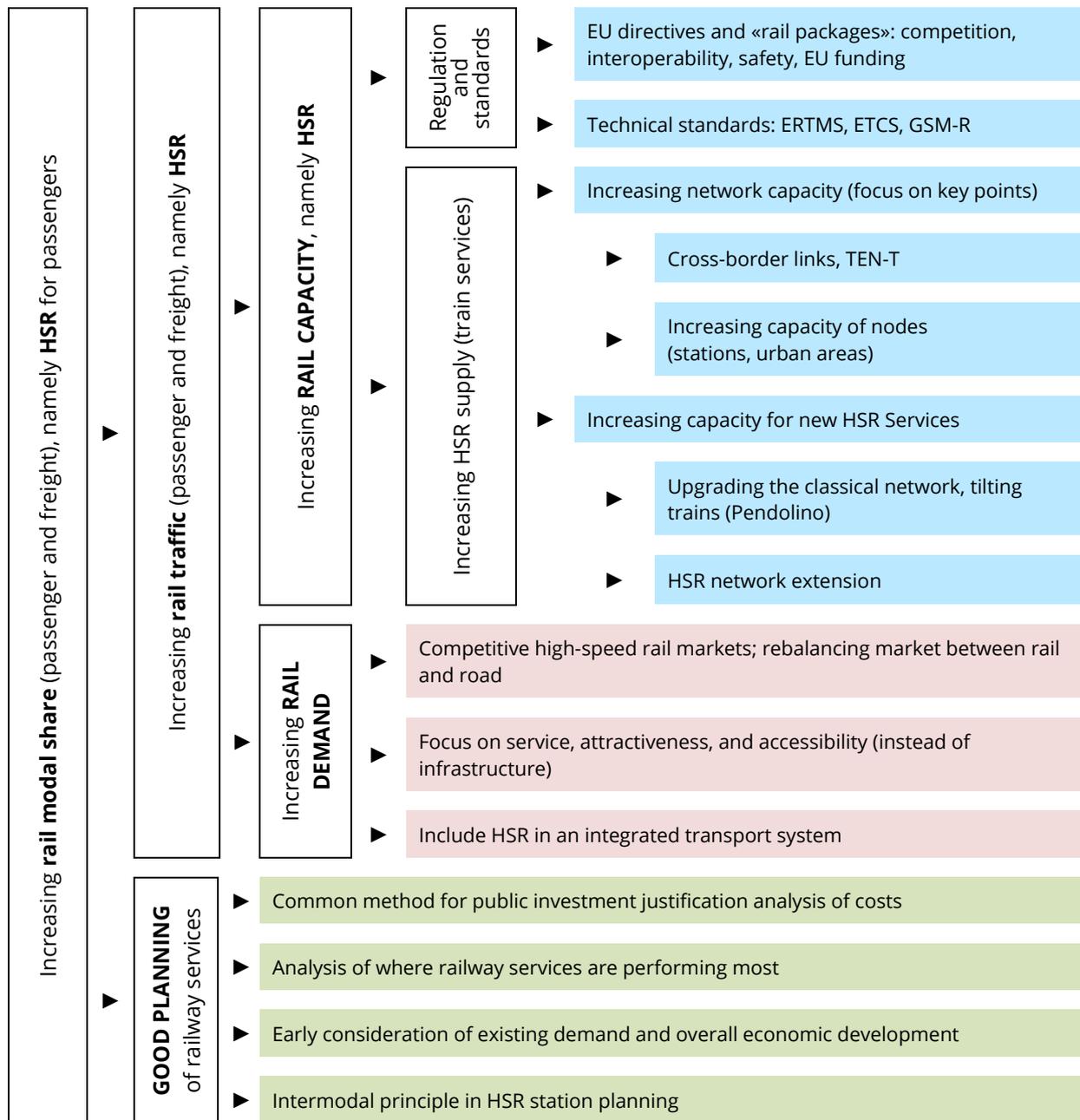


Figure 1: Structure of measures towards the HSR White Paper goal (measures increasing rail capacity in blue, measures increasing rail demand in red, good planning measures in green).

3 Background, trends and barriers

Most high-speed trains have been developed in a period of pressure on transport sustainability alongside an increasing demand in mobility, on a greater distance. This pressure on capacity responds to an enhanced economic attractiveness of major European poles, as it has been the case for some capital-capital lines such as the Eurostar between Paris and London, the Thalys between Paris and Brussels and the planned Rail Baltica line linking Baltic capitals with each other and with the Western European HSR network. But demand is also influenced by generalised costs on which the distribution of modal shares depends, assuming a constant travel pattern. Another major trend are the modal share objectives determined by national and European institutions, declaring rail and HSR a sustainable transport mode whose modal share needs to be enhanced by monetary and quality incentives.

During TRANSFORuM's first joint forum meeting in Gdansk in June 2013, major trends have been identified, influencing most HSR planning schemes – whether constraining or supporting them. TRANSFORuM's deliverable 3.1¹ highlighted the most important cross-cutting and HSR-specific trends as being the quite recent change in the HSR rationale from the speed focus scheme to a greater focus put on services and connectivity (through seamless transport measures, corridors and station design etc.). This goes along with the scarcity of public funds leading to an improved allocation of resources and efficiency of the HSR network by developing an integrated transport system where HSR is one of the modes within multi-modal travel patterns, in order to reach a long-term goal of modal shift from road and air to rail and HSR on medium and inter-urban distances, which in return emphasises that geography matters in the design of HSR routes.

