



# Ambitions &

# Opportunities

Understanding the Spatial Effects of  
High Speed Rail



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1. Coverpage: Liège Guilemins Station by Santiago Calatrava



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# Ambitions and Opportunities

Understanding the Spatial Effects of  
High Speed Rail



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*A journey which has been as much about the process as the product*



2. The Lille symposium, February 2014



3. Fieldtrip Lyon Avignon, June 2014



4. Fieldtrip Antwerp Liège, July 2014



# Foreword

We all remember the pride and exhilaration we felt as we first used and became familiar with the new High Speed 1 (HS1) line from St Pancras to the Continent. There is little doubt that it revolutionised the use of the Eurostar service. Since HS1 opened in 2007, just as world economics were fragmenting at the advent of the Great Recession, passenger numbers have increased steadily and the line has provided opportunities for new urban regeneration.

In a little under 20 years my son might be feeling the same sentiments as he says “today I went to London by the new High Speed Line”. But this simple statement may well mask the simple truth that it is quite possible that, because of the revolutionary speed of the new line, the majority of his time might well have been spent getting to and from the High Speed stations from his origin and to his destination. Certainly the quality and number of transfers will significantly have influenced his decision to travel and to use the new service, particularly the need to journey plan because each transfer involves time delay, distraction and, potentially, disturbance if an inter-connecting service fails to perform and, worse, fails to inform him.

The purpose of this report is, therefore, to encourage all policy makers, nationally and in city regions to which HSR will connect, starting now, to think ahead as to how they will ensure that all our sons and daughters feel that they have easy and reliable access to this major piece of 21<sup>st</sup> century investment. Without such prior engagement with the core team and within each region there is a risk that the full benefits of a major piece of railway infrastructure, the first of its scale in 150 years, will have been lost.

I commend this report which has been compiled under the expert direction of John Worthington to your attention and would like to thank the editorial team and all those who participated in the ITC’s discussion events, workshops, expert panels and excursions that have together made this report possible.



**Simon Linnett**, Chairman Independent Transport Commission

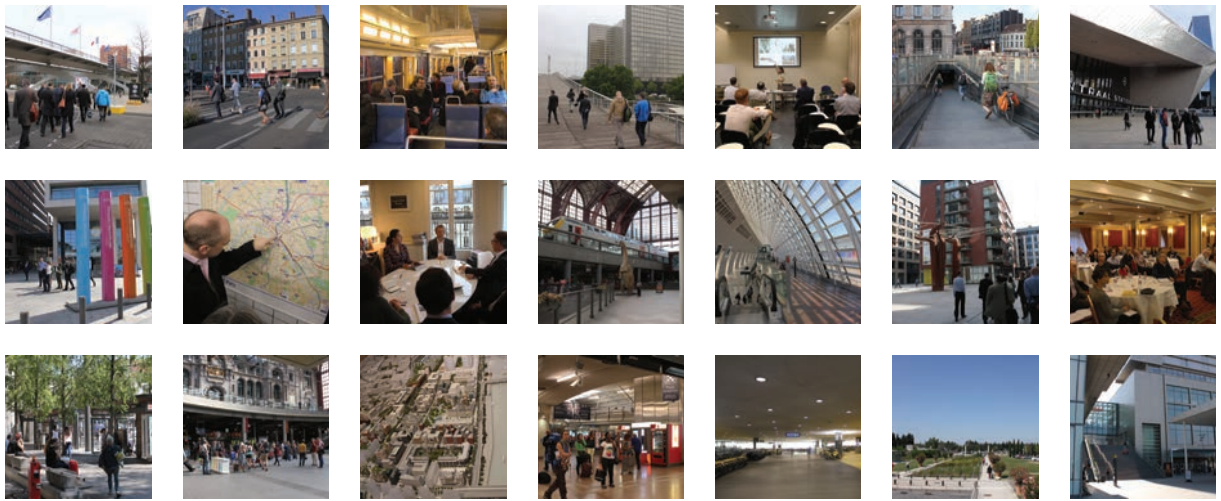


5. Fieldtrip Antwerp Liège, "The Guillemins Station is the most popular guided tour in Liège", July 2014



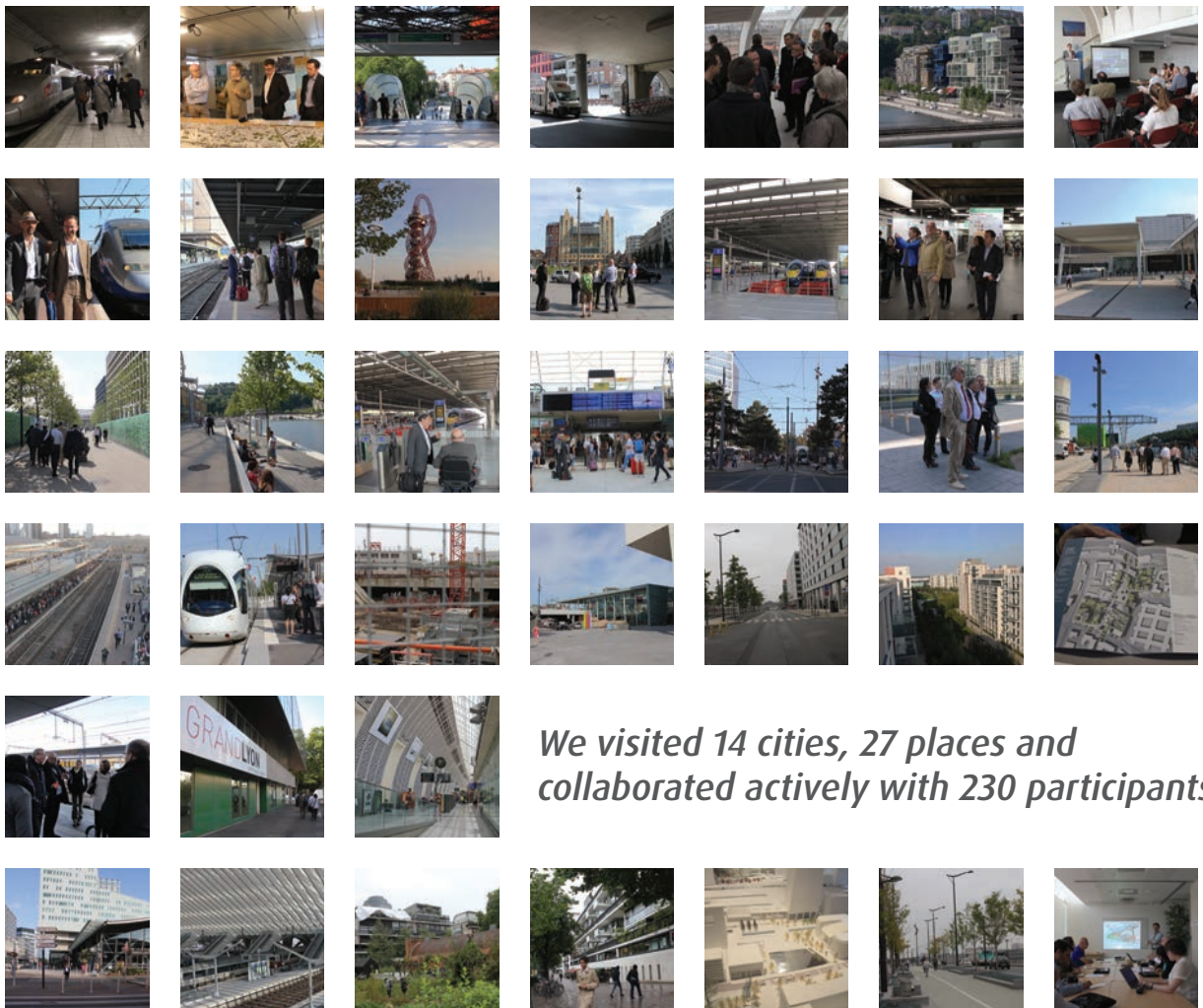
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*'The new network will only be a twenty-first century success if it breaks with twentieth-century railway thinking and practices'*

Sir David Rowlands, former Chairman HS2 Ltd



*We visited 14 cities, 27 places and collaborated actively with 230 participants*

6. Learning from Europe initiative organised by the ITC



# Preface

## From the Why to the How

Based on experience from High-Speed One (HS1) and elsewhere, the High-Speed 2 (HS2) project was born from a strong conviction that its construction would transform the nation's connectivity and its economic fortunes. The Government's rationale to build a new High-Speed Rail (HSR) line was set out in "Delivering a Sustainable Transport System" published in 2008<sup>1</sup>. In March 2010 High-Speed 2 Ltd published their report to Government<sup>2</sup>, in which the then Chairman Sir David Rowlands offered a vision for "a network of high-speed lines and services, bringing together the main conurbations of England and Scotland but integrated with the classic railways so that the benefits can be spread more widely".