What also needs to be considered in order to reach an efficient HSR network in Europe is the organisation of institutions, public bodies and decision-making processes. Indeed, some European directives still need to be implemented as ground conditions towards the European Commission's goal of a Single European Transport Area, in order to settle down common rules of organisation and management on national networks and enhance inter-national cooperation on cross-border links (and vice versa). In that sense, it is important to identify and highlight the legislative background on which TRANSFORuM's roadmap towards a Single European HSR area will have to rely on a definite timescale being: 2020, 2030 and 2050 considering background and feasibility.

¹ Deliverable 3.1 is available at <http://www.transforum-project.eu/resources/library.html>.

3.1 Brief mapping of the field

The development of a European HSR network is one of the components of achieving a more sustainable European transport system. The train, unlike the plane, can use renewable energies and non-fossil fuels. The development of a European HSR network is thus a powerful lever to reduce greenhouse gas emissions and the dependency of our mobility on non-renewable energies. HSR services have shown a rapid development in recent years, making up a quarter of rail passenger travels in 2010 and also contributing to significant overall rail travel increases. Still, understandings of HSR and the respective approaches to implement HSR services are quite heterogeneous across Europe and need close inspection.

Table 1: State of the art of HSR in Europe 27 (Banister, D. and Givoni, M. (2013) “High speed rail development in the EU27: Securing the potential”. In, Perez Henriquez, B. (ed.) High Speed Rail System for California.”)

Thousand M pkm	1995	2000	2005	2010
France	21.43	34.75	43.13	51.89
Germany	8.70	13.93	20.85	23.90
Spain	1.29	1.94	2.32	11.72
Italy	1.10	5.09	8.55	11.61
Sweden	0.42	2.05	2.33	3.10
Belgium	-	0.87	0.98	1.06
United Kingdom	-	-	0.45	1.01
Others	-	0.17	1.50	1.75
Total	32.94	58.80	80.11	106.04
% of all rail	9.4%	15.9%	21.2%	26.3%

Since the inauguration of the first French HSR line in 1981, lots of European countries have made huge investments in order to catch up with the increasing demand for more speed on longer distances. HSR, coupled with the general request for a more sustainable mobility, appeared to be an appealing solution to the Member States, and with regards to their own economic, financial, political and demographic situations, national networks have started to develop and reach now a total of 7,378 km of high-speed lines (above 250 km/h as defined by the UIC). In a strategy of cooperation and in the search for a network effect enhancing medium and long-distance cross-border high-speed links, 12 Member States defined in the beginning of the 1990s top priority links, among these some high-speed lines, dedicated to passenger transport and led by common standards of interoperability and requirements defined in European Commission Directives that are listed below. This policy of

frameworking a common vision of an inter-national transport lead to the TEN-T networking and planning, as presented in the European Commission’s table (Table 2) and map (Figure 2). The European Commission’s goal of tripling the length of the HSR network is already on track with more than 1,900 km of HSR lines currently being under construction or planned², in order to support the increasing demand for HSR services that doubled between 1998 and 2008, as shown in the latest numbers (from 49.2 billion pkm to 98.6).



Figure 2: Map of European HSR projects (Source: "The Rail Journey to 2020", Amadeus Rail, 2013, Accessible on request via <http://info.amadeusrail.net/rail-journey-2020-download>).

² Source: http://www.uic.org/IMG/pdf/20131101_high_speed_lines_in_the_world.pdf.

Table 2: TEN-T axes and priority projects relating wholly or partly to HSR (Source: "High-Speed Europe, a sustainable link between citizens" European Commission, Directorate General for Mobility and Transport, 2010).

Axis/Project No.	Title
1	Railway axis Berlin–Verona/Milan–Bologna–Naples–Messina–Palermo
2	High-speed railway axis Paris–Brussels–Cologne–Amsterdam–London
3	High-speed railway axis of south-west Europe
4	High-speed railway axis east
6	Railway axis Lyon–Trieste–Diváča–Ljubljana–Budapest–Ukrainian border
12	Nordic Triangle railway/road axis
13	West coast main line
16	Freight railway axis Sines/Algeciras–Madrid–Paris
17	Railway axis Paris–Strasbourg–Stuttgart–Vienna–Bratislava
19	High-speed rail interoperability in the Iberian peninsula
20	Railway axis Fehmarn belt
22	Railway axis Athens–Sofia–Budapest–Vienna–Prague–Nuremberg/Dresden
24	Railway axis Lyon/Genoa–Basel–Duisburg–Rotterdam/Antwerp
28	Eurocaprail on the Brussels–Luxembourg–Strasbourg railway axis

The TEN-T program enables projects to ensure their financing schemes and it provides an overview of what the European strategy on the priority projects is. But the European Commission did also settle a legal framework for common rules of functioning, intervening in lots of elements of the railway market organisation. Table 3 below provides an overview of the most structuring directives that cannot be ignored while building recommendations on policies and measures since there is already a strong signal on the direction to take by the European Commission. Another signal from the European Commission has been given in October 2013 with the inclusion of the Eastern European HSR network in the priority projects, according to HSR schemes in the new Member States (see Table 4 and section 5.1). Their obvious importance in the context of implementing the White Paper goals leads also TRANSFORUM's work to take their implementation stage into account and this is why a third time horizon, 2020, has been decided in order to leave time to complete background measures on which our recommendations will be built on.

Table 3: EU directives and their principles.

Directive	Principles
EC/1991/440	Independence of the railway infrastructure management Separation of infrastructure manager and railway operator Open access on international railway operations
EC/1996/48	Interoperability (TSI) of HSR infrastructure (TEN-T objective)
First railway package (2001)	Railway regulator for access charges and railway allocation Licensing framework
Technical specifications for interoperability (TSI, 2002)	Framing the interoperability on conventional rail
Second railway package (2004)	Harmonisation of safety and technical norms
Third railway package (2007)	Settlement of open access rules of international passenger services
Fourth railway package (upcoming)	Settlement of common regulatory rules Reinforcement of measures on safety, liberalisation and vertical separation

Table 4: EU contribution to TEN-T programs

(Source: http://ec.europa.eu/transport/themes/infrastructure/ten-t-policy/linking_en.htm).

Country	EU contribution in million €
Czech Republic	2217,0
Estonia	195,0
Cyprus	16,3
Latvia	476,6
Lithuania	117,2
Hungary	1480,5
Malta	93,7
Poland	13193,5
Slovenia	593,5
Slovakia	1095,7
Total	19482,0
Bulgaria	1251,7
Romania	3054,7
Total	23788,6

The measures listed above, combined with the HSR links included in the TEN-T program, address three main issues that need to be tackled in order to move towards the goal.

A first focus is on concrete network improvements and missing links in the European railway network (TEN-T projects), a second one is on the necessary funding mechanisms that are needed to make the big infrastructure investments for new HSR lines and their equipment possible in the first place. Third, these investments have to be accompanied by uniform standards that enable interoperability across the European HSR networks and that also allow an effective operation of this network, what is underlined by the listed structuring directives.

It is noticeable that the current measures only partly point towards the need for a user- and service-oriented perspective on HSR services – as opposed to the above-mentioned perception of stakeholders in the field. But beyond extending the HSR network length by infrastructure measures, ERTMS, ETCS and GSM-R can as well be seen from the perspective of increased capacity on existing lines, and uniform standards and interoperability as well contribute to better services towards the user (e.g. by fast and easy connections across Europe).

3.2 Trends

Though demand for mobility and rail traffic has continued to increase over the last decades, at least in most of Western Europe countries, this does not necessarily imply a rise in rail modal share (which has e.g. fallen in 50 years in the United Kingdom from 18% to 8%). The first trend of increasing rail traffic is an argument in favour of HSR as a way to relieve some major hubs from bottleneck effects, where the mix of both commuters and long-distance travellers on peak hours creates congestion and leads to longer travel times, affecting its attractiveness and thus, its modal share. An enhanced accessibility and attractiveness might in some cases lead to congestion which has the adverse effect of shifting modal share towards road, where comfort is still perceived as higher than on rail. HSR is justified to create supplementary capacity on longer distances and a high level of service, rebalancing travellers' shift towards rail.

Another structuring trend in the rationale for HSR is the importance given to valuation of time in project assessment and the regular over-valorisation of travel time savings regardless of the level of services off- and on-board. Access to the internet and electrical power sockets are exemplary features that can illustrate a focus on services and quality of travel experience. HSR orientation, considering the cost of speed in terms of rolling stock, construction and electrification and even environmental results, needs to be orientated towards a reduction of wasted time not by dramatically reducing travel times (or not in such big proportions as it used to be) but by making travel times productive. To go even beyond, increasing travel time productivity could change the rationale of transport from a completely derived

demand for a principal activity to a partially main activity, as soon as productivity and task fulfilling would be reaching office-level. This trend is what is now mainly influencing opposition to increasing speed on some dedicated line, leading to derives in costs and lack of public comprehension, as the UK Department for Transport has faced for the past months regarding its project of High-Speed 2.

Another key feature of planning HSR is the degree of its integration in the existing public transport network as a mean to increase efficiency. Transport policies base their approaches on generalised costs, including prices and travel time, not on a segmented line that would represent only access, but from origin to destination, emphasising the need for more accessibility and thus reduced waiting times by more frequency, for instance. This rationale, namely the door-to-door approach, would mean a global thinking of HSR as part of an integrated transport system and a travel time value including connectivity, efficiency and access facilities. It also highlights the need for multi-level cooperation in order to settle a coherent transport organisation on the basis of HSR as part of multimodal travel, which is one of the current goals pursued by most regional, local, national organisations as well as by the European Commission in the 2011 White Paper.

On the technological side, trends are dominated by the need for better services which would bring together the multiplicity of actors sometimes involved in one travel pattern. For this, integrated initiatives such as Rail Europe Ltd, need strong cooperation of actors in order to gather data and provide to customers a reliable information and reaching the final goal: facilitating multi- and intra-modal ticketing and thus multimodal trips and integrating HSR in the process as part of an attractive transport offer with efficient and reliable connections.

3.3 Key barriers and fields of conflicts

HSR services and investments are technologically, organisationally, financially and politically challenging. In the political and institutional perspective, governments may partly be reluctant to actually follow strategies to improve HSR services; on the other hand appraisals for new HSR lines are often not used in the best possible way (i.e. by not thoroughly analysing the full benefits and drawbacks of HSR investments), which may lead to inefficient use of public money and an ineffective HSR system.