Under increased pressure to develop the business case the project focused on constructing a railway line to reduce journey times between the primary destinations of London, Birmingham, Leeds and Manchester. The specification to reduce rail journey time and control project costs became paramount.

The ITC, concerned at how the public and media debate over HSR in Britain was being conducted, launched its own review of the spatial effects of HSR in 2012<sup>3</sup>. The goal was "to clarify the geographical and spatial effects of HSR and to provide guidance on how to ensure that such a network can provide maximum benefits for our cities and regions". We recognised that there were inconsistencies in the national debate, creating problems in defining the expectations of HS2. It was perceived by much of the public and the press as an expensive civil engineering project wholly designed to move passengers at great speed between the major regional cities and London. The workshops undertaken by the ITC in the spring and summer of 2013 initiated a broader debate and identified the need to also understand HSR as the fundamental cornerstone of an integrated infrastructure network, which could increase the long-term capacity of the UK's transport infrastructure and act as a catalyst for regional economic regeneration.

At a recent Urban Land Institute conference in Birmingham on HS2 Growth and Connectivity<sup>4</sup> it was agreed that the agenda had changed from one of 'Why High-speed Rail?' to one of 'How?' The ITC over the two years of its review of the spatial effects of HS2<sup>5 6 7</sup> has played a major role in the shift in thinking. Through our programme of events, workshops, expert panels and field trips<sup>8</sup> over 230 opinion formers from the places and organisations impacted by HS2 have been actively involved. Perceptions and opinions have changed and we have seen reinforced commitment to the opportunities that HSR offers. The most important question today is: 'How can we use HS2 to achieve the long-term aspirations of each city?'

This publication reports on the process of visits and workshops and aims to encapsulate and communicate insights and experience from Europe to those who will be involved over the next few decades with developing Britain's HSR network and its associated projects. The report has been created as a source of value and inspiration to all the different places that will be involved. It brings together insights from policy makers, city politicians, rail providers, investors, entrepreneurs, civic society, academia, and the user as passenger and citizen. We explain here how each should be given the means to contribute in a pro-active and responsible way if HS2 is to achieve its full potential.

**John Worthington**, Chairman of the ITC HSR Working Group

1. Department for Transport. Delivering a Sustainable Transport System: Main Report. (2008).
2. Department for Transport. High Speed Rail London to the West Midlands and Beyond: A Report to Government by HS2 Limited. (2010).
3. Independent Transport Commission. Call for Evidence: The Spatial Effects of High Speed Rail. (2012).
4. ULI Infrastructure Council and West Midland ITA. in Urban Land Institute UK: HS2 Growth and Connectivity Conference. (2014).
5. Independent Transport Commission. The Spatial Effects of High Speed Rail: Capturing the Opportunity. (2013).
6. Independent Transport Commission. Two Speed Britain: How will High Speed Rail affect our cities and regions? (2011).
7. Independent Transport Commission. What will be the spatial effects of High Speed Rail in the UK? (2012).
8. Independent Transport Commission, Capturing the Value of High Speed Rail: Learning from Europe: The Lille Symposium 2014..

# Executive Summary

## Background

1. The Independent Transport Commission (ITC) has dedicated one of its major research streams to investigating the spatial effects of High-Speed Rail (HSR). This stemmed from a desire to clarify the geographical and spatial effects of HSR and provide guidance on how a HSR network can provide maximum benefit for our cities and regions. The main focus has been on collecting evidence and forming lessons from the past experience of HSR investment in Europe and the UK's High-Speed One (HS1) line.
2. This report captures the evidence and insights gathered from the ITC's study visits, workshops and symposia looking at the experience of past investment in HSR. The aim has been to provide a reference guide for all those who will be involved over the next few decades with developing Britain's HSR network and its associated projects. The report first provides some context on the need for building HSR infrastructure and the rationale for investing in urban regeneration. It then offers insights from the various locations visited, before scoping some lessons and recommendations for action.

## Investing in Rail Infrastructure

3. High-Speed Rail (HSR) is normally used to describe services operating at over 125mph (200kph). It requires new infrastructure compared to conventional 'classic' rail in order to permit such speed. The capacity of a HSR line is enhanced if all services can run at similar high speeds; it also will release capacity on existing 'classic' rail lines for more freight and regional passenger services. The passenger experience of HSR is an important factor. Users of HSR services in France and Germany report high levels of satisfaction, and it has been demonstrated that rail is competitive with and usually preferred over air travel between cities where rail journey time is under 3 hours.
4. The current HSR proposals represent the most significant rail investment in Britain for over 100 years. The upgrading of our 'classic' rail network in recent decades has successfully expanded the market for longer distance rail travel. ITC research indicates that the rapid growth in rail demand since the 1990s is likely to continue and is the result of fundamental shifts in travel behaviour. However, we need to make sure that new HSR rail infrastructure is properly connected to



7. A great example of Placemaking: from a remote space to a meaningful place: The new Utrecht Central Station West Entrance



the 'classic' rail network if the new lines are going to extract their full potential to provide additional connectivity.

5. All major transport investments affect the efficiency of business operations, in part by increasing the number of destinations which can be reached within a given journey time. These agglomeration effects can be self-sustaining, boosting the demand for premises and opening new development opportunities. HSR is distinctive in that the connectivity improvements offered are very considerable but this advantage is concentrated in a limited number of places where services can be accessed. Maximising this advantage depends on the manner in which through or connecting services are operated beyond the HSR lines themselves. The resulting improvement in accessibility patterns within individual city regions provides opportunities for urban redevelopment.

#### Investing in Urban Growth

6. There has been a global shift of economic power and influence from nation states to cities and city-regions. Today's successful cities collaborate across existing boundaries to form polycentric metropolitan regions. As a result cities function in a much less self-contained manner than they did fifty years ago. Long-term trends in the pattern of urban settlement reflect the interplay between opportunities for dispersal afforded by greater mobility, and economic and social forces promoting concentration.
7. Recent research by the European Institute for Urban Affairs has shown that many major UK cities outside London are lagging behind their continental competitors. Improving the performance of our cities could provide enormous gains for the national economy. Continental cities over the last 30 years have been given a greater range of responsibilities, with the result that they have become more pro-active, entrepreneurial and competitive. HS2 has acted as a welcome catalyst in raising awareness of the value of collaboration and is helping to germinate policies that give cities more power to determine their future paths. The recent growth deals brokered by the Minister for Cities are an encouraging sign of greater inter-departmental thinking and a step towards a greater level of trust between national and city governments.
8. Since the great recession of 2008 the economic gap between North and South England has continued to

widen. At the same time, rapidly rising accommodation costs in London and the South have created a housing crisis for many young people and those on low or middle incomes. It is likely that more convenient, comfortable and faster national travel networks, aided by HSR, will encourage a reversal of current migration away from the North, and stimulate additional economic growth in those cities served. Research has shown that the potential benefits of HSR investment could include long-term land value increases, the stimulation of regeneration opportunities, an improved public realm, a more flexible labour market, and rebalancing effects to reduce regional and urban inequality.

#### Learning from the European experience of HSR investment

9. During 2014 the ITC conducted a series of study visits to learn from past experience of HSR investment at key locations in Britain, France, Belgium and the Netherlands. Evidence was collected from speaking to local stakeholders and seeing what has worked well and not so well. The places visited fell into three categories: major cities and conurbations, smaller city-regions, and peripheral city stations.
10. In **London** and **Kent**, the experience of investment in HS1 offered a number of insights. At King's Cross/St Pancras the development team recognised the importance of encouraging transitional initiatives early. In East London, the arrival of HS1 acted as a catalyst for the Olympic bid by opening up a neglected site and providing a major link between different parts of the city. The experience of Thames Gateway has been mixed: some problems being the presence of a complex collection of authorities and no clear vision.
11. At **Paris Rive Gauche**, the study team explored a massive regeneration area near to the TGV stations Gare d'Austerlitz and Gare de Lyon. Key insights included the importance of having a grand strategic vision and developing this incrementally, so that redevelopment can adapt over time. In addition, the public development authority took the lead in developing the most critical aspects of the plan.
12. In the **Randstad**, the polycentric metropolis of the Netherlands, the study team witnessed the benefits of collaborative planning. The holistic economic and spatial strategy for the Randstad has helped the area implement a coherent transport plan and focus on key

projects. In terms of rail, the area has benefitted from ensuring good local connectivity to HSR stations, and thinking of the rail system as a network rather than a series of lines.