In addition to that, local resistance against big infrastructure projects is of growing importance and requires careful analysis and consideration of arguments in order to conclude with good governance. Public acceptance is one of the key levers in the construction of a high-speed line, as it often comes in opposition to political will and relies on the quality of communication of both parties. Indeed, some projects, considered as structuring, like the Lyon-Turin tunnel or HS2 in the United Kingdom, raise strong local and sometimes national opposition for environmental reasons but also for social and economic reasons (notably issues on taxation effects and infrastructure financing schemes).

Such resistance to extensive works on HSR highlights the staggering objectives of politics and citizens, particularly strong in times of economic pressure as Europe is facing them now.

Political will, political vision and long-term infrastructure needs can also get in conflict when it comes to the allocation of budgets, as timescales, interests and motivations differ between the perspective of policy actors and a perspective that is oriented towards the lifespan of the respective infrastructures. Some needs may be fulfilled by different solutions and one cannot be satisfying for every democratic decision-maker (whether politician or citizen). Such delicate issues must be handled carefully as asymmetric information often leads to misunderstanding and sometimes even to lack of support. Institutional communication might be one of the levers that could enhance bilateral understanding and identification of objectives leading to a maximisation of public interest in cases of very expensive schemes. Switzerland is a good example of democratic allocation of public budgets. Earlier this year, Swiss people voted positively for a new financing scheme of rail development plans which brings more money to the sector.

Technical challenges remain where international standardisation is incomplete and where train manufacturers and operators therefore come across multiple sets of requirements and complicated approval procedures.

For HSR operational models, the distribution of HSR stations and timetable planning is a challenge because a dense network of stations conflicts with minimized journey times. Closely linked to the distribution of HSR stations, the impact of HSR investments is still difficult to assess. In a competitive market, HSR services have to find their competitive place between road transport on shorter distances (which can offer convenient door-to-door travel) and air travel on longer distances (which can offer faster point-to-point speeds); this is a major reason why the strategic planning of HSR services has to consider an integrated transport system perspective and should focus on good service – and not only speed.

A main barrier for the extension of the European HSR network is its high cost. Building up a HSR network entails significant capital costs for the construction of the infrastructure, and as well the operation of trains on HSR infrastructure and the maintenance of the network are continuously costly. It is therefore not likely that HSR investments will be possible without public subsidies.

Overall sources of conflicts can be found in the very first step of HSR planning: in defining its strategy and the very aim of building a HSR line and offering HSR services. Such a strong political vision needs some visibility in order to be accepted but also in order to implement the right measures. Thus, there is a need for setting timescales in order to give a clear vision to future decision-makers and a pathway to follow, which the following pages and TRANSFORuM project in general aim to provide for all kinds of HSR actors.

4 Processes and policy packages towards the goal

The processes towards the goal require a strong coherence between the vision held by the European Commission as the common decision-maker and the Member States as tenant of their own national strategy on mobility and the degree of integration and multimodality they aim at on their national networks. This vision, as explained before, needs to make a choice on whether the European Commission is in charge of cross-border links and then of a connection-focused HSR network or if all Member States act together in the sense of a common HSR area, where national lines and cross-border connections are both part of a whole network that has to be supported by the European Commission. Once a common vision is provided to all European actors of HSR, there are still decisions to be made on which feature to go with which aim. And this is meant to be the different policy packages towards the goal: a variety of different sets of measures and policies aiming at achieving the primary goal of the European Commission and Member States: increasing rail modal share.

The policy packages are combinations of relevant measures required in order to reach the goal that seems to most feasible in order to increase HSR attractiveness and thus rail modal share. The table below aims to present a non-exhaustive list of HSR features that need to be included in the rationale of a European HSR network. It is divided by the three main organisational branches structuring HSR: info- and infrastructure, end-user services, and institutions and policies. These three branches imply multi-actor decision-making processes and some issues might be intertwined as well as actors involved in more than one level. The aim is to provide a relevant overview of HSR as a system, especially where cooperation between actors is particularly needed.

As a basic orientation, every policy package in the table below (on policy package = one column) follows a specific orientation. Policy package 1) is about extending the HSR network (focus on infrastructure), package 2) deals with providing good access at stations (accessibility focus), package 3) deals about integrating HSR with local, regional and national networks (integration focus), and package 4) considers HSR services and their attractiveness for users (service focus).

Good practice examples

Throughout this section, examples from TRANSFORuM's previous work on good practice in the context of the White Paper will demonstrate identified factors of success. These examples will be presented in small grey boxes.

Table 5: Proposed policy packages.

<i>Policy package</i>	Extending the HSR network	Providing good access at stations	Integrating with local/regional/national networks	Focus on HSR services and attractiveness
Info- and infrastructure features				
Financing	Public Subsidies	PPP – traffic risk guarantee	PPP – without traffic risk guarantee	
Main source of funding	Customers fares	Subsidies	Private	Other modes (spillovers)
Offer focus	Very high speed	More capacity	More service off-board (in stations)	More services on-board; WiFi etc. in metropolitan regions with many business commuters; convenient night-trains where applicable
Network focus	Upgrading of existing lines in densely populated areas, careful consideration of demand in less populated areas	Central hubs in less populated areas, dense network in highly populated areas	Separation of traffic flows in metropolitan areas, direct integration in medium-size cities, links to airports in remote areas	
Capacity extensions	Focus on bottlenecks and network	Focus on long-distance links (300+ km/h) and securing connected regional services	Upgrading existing lines (200 km/h) and balancing with regional and freight traffic – use expensive infrastructure efficiently	Upgrading existing lines, bringing equipment to modern standards, keep compatibility with European network
Business models	Private operators, licenses, franchising	Separate service operators	Cooperation between public authorities and private companies for mutual benefit	Competition between operators
End-user services				
Access at stations	Integration in urban and concentrated business districts	Isolated station accessible by high level coach services and car	Urban multimodal hub	
Integration	Integrated network with balanced hierarchy of hubs	Separation of traffic flows in metropolitan areas, efficient and accessible integration at regional hubs	Integration with local and regional transport, links to airport	Integration in existing dense networks, taking care of balance between modes

<i>Policy package</i>	Extending the HSR network	Providing good access at stations	Integrating with local/regional/national networks	Focus on HSR services and attractiveness
<i>Institutions and policies</i>				
Legal framework	Fair competition	Access rights	Obligations to integrate with connecting services	Passengers rights
Decision-making	EU policy – global vision of HSR network	EU policy – cross-border HS links	Bi- Tri- National strategy for inter-national links	National governance on HSL
Good planning factors	Early public involvement, transparent strategies	Early consideration of which actors are affected and should be involved	Eye-level involvement of affected actors, i.e. rail service operators, rail infrastructure operators, local public transport operators, car and bike sharing operators, city authorities, users	Balancing economic interests of private actors with societal economic interests and user's interests (convenient usage of rail services to foster modal shift)

Considering the features presented above, some issues have been identified as major. They need to be addressed and developed in order to enhance the construction of a solid and common rationale on what direction to take in order to further develop HSR in Europe. These questions also address some of the issues already identified in TRANSFORuM's deliverables 5.1 and 5.2 about case studies, good practices in Europe and lessons to learn from successes and failures in implementing innovation in HSR.³ While developing the points that seem relevant to emphasise, a parallel will be drawn with the most illustrative case studies that can serve as benchmarking for future projects in Europe, whether nationally or commonly planned by the European Commission and the Member States.

4.1 Extending the High-speed Rail network

Though extending High-Speed Rail network in Europe is very much about the financing scheme, considering the scarcity of public funds and the search for private funding it also implies a need for a European vision in shaping the European network. The TEN-T focus a lot on cross-border links, putting the European Commission in charge of international high-speed lines and focusing on a network effect that is only feasible if national networks enable interoperability between each other, enlarging then the sense of a common HSR area. But when considering some projects such as the Lyon–Turin link, the issue of frontier effect tends to highlight the lack of relevance of some international lines, making traffic much lower than predicted. The main issue to be addressed in the extension of the HSR network in Europe is if there really can be a European HSR network.

³ Deliverables 5.1 is already at <http://www.transforum-project.eu/resources/library.html>.

This issue raises the question of funding HSR schemes according to the vision given and supported by the European Commission. In a vision of focusing on cross-border links, a bi-national funding scheme seems relevant as it mostly depends on the situation on national railway networks. But on the other hand, if the European Commission advocates for a global thinking of HSR, there could be an encouragement for a perequation between Member States on the basis of the network effect on national markets due to the facilitation and common effort put on European traffic and not only national and bi-national traffic.

The first question to be raised is then: **How far to go from a national to a European vision of HSR?**

Good practice: HS1 and the Eurostar

HS1 and the Eurostar is an example of how international coordination is possible and can drive innovation for domestic services at the same time. The international link follows a strategy with a connection from London to Paris and Brussels (Amsterdam is in planning). The case has shown how international line development underlines the need for a strong cohesion. Despite traffic figures being lower than government estimates, this speaks more to the shortcoming in assessment methodology used, rather than the success of the service. HS1 and the Eurostar can be considered a real success in cross-border HSR services.

4.2 Providing good access at stations

Providing good access at stations raises the issue of the market area and relevancy zone of HSR around its stations. High-speed trains have a larger impact than only on the primary market, being the HSR station, implying a strategy of linkage facilities. The economic and geographical strategy implied by the implementation of HSR is the key for deciding how to provide linkages to the railway station.

By identifying the targeted travellers, station planning has to be coherent in its location and integration in the existing transport system. For an international linkage, connected to an airport, there is a need for dedicated and fast links with economic centres and a strong integration in the airport connectivity, but for a larger regional impact, focus will have to be put on connecting the station with the urban public transport system and regional railway network, meaning to integrate the station in a hub or making the station a hub. Locating a HSR station outside a city centre or at least in a location with a poor public transport support has to be planned careful to avoid the adverse effect of segmenting HSR and isolating it too much, leading to both a disappointing ridership compared to predicted figures and the over-use of the private car to reach the station, raising the issue of the sustainability of HSR in such a case.

The main issue to be addressed then: **How to adapt the targeted market area of HSR?**

Good practice: Javelin line

The **Javelin line** is a good example of how to efficiently link a specific destination to a network and upgrading stations to facilitate using the train. As a route planned to cope with strong demand during the London Olympic Games of 2012 from the international St Pancras station to Stratford, its efficiency in linking major transport hubs according to a specific demand (both in volume and in timescale) make Javelin a good example of flexible ground transportation.

4.3 Integrating with local/regional/national services

There is a parallel to be drawn between section 4.2 and the issue of HSR integration. Indeed when a HSR strategy has been defined and its market area determined, there is a need for adapting the existing public network in a measure showing coherence with the magnitude of predicted impacts. A segmented HSR line needs a fast and dedicated line connecting the station and the closest city centre like a dedicated bus, on the same scheme than airports. Such schemes might find some relevance in the need for more inter-regional relations, making the HSR station a hub for inter-regional traffic, but often also implying to link two strong economic centres to reach satisfying level of traffic to keep economic relevance.