13. At **Amsterdam** Schiphol Airport, there were a number of insights about the importance of properly integrating aviation and HSR infrastructure. Due to its location on a central transport hub Schiphol Airport offers the highest retail and commercial development value within the Netherlands. Importantly, by building the HSR station inside the airport its services have helped to increase aviation demand and Schiphol's status as an intercontinental air transport hub. HSR has also brought opportunities for High-Speed Freight services linking with the high-value (and often time-sensitive) airfreight flowing through the airport.
14. In **Liège**, in eastern Belgium, the study team saw how the iconic new HSR station (see cover image) by Santiago Calatrava has become a symbol of pride for the whole region. At the same time, it was clear that physical and social regeneration is also needed to maximise the transformative effect of an iconic HSR station. At Liege cross-boundary collaboration has, over the last 30 years, revitalised a depressed industrial region through Liege's new iconic station with excellent local transport connectivity, ensuring that it serves as a gateway for the region.
15. **Bordeaux** is best known as an historic trading centre, but the promise of HSR services to Paris in just 2 hours has inspired a major new regeneration project. Although the HSR line will not be completed until 2017, the Bordeaux Euratlantique project has already connected an excellent tram network to the HSR station, and generated huge improvements in the public realm. The success of the project has been built on engagement with all stakeholders, coupled with clear

leadership from the Mayor and the public development corporation.



8. The 'classic' Lille Flandres Station with HSR integrated

16. The visit to **Lille** Euralille also revealed the importance of strong leadership and vision. Lille only won a HSR station after much lobbying, but has since captured the benefits with a major regeneration scheme. The masterplan for this included the reorganisation of the transport system and allowed for a continuity of flow across the city. Importantly, the developers used incremental planning in order to be adaptable.
17. In **Lyon**, the effects of the first HSR line in France were studied. Initial estimates of passenger numbers were far too low, and the original HSR station at Part-Dieu



9. The station as an icon for the city: Liège Guillemins by Santiago Calatrava

now struggles to accommodate demand. The station was originally located outside the old city but a successful regeneration plan starting when TGV first arrived created a new business district at Part-Dieu. Thirty years later new plans for the area are being prepared aided by strong local collaboration and the attraction of a wide body of support.

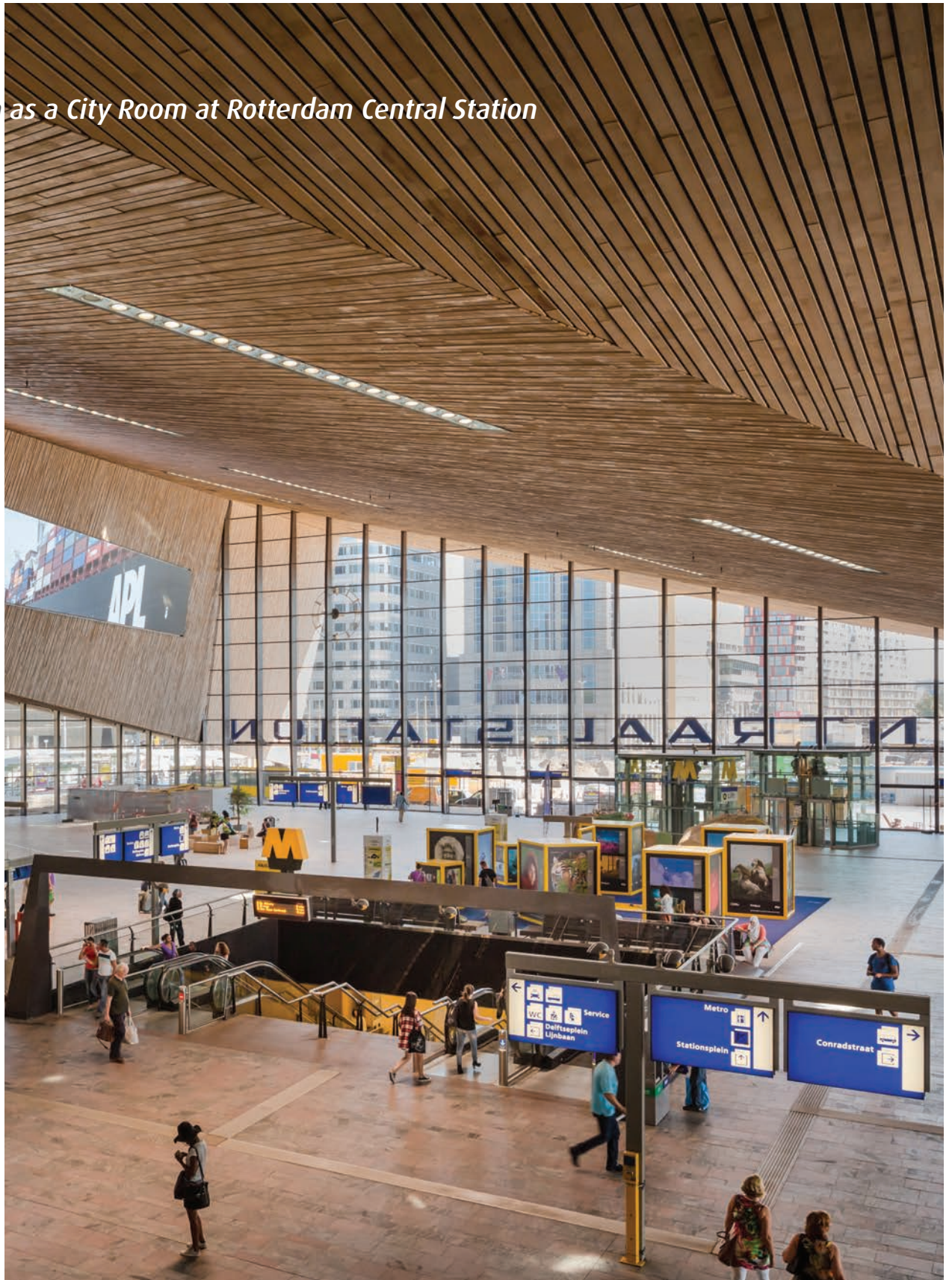
18. At **Utrecht** delegates saw how a station embedded in the city centre had been redeveloped to accommodate new rail services. Although the promised HSR line to Germany has not materialised, the promise of the investment provided the catalyst for transforming the station and surrounding area. Crucially an overall strategic framework was devised that was adaptable to incremental change.
19. The arrival of HSR in **Antwerp** involved a redesign of its historic central station turning it from a terminus into a through station. This was achieved through tunnelling and operating the station on multiple levels. The prize-winning station has now become a major node in the wider urban neighbourhood, and a meeting place with a variety of uses. The station has been integrated seamlessly into the surrounding urban form.
20. At **Rotterdam Central**, the study team saw the results of one of the Randstad's key projects. The striking and iconic station is an excellent example of a transport interchange connecting HSR services seamlessly with local and regional transport modes. The process of development has been inclusive and involved a wide range of stakeholders, and the area surrounding the station has been transformed into a thriving and attractive city gateway acting as a link between the city and the residential areas beyond, rather than a barrier.
21. The experience of **Avignon** provides insights for planning out of town HSR stations. Contrary to expectations, it has proved difficult to turn the area surrounding the station into an economic zone, and it has become a giant car park because there were initially no local public transport links. However, the attractive and elegant station design, rapid links to Paris, and a wealthy passenger base of tourists and people with second homes in Provence, have ensured that the HSR station is well-used.

### Conclusions and Recommendations:

22. From the review of European experience of HSR investment, three principles were developed for the successful governance and delivery of such projects:
  - Build resilience with a masterplan that allows for adaptation over time.
  - Evaluate a project on the basis of its ability to provide seamless connectivity.
  - Instill a culture of collaboration between central and local government, as well as between the developers and local citizens and civic groups.
23. Four groups of agents have been identified who, each in different ways, will have crucial roles as HSR projects progress. Insights for action have been identified for each, all of which could be undertaken in the short term whilst having a long-term impact:
  - **Central government** can provide strategic guidance and provide certainty with the appropriate investment to build national HSR infrastructure. An integrated vision for UK infrastructure is to be encouraged, with collaboration between government departments working together.
  - **Cities and their regions** can provide the leadership to initiate urban regeneration, and develop an urban masterplan. We welcome the Transport for the North proposal and encourage the Core Cities and Key Cities networks to collaborate and think about planning successfully for HSR.
  - **Providers and developers** ought to foster collaboration between different suppliers and community bodies, and establish strong networks of communication. Small scale and pilot projects in areas earmarked for development around HSR stations can help to avoid planning blight and can become transformational.
  - **Civil society and citizens** have a responsibility to be pro-active in contributing their vision for their local place. As the potential users of HSR infrastructure, their views ought to be used to shape its planning and production.