Planning a HSR station implies also an effective sharing of information on land use, environmental, economic policies and strategy between different jurisdictions according to their decision power on these themes. Such a collaborative and transparent multi-actor decision-making process can avoid unsustainable planning within a HSR strategy and thus station allocation that could lead to inefficiency of HSR and a too low level of traffic. Cooperation is also a key success factor for integrating HSR in the whole existing transport network which needs some logic in terms of accessibility and reliability of services linking HSR stations and the rest of the network, for example by the creation of a hub. Priority access should be given to the mode that needs to be most promoted (e.g. parking will promote access by private car and might lead to environmental adverse effect).

The issue addressed here can be expressed as: **Which integration for which regional HSR strategy?**

Good practice: TGV Lyon-Est, Frecciarossa, City-Ticket

The first European HSR line, the SNCF **TGV Lyon-Est**, is a good example of how to manage a complex transport system by providing capacity on both HSR and conventional rails. This is also the case for Trenitalia's **Frecciarossa** train, which is adapted to multiple speeds, enabling operation on different tracks all over Europe, opening up the possibility of new international routes.

The German **City-Ticket** provided by Deutsche Bahn is another example of how technologies can facilitate door-to-door travel. The City-Ticket allows access to both regional and national networks through one single pass. This integration of HSR into the existing transport system is important for promoting multimodal travel.

4.4 A focus on service and attractiveness of rail services

The rationale for HSR is changing over the years alongside technological progress made in off- and on-board services. Without services such as frequency, internet access, a reliable mobile network, power sockets, travel times were naturally considered as wasted time, spent on unproductive activities. Since technological innovations, frequency and accessibility progresses were introduced by most operators and in most HSR stations, travel time can be spent on productive activities such as answering emails, schedule management etc. That is a question raised in some HSR projects where values of time are often over-estimated and thus benefits linked to travel time savings, since most of projects still rely on the assumption of travel time as wasted time. The current trend is to focus on comfort, reliability and frequency as key variables of a door-to-door travel pattern, making HSR a travel experience and thanks to reliability, consider it as a relevant alternative to other modes like road (whose travel times can still be considered as wasted time) or plane (whose door-to-door travel time can be, especially on medium-distance, unattractive compared to HSR).

As a conclusive question: **What are the most important innovative services to provide HSR with in order to enhance its attractiveness?**

Good practice: Thalys, Frecciarossa1000, Rail Europe, City-Ticket

The introduction of Wi-Fi services and electrical plug sockets should not be underestimated. **Thalys** trains offer this free to 1st class and selected 2nd class ticket holders. Similarly, the new **Frecciarossa1000** will also offer meeting rooms in addition to these facilities as a means to attract travellers from medium-distance road journeys.

Rail Europe, a common platform for booking international travels (both international links and national networks) is also a way to identify technologies and customer-focused tools in the strategy of making rail a seamless transport mode, removing all constraints of organisation and complexity that could arise from the variety of actors involved. Integrated ticketing and links to other modes, like provided by the **City-Ticket** mentioned above, should be seen as an important consideration for HSR development, linking HSR with the other European transport priority areas identified in the White Paper.

4.5 The role of public-private partnerships

Public-private partnerships have been identified in the previous TRANSFORuM meetings as a key feature of further HSR financing schemes. By building a mixed consortium in the building of new projects, both private and public organisations guarantee a share of knowledge, know-how and financial advantages to each other. Indeed, if public bodies can provide lower interest rates than private companies, the latter can bring higher skills and more efficiency due to stricter management rules. In socio-economic evaluation, some key differences need to be considered in order to identify each party's requirements to explain what issues a PPP can face and how to cope with these constraints. If the State is rather focused on distributional effects of an infrastructure providing services in regards of public interest, the pressure put on infrastructure deficits is lower than for private companies whose financial pressure is by far greater, considering the interest rates burdening the financial charges more than for the States. A paradox addressed by PPP that needs to be considered is the balance between level of subsidies and private funding. Indeed, in some cases profitability can be too low for private companies to invest without support through subsidies, leading to some public subsidies representing more than half a project investment. In such cases, one must wonder if a PPP is a really an inevitable solution, as it has been the case during the Railtrack privatisation in the UK, whose subsidy needs were so great that the company has been re-nationalised in order to keep financial charges on a reasonable level.

Thus, there is not just one form of PPP contract. If PPP seems a relevant solution for a high-speed line, its conditions need to be discussed. Indeed, there is a particular attention given to traffic risk (or commercial risk) and the party that will have to take the burden. In some cases, the public organisation can guarantee a certain level of revenue on the basis of traffic risks, if the private company invested in the infrastructure; whereas in other forms, the State is tenant of the infrastructure and the private operator assumes the traffic risk and pays an access charge to the public infrastructure manager which can also be a great risk as some lines, like the Eurostar line between Paris and London, take 20 years to reach a sufficient level of profitability to be considered successful. These are the two main kinds of PPP, mostly used in consideration of the predicted profitability rate and its sensibility to economic context.

As a conclusive question: **Would there be other financing solutions in order to balance public and private involvement and respect each party's financial and social requirements?**

Good practice: Eurostar, Thalys, Swedish case

Multi-actor funding schemes are typical for cross-border links such as **Eurostar** and **Thalys**, since diverse funding arrangements reflect the commitment of resources from all countries involved. But the **Swedish case** of investing in HSR provides a good example for multi-jurisdiction cooperation, as its transparency and consideration of the best approach to investment is outstanding.

5 The different contexts for High-speed Rail

HSR planning is a multi-disciplinary task since it implies considering lots of different topics in order to build a network that fits both national and European needs in terms of land use policies, traffic forecasts, urban topography etc. One of the key success factors of HSR is to be able to consider the large spectrum of factors that need to be considered before or during the implementation of a new high-speed line. In such a perspective a cross-cutting analysis should look at what influences the capacity of HSR in order to cope with the ongoing need for mobility. The building of a HSR strategy needs to take into account both internal and external contexts. Internal contexts define its model (which degree of integration, what pricing policy, what commercial speed, how many stops on the route etc.); external contexts include the economic, social and spatial contexts that are obviously conditions for success or failures of a high-speed network. Prospective studies take into account different scenarios in order to identify as much potential situations as possible, despite uncertainty risks, and the success of implementation of a HSR model lies in the recognition of intertwined relations between both characteristics of the HSR model and its implementation territory.

A short-/medium-/long-term approach highlights the need for a sustainable background for the HSR network, both institutionally and organisationally. Some directives still need to be fully implemented such as the EC/91/440 about the opening of the railway operations to railway companies that are not the owner of the infrastructure. The application of those current directives needs to be complete before going further in the design and decision of new policy measures, as legal situations that are not harmonized across Europe could lead to complex interactions between the countries and the irrelevance of further measures that need some common framework to reach their goals. In that sense, TRANSFORuM identified a short-term need to clarify this situation and to provide the required background of the White Paper goal. The mid-term, until ca. 2030, can be seen as a reasonable scale to implement the intermediate requirements in terms of norms and standardized interoperability factors. By this time cooperation and coordination among actors of the railway market will have had time to organize themselves, and provide the right conditions to pursue further common measures towards the final goal. The goal can be reached by 2050 if the correct conditions are provided in all Member States and if a strong cooperation between different jurisdiction levels, different production chains and other decision-making stakeholders is ensured, including open fora for discussing a common understanding and knowledge gathering platforms. But such a process might need a common framework, officially settled and with some strong decisional power, to enhance cooperation and settle the legitimacy of such gathering and their results in terms of decisions and the necessity of their application.

Another approach advocating for a better use of geographical information and organization in Member States all across Europe might find relevancy in the search for a European Single Area, since geographical matters take much place in territorial strategies and influence the definition of the HSR strategy on regional, national and European scales, underlining some convergences that could lead to a better integration of HSR in intermodal travel patterns. This could also lead to a clarification of objectives pursued by HSR in urban relations and regional accessibility policies. Nevertheless, the geographical approach would need a strong political backbone in terms of clarity of the decision-making processes and the political powers all along the process of resource allocation, reinforcing the need for multi-disciplinary cooperation and transparency between economic, geographic and political interests.

5.1 The new member state perspective

The new Member States seem to catch up the trend for HSR planning and set the focus on long corridors between Western and Eastern Europe by addressing to the European Commission the necessity for interoperable standards, as seen with the Rail Baltica project whose aim is the creation of a North–East Europe axis, opening Europe to Northern networks and Russian traffic. A trend that might also be raised by Eastern Europe HSR planning is the characteristic of developing a national network on behalf of the European network. In that sense, Romania is planning to have a high-speed line from Bucharest to Constanta, nationally managed, with some support from Chinese organisations, and contributing to a Paris–Black Sea HSR axis.

But here again the consideration for a thinking of HSR need to be raised, since operation speeds will surely be different across the different countries the line goes across, since most of the new Member States plan speeds up to 200 km/h (Poland, Romania, Slovakia etc.) and Western countries already operate at speeds up to 300 km/h, which could lead to traffic disruptions.

What needs to be most highlighted is the strong will from new Member States to commit in the European project and not to be left aside, as it has been the feeling for some years with focus on Western countries when planning HSR lines. Countries now take the initiative of bringing up issues of HSR in order to get included not only as Members of an East–West corridor but also on a Eastern North–South axis, that might bring lots of opportunities in terms of overcoming technological barriers, since the HSR network in Eastern Europe is not yet developed and would be a valuable ground for implementing new technologies and innovations, at least more than in Western European countries whose network are locked in some technological path dependency. But new Member States need to have strong directives from the European Commission on which axes they could be included, based on which funding to build such extensions and with a strong background thinking of the shift from road to

rail, where planning should contribute to encouraging road freight and passenger traffic to shift towards rail.

Good practice: Rail Baltica

HSR developments are already underway in newer member states. The **Rail Baltica** project is one prominent example delivering a North-South cross-border link between the Baltic States. Whilst this development has encountered problems in delivery, it is nonetheless a good example of collaborative working between Member States. It is an example which is adopting standardised operability and employing safety norms and in doing so, demonstrates that new significant infrastructure development and improvement is possible in line with the White Paper goal across the regions of Europe.

5.2 Different potential economic development pathways for Europe

The different possible scenarios of what could be the economic situation in Europe in the years and decades to come are still a struggle for analysts to firmly determine because of uncertainty of economic cycles. But major points can be highlighted in order to advise some project assessors and give tracks to further reflexion on how to cope with uncertainty of economic development and thus prospective demand figures.