*Station as a City Room at Rotterdam Central Station*



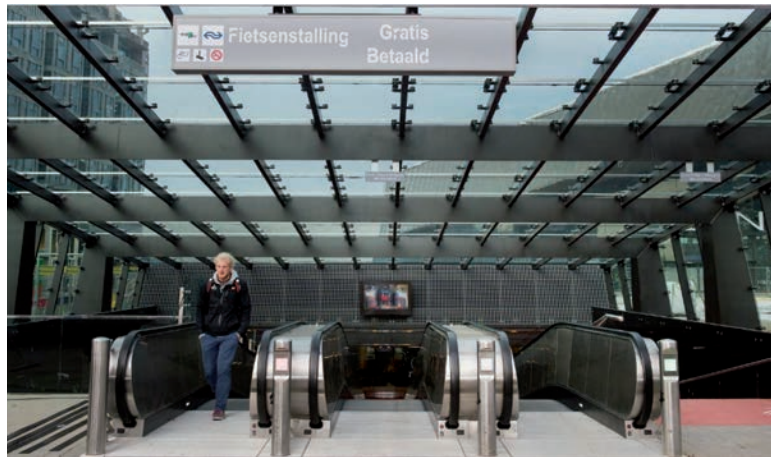
10. The Station as a City Room, Rotterdam Central Station



# 1. Changing Perceptions

When the ITC's Call for Evidence was launched in the Autumn of 2012, the focus of HS2 was on the route and destinations. As the dialogue broadened the key themes identified were: the role of HSR in releasing **Capacity** on the national network; increased **Connectivity** if HSR stations were properly integrated with local transport systems; the importance of **Convenience** to passengers of providing a frequent, affordable, reliable and comfortable service and **Continuity** of flow between modes and levels of travel.

As the wider impact of HSR has become clearer new themes emerged related to the means of managing urban change. Based on the experience elsewhere in Europe and with HS1, these include continuity of planning that allows change and adaptability over time. The need for **Commitment** from both central and local government, each establishing a vision for a prosperous future and finding ways for **Collaboration** through recognising the roles that all levels of government, whether national, regional and local can effectively play with business and civil society. Finally, success in implementation comes through continuous **Communication** clearly articulating aspirations and managing expectations, combined with effective **Control** over the planning of HSR, including strong leadership, governance and delivery structures.



11. **Connectivity:** integrated transport modes train, underground, buses, bikes, Rotterdam Station

The initial debate focused on “why” High-speed Rail. As the opportunities became clearer the focus has shifted to “what” is required to in the planning and configurations of systems to ensure long-term success and “how” might effective and lasting delivery be achieved. The themes identified above are addressed in this opening chapter according to “what” is required and “how” to deliver with reference to the insights gained from our investigation of European experience. We then look at the context for HSR investment and urban change in Britain. Chapter 2 explains the characteristics of HSR travel in a UK context, the spatial implications and what we should be looking to achieve. Chapter 3 sets the context for economic success in a period of rapid change. With these contexts established, Chapter 4 provides insights from the European experience of HSR investment which have contributed to a better understanding of “what” to aim for and “how” these expectations may be achieved. Chapters 5 and 6 distil the critical lessons to apply to help capture the potential benefits arising from the proposed expansion of the UK HSR network and identifies four key principles, with case studies, for governance and delivery, and insights for action.



12. **Capacity:** Release capacity and create developable land, St Pancras International

## CAPACITY

*Sufficient slack to allow for growth, change and unforeseen opportunities*

Capacity is defined as the frequency and type of services that a high-speed rail line can carry. However, capacity can also be assessed through the opportunities that new high-speed lines create for the long-term functionality of the overall rail system. HSR infrastructure also releases capacity on the existing rail stock, thereby leaving the possibility of growth for regional and local trains. When speed is not the primary aim, junctions may be added to allow links between high-speed and classic rail, allowing crucial connections for improved services across the system (see Chapter 2).

As our review has progressed new opportunities have been recognised for HSR infrastructure to become a catalyst for stimulating economic growth and regional regeneration. To achieve its full potential the community needs to be considered as well as the political will, leadership and skills available. Similarly, station locations should be not only chosen for their ease of rail access but also for their capacity to make available accessible and developable land where there are high levels of agglomeration and potential market demand.



13. **Convenience:** Provide accessible services, comfort and quality, Gare d'Avignon TGV

*'Land value is increased through investment in local and regional connectivity'*

Kirsty Austin, Department for Transport

## CONNECTIVITY

*Contiguous connection between levels and modes of movement and the surrounding urban landscape*

Stations are places of connection between different levels and modes of transport within the urban landscape. Connectivity is also about visual and physical links between different systems of transport (4.5 & 4.11) and about collaborating between operators: for example, with integrated timetabling and ticketing in order to provide a seamless journey for the passenger. Finally, connectivity is how the station merges with its urban setting (4.10).



14. **Continuity:** Combine the terminus and throughway station, Antwerp Central

## CONVENIENCE

*To provide available and accessible services at the appropriate price, comfort and quality*

The convenience that travellers experience when changing modes of transport, and the accessibility and frequency of service offered, are key elements in passengers' perception of public transport. Ease of wayfinding supports the experience of convenience: Good signage, clear routing and logical station design and layout can support this (4.10).



15. **Commitment:** An "open planning" system that can adapt to changing perceptions and expectations, Utrecht

## CONTINUITY

*To allow a flow through and between spaces, facilitating a network of diverse opportunities*

Continuity reflects both the ease for movement between places and also the need for continuity of leadership over time. Professor Joost Schrijnen at the ITC's Lille symposium in Rotterdam stressed the importance of conceiving the railway system as a network and not merely as a single line<sup>9</sup>. HSR provides new links in an integrated rail network that connects all cities directly with each other. The terminus station, he argues, is an outdated concept; where possible one should combine a terminus and through station for HSR and classic rail (4.10).

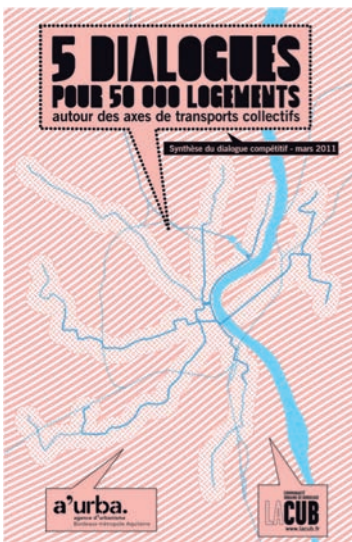
9. Independent Transport Commission, Capturing the Value of High Speed Rail: Learning from Europe: The Lille Symposium 2014. (2014).





16. **Collaboration:** The Dutch 'Bureau OV Randstad' is a collaboration between private stakeholders, interest groups and all levels of authorities to achieve an integrated system for the convenience of the traveller

10. Academy of Urbanism & INTA, Places of Connections: Utrecht 2012: Themes, Concepts and Principles. (2012).



17. **Communication:** Open and continuous dialogue, Bordeaux Euratlantique



18. **Control:** The role of the master developer, Gare de Lyon-Perrache

## COMMITMENT

*To a programme spanning more than a generation and several economic and political cycles*

Typically, in the European context, the processes of establishing a high-speed network and its integration with the surrounding city-region have taken one or two generations to realise. Utrecht (NL) provides an example of an "open planning" system that can adapt to changing perceptions and expectations over time. Planning and implementation become merged allowing for continuous evaluation and incremental change<sup>10</sup>. Better control over the process is achieved through a greater commitment to the project by a wide range of stakeholders from community groups to long-term investors. The necessary long-term commitment of the (local) authorities is expressed by the many 'project-offices' we have seen in European regeneration schemes, leading the operation for many years and providing stability.

## COLLABORATION

*To work across disciplines, boundaries and interests, in collaboration in order to compete in bigger markets*

Although constructing a rail network can be seen as an engineering project in itself, we have also seen that the most successful projects were based on collaboration between many types of stakeholder, interest groups and all levels of authorities. Through such collaboration the impact of new rail connections were steered in a direction that was supportive of much wider local and regional ambitions for development and regeneration.