There is a need of taking into account public scarcity in economic analysis, as subsidies are in most schemes the main financial source – though not as sensitive as private funding might be. The emphasised scarcity in public budgets highlights the constraint put on other projects by allocating resources on one scheme. Such a consideration might also help in the mutual comprehension of citizens and politicians when projects face a strong public opposition. Such opposition has for instance been the case in France and the National Transport Infrastructure Scheme (SNIT, 2013) when most of HSR construction plans have been postponed (and some enough to be considered as cancelled).

What needs to be considered when planning very costly HSR schemes, despite cheaper alternatives, is the uncertainty of figures they are based on, uncertainty in economic development leading to traffic uncertainty and uncertainty of funding availability.

6 Annex: Description of measures and responsibilities

The following annex includes a table with single measures that have been drafted earlier in the process of the TRANSFORuM project. Rather than combining specific measures into comprehensive policy packages, they relate to the basic strategies to move towards the White Paper goal, namely increasing rail capacity, increasing rail demand and good planning – as outlined in section 2. Measures aiming at **increasing rail capacity** include measures that directly aim at extending infrastructures or HSR services, or measures (like obligatory rules provided through common standards and regulation) that provide the technical basis for such extensions. Measures aiming at **increasing rail demand** include measures that make HSR services more competitive and more attractive for users either by providing better service or by rebalancing the competitive situation between the different transport modes. Furthermore, some measures relate to **good planning**, understood as general approaches regarding planning procedures that are not directly related to specific HSR projects. These three categories overlap and some measures may therefore be considered as being on the edge, but for reasons of simplicity they are allocated to one of the three areas.

Taken together, all the measures from the table illustrate concrete examples of specific measures and their characteristics, which can be used and combined in outlining actual policies that follow one or another policy package from section 4.

Explanation of timescales indicated in the table:

- short-term – can/should be implemented until ca. 2020
- mid-term – can/should be implemented until ca. 2030
- long-term – can/should be implemented after ca. 2030

6.1 Table of measures

Measure	Responsibility / key actors	Level of stakeholder / public acceptance	Barriers	Supportive measures (incl. funding)	Timeline	Example (to transfer or to scale up)	Comment
INCREASING RAIL CAPACITY							
Common standards/regulation for interoperability	European policy	High, but sensitive to imposed costs for operators and manufacturers	Existing mismatching regulation across Europe	Research and development for required interfaces	Short-term or already existing (setting standards) Mid-term (implementation)	ERMTS, ETCS, GSM-R	
Common standards/regulation for safety	European policy	High, but sensitive to imposed costs for operators and manufacturers	Varying interpretation of existing regulation	?	Short-term or already existing (setting standards) Mid-term (implementation)	?	
Harmonization projects in all member states	National policy	?	Structural inertia of actors	?	Short- to mid-term	Switzerland: ETCS for national HSR lines	
Enforcement of the European Railway Agency's existing norms	European policy, national policy	?	?	?	Mid-term	?	
Additional public funding for infrastructures	European policy, national policy	Medium (and varying across member states)	Lack of public resources	?	Ongoing	?	
Focus on important cross-border links and different national models (instead of global perspective)	European policy	High (from European perspective)	May raise resistance from countries that want European support for national projects	?	Mid-term	?	
Assuring good connections between largest European cities	European policy, national policy	High	Costs	?	Mid-term	?	

Measure	Responsibility / key actors	Level of stakeholder / public acceptance	Barriers	Supportive measures (incl. funding)	Timeline	Example (to transfer or to scale up)	Comment
INCREASING RAIL DEMAND							
Competitive high-speed rail markets; rebalancing market between rail and road	National policy, operators (European policy)	High (rail and other public transport actors), low (road actors)?	Resistance of modes that are currently advantaged	Fair and efficient pricing (user and polluter pays principle) for all transport modes	Mid- to long-term	?	
Focus on service, attractiveness, and accessibility (instead of infrastructure)	Mainly operators	High	Structural inertia of actors	?	Short- to mid-term	Switzerland	
Connect High-Speed Rail with other transport modes and complimentary services	National policy, regional policy, operators	High	Topographical barriers like already dense cities	?	Mid-term	?	
Regarding HSR services as a part of an integrated transport system (door-to-door philosophy)	National policy, regional policy, operators	High	Structural inertia of actors	Investment support for intermodal hubs and integrated tariff solutions (linked to its roadmap)	Mid-term	?	

Measure	Responsibility / key actors	Level of stakeholder / public acceptance	Barriers	Supportive measures (incl. funding)	Timeline	Example (to transfer or to scale up)	Comment
GOOD PLANNING MEASURES							
Common method for public investment justification analysis of costs	National policy (European policy)	?	Existing inconsistent methods	?	Mid-term	?	
Analysis of where railway services are most performing	National policy (European policy)	Medium	Structural inertia of actors, existing claims for investment, prestige projects of specific actors	?	Mid-term	?	
Early consideration of existing demand and overall economic development	National policy (European policy)	Medium	Structural inertia of actors, existing claims for investment, prestige projects of specific actors	?	Mid-term	?	
Good planning and design of HSR stations	European policy, national policy	High	Balancing travel times (long-distance point-to-point travel) with positive effects of stations (more frequent stops)	?	Mid-term	Japan (successful business cases regarding stations + successful governance for distributing stops along lines)	

Further Questions?

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