*'Effective, reliable multi-modal connectivity to the station is vital and should be operational from the beginning'*

Andrew Pritchard, East Midlands Council

## COMMUNICATION

*To raise awareness, change perceptions and provide the basis for open and continuous dialogue resulting in lasting relationships*

Communication can raise awareness and change perceptions in ways that support cultural, behavioural and physical change. Effective communication is based on an open and continuous dialogue resulting in lasting relationships and trust; effective communication helps to provide the basis for consensual decision-making. Good examples can be seen in Bordeaux (4.6) and Utrecht (4.9).

## CONTROL

*Managing the process of delivery through a combination of regulatory controls and co-operative production*

In numerous European cases the city or region took the role of Master Developer. The authorities are therefore able to provide a long-term commitment to schemes. Effective control requires a balance between first creating the vision and mission, and then managing the process of change through a combination of regulatory controls and participatory processes.

## Learning from Europe, HSR and HST Networks



19. Current European High-speed Network

Looking at HSR and HST networks in various countries has provided the insight that HSR in Europe need not be a separate network, but should be seen as always part of a national rail network combining high speed and conventional trains and lines. We can distinguish the following:

- Completely stand alone high-speed line with high-speed train only. Often parallel to conventional lines.
- High speed line with high-speed trains and conventional trains e.g. HS1 with Eurostar and domestic Javelin services.
- High speed trains on dedicated high speed tracks and conventional tracks e.g. German ICE.
- Conventional lines enhanced to have a high-speed capability but still carrying all traffic e.g. West Coast Mainline with Pendolinos and freight services.

### Legend :

— (Purple)	310 - 320 km/h	190 - 200 mph
— (Red)	270 - 300 km/h	165 - 185 mph
— (Orange)	240 - 260 km/h	150 - 160 mph
— (Yellow)	200 - 230 km/h	125 - 145 mph
— (Grey)	< 200 km/h	< 125 mph
— (Green Dotted)	Under construction/ upgrading	

# 2. Investing in Rail Infrastructure

11. Campos J, and de Rus, G. Some stylized facts about high-speed rail: A review of HSR experiences around the world. *Transport Policy*, 16, 19-28 (Elsevier, 2009)

## 20. What's High-Speed 2?

High-Speed 2 is the proposed second High-Speed rail line in Britain, following HS1 which linked London to the Channel Tunnel in 2007. It will be a roughly Y-shaped line, from London to Birmingham, before splitting and terminating at Manchester, and Leeds via Nottingham and Sheffield, with other minor destinations and linking spurs. Construction is aimed to begin in 2017, with a projected completion by 2032-2033, with an earlier phase to Birmingham by 2026-2027. It will be designed for a maximum speed of 400kmph, radically cutting journey times between many major British cities, and amplifying national transport capacity as a whole.

HS2 Ltd : *What is HS2?* (2014)  
<http://www.hs2.org.uk/about-hs2>



This chapter explains the background to High-Speed Rail travel in the UK. It defines the difference between High-Speed Rail (HSR) and High-Speed Trains (HST) in the context of Continental European experience, provides an overview of the UK's remarkable and innovative railway legacy from the 1830s, drawing inspiration for the current HS2 project, and identifies the need to allow for future change and adaptation. In conclusion, a conceptual framework is proposed to structure a review of how HSR may impact on the urban and regional geography of the UK.

## 2.1 Understanding High-Speed Trains & High-Speed Infrastructure

In the UK and European context the term High-Speed Rail (HSR) is used to describe train services which operate at over 125mph / 200 kmph. To achieve this speed requires a High-Speed Train (HST) with the necessary characteristics for high-speed operation (engine and braking capability and aerodynamic design) and infrastructure (HSR tracks, signalling, safety systems and power systems) with the necessary capabilities. HSR is generally passenger rail, since the imperatives of the rail freight business require longer and slower individual trains <sup>11</sup>.

Speed defines the compatibility of rail infrastructure but so also does gauge, the dimensions of rolling stock, which is wider and taller across continental Europe. This means that continental trains can only run on HS1 and 2 which are designed to accommodate continental gauge, whilst British rolling stock can run on both classic and HS infrastructure e.g. Javelin running from St Pancras into Kent.

HSTs running on "classic" rail may be constrained by track design – such as curvature, gradients or point work where lines separate or converge. High-speed infrastructure will be designed to be straighter and flatter, which increases the construction cost, since it requires more cuttings and embankments and possibly longer tunnels and bridges. It is generally much cheaper to build brand new high-speed infrastructure than to upgrade existing lines to a higher speed, which requires enhanced signaling, reduced curves and gradients and remodeled, longer and straighter junctions.

A slower train can still operate on high-speed infrastructure. So a conventional passenger train with a 75mph maximum speed can often operate on a piece of high-speed infrastructure designed for 140mph. Every train has a maximum design speed based on power and braking capability and other characteristics. Braking capability is important since the stopping distance of the train needs to be consistent with the signaling, spacing and design.

Operating a railway with only one type of train is straightforward. In such a system, all trains operate at the same speed, have the same stopping patterns and can follow each other regularly remaining a standard distance apart. This combination of stopping pattern and frequency in relation to the safety distance between trains can be seen as a 'time-slot' per train. The Victoria line operated by London Underground is an example with all trains having the same time-slot, which shows how intensively a line can be used with just one type of train and a very consistent passenger flow.

However, where there is a mix of train speeds on a line, the capacity is much less efficiently used. Now the 'slots' per train differ, the slow train (with a lon-



ger time-slot) slows down the fast train (with a shorter time-slot) and fewer trains can be run in an hour. The conventional railway solution is to have two lines operating in each direction with dedicated 'fast lines' and 'slow lines', including the capability to switch between them so that slower services can be overtaken.

Where rail lines join, there will normally be a reduction in speed where the train has to run through the connecting points rather than on 'plain line' which is continuous. High-speed lines typically run for long distances without other lines joining them. For example HS2 is designed with limited access onto it from the conventional rail network. The latter will largely remain separate from the high-speed line rather than being linked where a benefit can be found. Given the blend of distance and population density in the UK there may be advantages from creating a few more links between the conventional and the high-speed network in a way that resembles the German model rather than the French model where the high-speed lines are developing as a separate and parallel network.

## 2.2 High-Speed in the UK Context

**High-Speed Lines and Rail capacity.** In the UK discussions about building major new rail infrastructure between our largest cities has been tagged with the name of 'high-speed rail'. It is logical that major new rail lines will be designed to have high-speed capability since the incremental cost of doing this is small and this will help to release additional capacity on the existing conventional rail network. It is expected that high-speed services will run on the new line and less fast services (such as regional and freight trains) on the existing conventional line. This is the rail equivalent of building a new motorway (the HSR) separate from the A-road network (the conventional).

HSR, such as HS2 in the UK will transfer existing higher speed and limited stop passenger services onto the new infrastructure. This will therefore release capacity for slower or more frequently stopping passenger services on the conventional lines.

**Managing congestion and constrained capacity.** Unlike roads, rail operations are planned so that the number of trains fit within the normal operating capacity. Train movements are scheduled to within 10 seconds and timed in detail over each section with very small allowances for performance such as an engineering allowance or a pathing allowance. Each train type will be timed differently even if they have the same maximum speed, since their acceleration and braking characteristics are slightly different.

The rail congestion challenge comes at the stage where there is a mix of different speed train services, a slow speed junction (as junctions have to be crossed at a lower speed than 'plain line' with no junctions), or station activities, which require the train to be stopped. A high-speed line between two major cities can be a separate line for the entire route including terminus stations, or for the majority of the distance, with all services using the conventional lines on approach to the city centre station. The station and the station-approach capacity is likely to be lower than the capacity on the lines themselves since the trains need to decelerate and accelerate and the track layout will have points to allow for different platforms and possibly coupling and decoupling trains. Unlike many other European countries the UK also has a strong and regular cross-country network such as hourly services between



21. High-Speed 1, St Pancras International



22. Javelin is the fastest domestic rail service in the UK



23. Station square, Kings Cross

Liverpool and Norwich, Edinburgh and Plymouth, and Portsmouth to Cardiff. Although they are not high-speed services, the direct journey is a positive feature for customers and has contributed to the growth in overall passenger numbers.

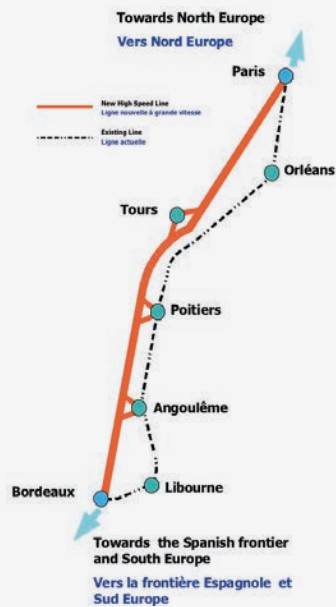
**Station configuration and design.** Stations are usually designed as either terminal or through stations but this can be altered to accommodate new services. Many passengers see St Pancras as a terminal station - prominent for intercity and international rail - but for the suburban Thameslink services below the main concourse, St Pancras is a through station. Paddington today is a terminal station for intercity rail - but for the Crossrail services from 2018 it will be a through station for suburban rail and journeys across London. Some terminal stations have been transformed into through stations for purposes of HSR. In Antwerp, the 'Centraal Station' saw a subterranean renovation, complete in 2006, to include four new HST through platforms, in addition to the existing termini platforms <sup>12</sup>.

12. La Gare B Het Station. Welcome to Antwerp Central. (2011).

#### 24. LGV Atlantique line

France has demonstrated their success in delivering High Speed Rail lines through the effective use of state subsidies and government-backed loans, and are on track to deliver a new 200 mile line from Tours to Bordeaux in what is currently Europe's largest construction job. The line will be served by France's 200mph TGV trains that are already running throughout the country. The enviable point is that the project is already at its halfway point since they started construction in 2011 - with a start to finish time of just six years.

Source: The Times, Saturday 1 February 2014. "France shows Britain the way forward by taking the high-speed route to Bordeaux."



**The passenger experience.** Internationally HSR is seen by many passengers as a positive development. The TGV network in France is universally admired, although its cost to the French taxpayer is relatively high. The early development of services from the centre of Paris to the centre of Lyon in just over 2 hours has ended the aviation market between France's two biggest cities. As the network has developed further more cities are now within a journey time which is competitive with air travel: rail is usually found to be dominant within a 3 hour journey time but in some cases this effect has extended to journey times of 3.5 and 4 hours <sup>13</sup>. Some see the 2-hour maximum as important since it is the preferred limit for business day return trips <sup>14</sup>. The 'hassle free' element compared to air travel is also important on the TGV with boarding and booking processes kept simple and the ability to start and end in a city centre business district is another attractive factor.

Frequency is also important in order that the short overall journey time can be offered consistently across the day. A journey time of 2 hours, with a 4-hour gap between services, does not feel like a high-speed service for business travellers who need flexibility in their travel schedules.

13. European Commission. High-speed Europe. (2010).

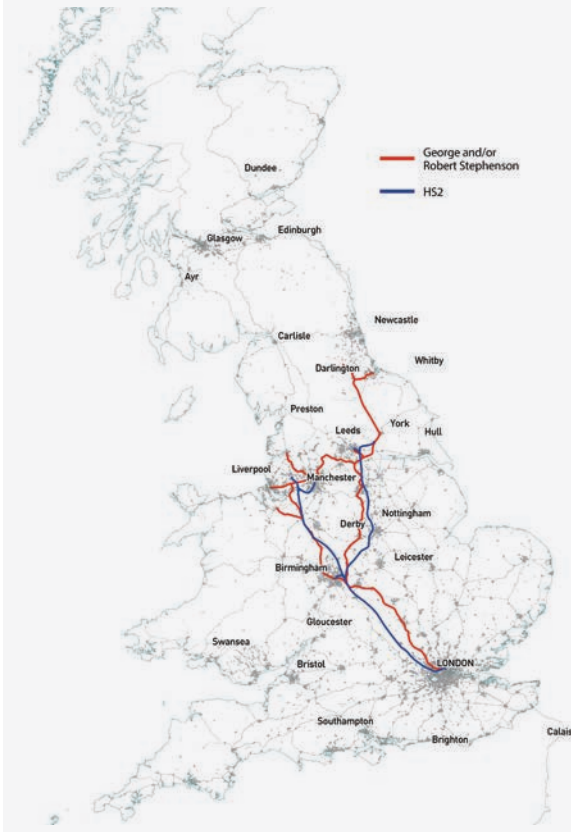
14. Greengauge 21. High-speed Trains and the Development and Regeneration of Cities. (2006).

### 2.3 High-speed 2 – A Long Term Contribution to UK Rail

The extraordinary development of the railways in Britain in the 1830s helped to underpin the industrial revolution. Many of the civil engineering structures and routes laid out then serve us well today – a remarkable legacy. There are some important lessons from this first great pioneering age of rail and its development for the new railway age in Britain which the building of HS2 heralds. There are strong parallels between the route planning of the 1830s and today's HS2. Many are simple geographic and topographical issues which led Robert Stephenson to plot his main lines from London to the north as a Y plan not wholly unlike today's proposal for the HS2 route.

Isambard Kingdom Brunel, with his Great Western Railway (GWR), aimed for a "billiard table" level railway to suit his low powered engines but had an inventive eye for how it related sympathetically to the landscape and towns. The result was that his railway proved not only a great engineering success but also a work of high visual quality in all its related bridges and viaducts, stations and tunnel portals. His sense of theatre in his design of the line passing through Bath, and especially the Skew Bridge and Sydney Gardens, is a tour de force. Stephenson, although he was less of an extrovert as a designer, created viaducts and bridges in the more difficult topography of Derbyshire and Yorkshire of great quality and landscape value, which have always been admired. Stephenson, Brunel and several other great 19th century engineers have therefore left us with a wonderful legacy. HS2's design is of course well engineered but it also needs to develop the necessary extra dimension of providing uplift and drama to the landscape.

Stephenson designed network 1841 + HS2



The network in 1900



25. Development of the UK rail network across time



There are also close parallels between today's HS2 plans and how the 1830s lines were planned and relate to the population centres they serve. Land values as well as urban design issues meant that stations were often sited outside the towns they were to serve. For instance, Brunel realised, after his Temple Meads station in Bristol was already built, that it was too far from what was then the city centre, but infrastructure, once it has been laid down, is difficult to shift. Over time, as the city has grown, Temple Meads is becoming absorbed into the urban infrastructure.

In the pioneering age of railways the lines built by different companies did not initially have any interconnection but, as they grew at an astonishingly rapid rate, their business cases generated frequent alterations and connections. A new line, even one as sophisticated as HS2, will experience, after it has become established, great pressure for change and adaptation as new economic and social forces continue to occur. That ability to adapt, which was much easier with lower key 19th century engineering, needs to be considered now in the context of much more sophisticated 21st century engineering. We are still living with the lack of co-ordination from the 19th century railway boom, which has resulted in the sometimes illogical routing and poor interconnectivity in and around London, and this has been expensive to adjust. Complex engineering artifacts are hard to alter and, if they cannot be upgraded easily, they can have shorter lives than anticipated.

The cities at each end of the early railway network were usually served by a terminus station but, as the 19th century rail industry became more established, there were many who realised the benefits of through stations, not ter-

The network in 1969



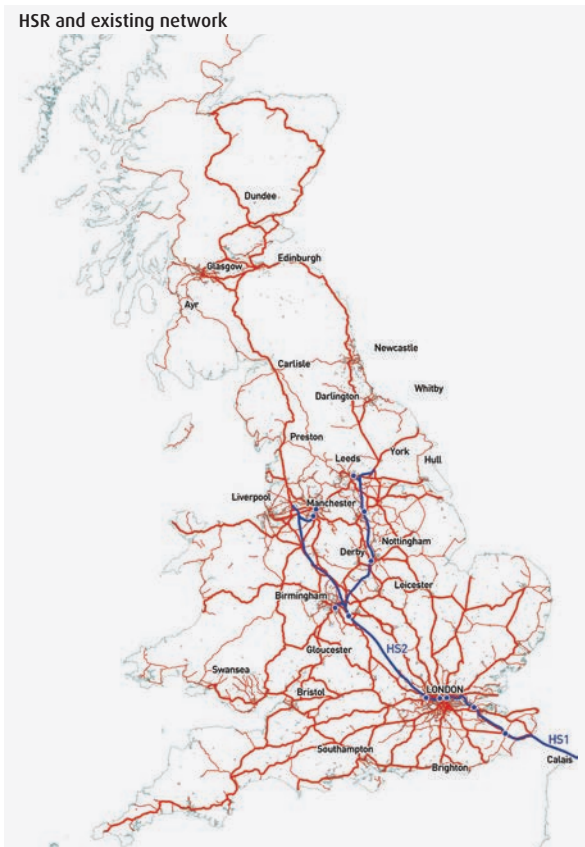
The network in 2014



mini, since they yielded greater value in efficient rail planning as well as land values. We are seeing today how Thameslink and Crossrail as through services across London are providing a revolution in connectivity across the capital. Are the plans to terminate HS2 at London Euston, Birmingham Curzon Street, Manchester Piccadilly, and Leeds New Lane the right decisions in the 21st century? Britain invented railways and covered the country in them to serve passengers and freight needs before moving on to build railways in other countries. The high tide of the railway network of 1900 had ebbed by 1969 through closures leaving the original pioneering lines and their essential adaptations as a highly stressed and often overloaded network especially with the rapid growth in rail travel over the past 20 years.

Today's plans for HSR in England build on the achievements of introducing HST services on its upgraded conventional rail tracks over the past 50 years. These initiatives include the original electrification of the West Coast Main Line, the introduction of diesel Intercity (IC)125 trains on the East Coast, Great Western and Midland routes, the IC225 electrification of the East Coast line and latterly the use of tilting Pendolino trains on the West Coast Main Line. The success of these trains in expanding the market for longer distance rail travel (aided by the impact of growing road congestion and the ability to use Intercity trains in rail transit) is a principal factor underpinning the case for a step-change in further improvements via the construction of new, purpose-built high-speed lines. Rail demand has rapidly increased since the mid-1990s, and ITC research indicates that this is likely to continue, the result of fundamental shifts in travel behaviour<sup>15</sup>. If we are serious about meeting the challenges of this new boom in rail travel we need to ensure that these new lines extract their full

15. Le Vine, S., and Jones, P. On the Move: Making sense of travel trends in Britain (ITC, ORR, Transport Scotland and RAC Foundation, 2012).



25. Development of UK rail through time

potential to provide additional connectivity.

The nature of how we relate to towns and cities is changing fast. No longer are they just the industrial and business centres that drove the 19th century railway boom or the 20th century commuter magnets sucking in people on a daily tidal flow. Both functions still continue, but they have also become great human exchange points for ideas and knowledge and social interaction with different demands on the rail network. The map of Britain over the coming decades will be one of powerhouses of collective intelligence in mega-city regions, the wider London area, West Midlands, the Northern Belt, and Glasgow/Edinburgh. Fast physical links of humans meeting face to face between these mega-city regions and the next tier of cities as well as electronic links will generate a massive collective intelligence that underpins Britain's position in the world. HS2 is an essential and welcome addition and should be thought of as a wholly complementary part of Britain's connectivity and its economic future.

## 2.4 Changing the Urban Geography of Britain

How does HSR relate to urban and regional geography? The opportunities afforded by HSR – and the form that any scheme is likely to take – are fundamentally conditioned by the size and spatial relationship of major urban areas (because the resulting volume of longer-distance flows forms the basis of an economic case). Hence a country's urban and regional geography is of critical importance. The following typology provides a basis for understanding the geography of the different cities and city regions that HSR may serve:

- Monocentric megacity (eg London or Paris – currently extending 60-80 miles from the capital)
- Polycentric megacity (eg the Randstad in the Netherlands or the Flemish Diamond)
- Conurbations (eg West or South Yorkshire)
- Freestanding cities/city-regions (eg Nottingham, Liege-Maastricht)

Long-term trends in the pattern of settlement at the city-region level reflect the interplay between the opportunities for dispersal afforded by greater mobility on the one hand and the economic and social forces promoting concentration on the other. Most cities, particularly those founded on a predominantly industrial economy, have experienced population decline in the second half of the 20th century. Over the last 20 years, however, there has been a remarkable, but selective turn-around. This can be attributed to a combination of factors, from changes in the national and global economy, to movements of population both nationally and internationally and public policy promoting urban regeneration. Recognition of the importance of cities as contributors to the national economy represents a fundamental change in official thinking<sup>16</sup>.

There is, however, a marked divergence in the fortunes of individual cities and their regions. The growth of London as one of the world's 'mega-cities' is of over-riding importance. Meanwhile, outside the Greater South-East region there is evidence of an emerging 'archipelago economy' consisting of "a few central islands dominated by the sharp peaks of the core city economies, and lower peripheral islands in perpetual danger of economic inundation"<sup>17</sup>. As a result, the UK's regional cities have underperformed their European counterparts<sup>18</sup>. Transport investment in the form of inter-urban motorways, inter-city rail services and regional airports, has contributed to this spatial differentiation over many decades.

16. Robson, B. et al. *The State of the English Cities*. (Department of the Environment, Transport and the Regions, 2000). Note: this is an on-going study of the social and economic performance of the major cities of England, commissioned by the Government in 2000 following publication of "Our Towns and Cities: The Future - Delivering an Urban Renaissance" (the following reference), which drew attention to their importance in driving economic growth.

17. *Transport and the Regions Great Britain*: Department of the Environment. *Our Towns and Cities: The Future - Delivering an Urban Renaissance*. (2000).

18. Falk, N. *Funding Infrastructure: What Can We Learn from Continental Europe?* (2013).



Perhaps surprisingly, the freedom from spatial constraints implied by advances in telecommunication are not leading to the demise of cities established in earlier eras. In fact the opportunity for face-to face contact in business negotiations, for interaction amongst members of specialist clusters and for individuals' participation in highly diversified forms of social and cultural activity are now seen as key attributes of successful cities. In support of this Charles Landry argues that the quality of the public realm and the evident efficiency and sustainability of the prevailing transport regime are components of the 'soft infrastructure', which increasingly defines their attractiveness. These warrant a central role as part of the wider reframing of public action from 'urban engineering' to 'creative placemaking'<sup>19</sup>.

With smaller freestanding cities access to/from the wider city region may assume greater significance. Depending on the local geography opportunities may exist to provide such access by rail to a station in or on the edge of the city, but elsewhere a station sited at a nodal point in the region's main road network may offer a more effective alternative. In the UK, parkway stations such as those at Bristol and Didcot were designed as giant car parks, but gradually housing and jobs have spread and surrounded the station area over a period of several decades. Examples from our field trips are Schiphol (4.3), where the city has grown outwards to the place of connection, and Massy, Avignon (4.12) and Ebbsfleet (4.1), which despite having good connectivity, have not generated significant development around them.

The 'Spatial effects' of HSR is a reference to changes in the character or relationship of places. These impacts can occur at a variety of spatial scales, from the inter-regional through to the very local.

A newly constructed high-speed line will have impacts throughout its length (as a consequence of both physical structure and train operation), but this is not an aspect covered in this report. Rather we are focusing on the impact of HSR services through changes in accessibility arising at or via the stations where stops are made. These stations represent the critical interface with the form and functioning of cities and their regions and the point of interchange with other transport networks.

All major transport investments alter – and usually add to – the efficiency of business operations, in part by increasing the number and significance of destinations which can be reached within a given journey time. These agglomeration effects can be self-sustaining. Economic growth increases the demand for premises, particularly at locations which benefit directly from transport improvements. In turn, this demand may prompt landowners and developers to bring forward proposals for new development. Planning policy and actions by other agencies may help or hinder the realisation of such development opportunities.

HSR is distinctive in that the improvement in connectivity it offers is very considerable but this advantage is concentrated in a limited number of places where services can be accessed. Maximising this advantage is dependent on the manner in which through or connecting services are operated beyond the high-speed lines themselves. The resulting change in accessibility patterns within individual city regions will add to the range of factors, which are conditioning the economic well-being of their constituent parts<sup>20 21</sup>.

19. Landry, C. *The Creative City*. (Routledge, 2008).

*'High-speed rail is not about bringing commuters in from further and further afield, but mechanisms for spreading the wealth from the established economic centres to the wider regions'*

Camilla Ween, Goldstein Ween Architects

20. Hall, P. *Looking Backward; Looking Forward: The City Region of the Mid 20th Century*. *Regional Studies*. 43, 6 (2009).

21. The way in which the impact of HSR is superimposed on a pattern of changing economic fortunes within different parts of a city region is very thoroughly reported in: Hall, P. & Chen, C-L. *The wider spatial-economic impacts of high-speed trains; a comparative study of the Manchester and Lille sub-regions*. *Journal of Transport Geography*. 24, 89-110 (2012).

The focus of this report is on identifying and capturing the development gains, which the economic impetus of HSR offers. 'Economic growth' does not occur in the abstract – it requires translating into physical form. But equally securing attractive and successful development ensures that maximum benefit is derived from transport investment in order to deliver improvements to the quality of life in urban areas.

*The Peaking proposal was submitted in the original ITC Call for Evidence \*. The proposition can now be appraised in the light of the One North report and European experience, since we believe that there needs to be greater integration between HSR and the existing rail infrastructure.*

*Geoff Woodling the author of Peaking writes that the concern for the north – south divide is once again driving politics and policy to reduce the disparity in the economic fortunes of Britain's regions.*



26. 'The Peaking' HSR for a Future Urban System

HS2 is now deemed to be the latest instrument with which to remedy this economic divergence. It is not simply a regional divide, but a failure to recognise the profound change in the spatial and functional relationships among cities in the urban economy. Undoubtedly relative decline affects most of the older industrial cities outside of London, which are no longer competitive, with either giant global metropolitan economies, or their counterparts elsewhere in Europe. London's global status has left its former domestic rivals far behind. Individually they are too small, lacking their former specialisation and too fragmented to compete in the global arena.

Need this be the case? Almost the same number of people - 15 million - live within 50 kms of the Peak District as live within

a similar radius of the London Metropolis. They form, however, a different model: a polycentric urban system, rather than a monocentric metropolis. This circle of cities around "The Peak" share an industrial heritage and a cultural rivalry, but lack a vision for their common future. "Peaking" would rank as Europe's second largest metropolitan region, almost twice the size the Randstad: its Dutch counterpart and possible model. This is not quite the same as the "One North" model which proposes more of an east- west axis, to the exclusion of its Midlands counterparts, with a cultural outlier in the North East. "Peaking" is beginning to become more closely integrated as people live and work in different cities and in economies which much more closely resemble one another and function as parts of a larger system.

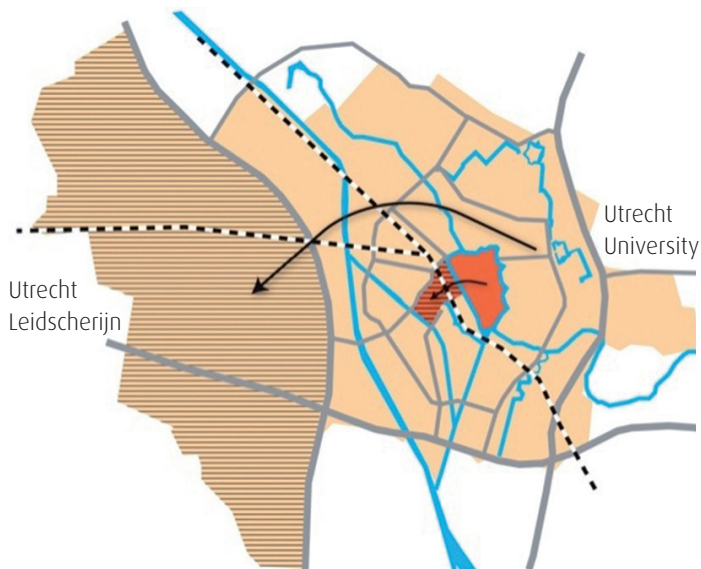
What could HSR do to enhance the economic fortunes of these cities which in most cases are individually too small to justify the cost of providing high speed rail access? The London centred radial national rail network established 170 years ago has allowed London's economic sphere to grow so much bigger than other British cities. It is not simply the North, but all parts of the country that have suffered from having to subordinate their rail access to London's needs. There is a growing recognition that journey times by rail between the cities of "Peaking" in particular are a disgrace. This has encouraged very high levels of traffic congestion on the motorway ring that inadequately connects them. It also means that access to regional airports is very poor, reducing air services and connections below what might be offered.

One North fails to address the fundamental need for a coherent HSR network connecting cities within the new urban system with the multiple routes that link it to London and other parts of the country. Perhaps it would be better to consider a more coherent network comprising an orbital network linking all the large cities of the "Peaking".

To conclude, it would be far more realistic to describe Britain as dominated by two metropolitan economies, each with about 25% of the nation's population. Britain's geography is not a battle between the three regions of the north and the three regions of the south, no matter what the political loyalties might imply. Concern with the "north – south divide", as if there were no middle, is a dangerously misleading myth. It is time to recognise that the spatial inequalities within the British economy are symptoms of a failure to address the need to create and equip a modern urban framework that will be globally competitive.

Woodling G. *Submission on the "Peaking Argument"*. (2012)

*The station area development as a catalyst and stimulator for city growth at the city periphery*



27. The growth of Utrecht meant the growth of station and city centre



28. Utrecht University campus developed to accommodate the growth of one of the Netherlands' leading Universities



29. Leidsche Rijn, a new housing area for 30.000 homes built over 10 years



30. Growth city asked for regeneration of the city centre: new Music Hall Tivoli Vredenburg



# 3. Investing in Urban Growth

22. See 5

Understanding the necessary infrastructure investment to support regeneration is a crucial task. The ITC's research into this has included a Call for Evidence<sup>22</sup> as a starting point for its review of the spatial effects of HSR. The call was distributed in Autumn 2012 to more than 200 leading thinkers and organisations and posed five questions:

1. Will the Cities served by HSR become subservient centres to London or will they be enriched in their own right?
2. How will HSR impact on the economic and social life of the cities it serves?
3. What will be the impact of HSR on those cities/regions it will not directly serve?
4. What should be the top priorities for investment in HSR in order to ensure it improves your locality/city/region?
5. What additional public/private investment should be considered by these cities and their wider region to capture the maximum value?

This was then supplemented by workshops held in each city region that would be served by HS2. The conclusion that emerged from the subsequent workshops was that London was a mega city competing at a global scale. Rather than competing with London, the UK regions were economically supportive of London and in turn were indirectly supported by London's position as a global capital, providing the opportunity to compete with Europe's other great city regions and in niche global markets. However, it was clear that success would depend on each city region embracing such opportunities, identifying their unique characteristics and collaboratively establishing a vision for its own future.

*'What was evident was that HSR could and should be used as a catalyst for other transformational changes, such as urban renewal, not just treated as a transport/ engineering project alone'*

Pat Bartoli, Manchester City Council

The Rt Hon Greg Clark MP, Minister of State for Cities, in his co-authored report "Nations and the Wealth of Cities" argues that "cities are increasingly integrated globally and they are key to nation states remaining competitive and successful"<sup>23</sup>. They propose that local leaders must be empowered to lead and govern their cities and encourage the drive to integrate infrastructure, services and policies "across wider city/regional geographies through a focus on 'city systems'". In addition, they argue that national leaders must manage and shape the wider 'system of cities' at a national level.

23. Clark and Clark. Nations and the Wealth of Cities: A new phase in public policy. (Centre for London, 2014).

This Chapter charts the global shift of economic power and influence from nation states to cities and city-regions. Information technology has reduced distance, increased mobility and allowed a greater freedom of choice. Today's successful cities are collaborating across regions to form polycentric "city systems". An overview is presented of how UK cities are performing against other European cities, with the opportunities for improvement. The stark differences in economic growth and investment between North and South are described as are the opportunities afforded by changing patterns of production, working and living to rebalance the economy. Drawing on the input from the expert panels and field trips, conclusions are reached on the conditions required to capture the additional value from HSR investment and redistribute the returns equitably.

### 3.1 From Competing Cities to Collaborating “City Systems”

Today’s cities function in a much less self-contained manner than they did fifty years ago. A combination of investment in major inter-urban road and rail routes and radical advances in information and communication technologies have had the effect of reducing distance, facilitating mobility and interaction and allowing greater freedom of choice <sup>24</sup>. As a result, traditional concentric settlements at the centre of a collection of subservient communities are increasingly linked to surrounding centres, each with a distinctive character to create networked polycentric metropolitan regions.

24. Worthington, J. et al. Reinventing the Workplace. (2006). (Architectural Press, 2006).

*‘Devolution works in transport because local decision makers know they will be made accountable by voters and the local media for any shortcomings’*

The Smith Institute, PwC, All change - delivering future city transport

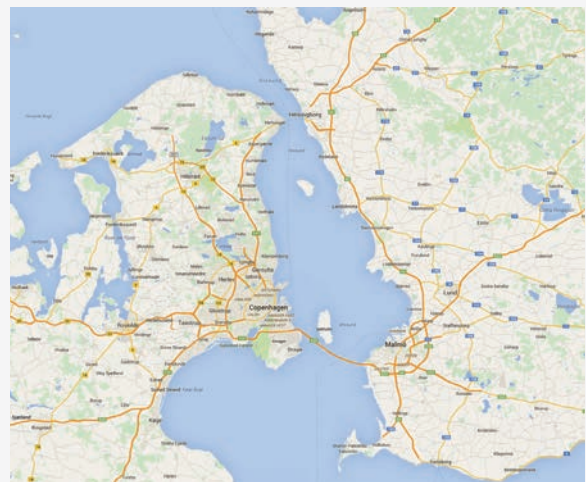
Economically and socially successful European cities today such as Amsterdam, Copenhagen or Cologne/Bonn are often associated with larger city regions such as the Randstad, Oresund or the Ruhrgebiet. With the development of HSR infrastructure metropolitan city regions are now forming larger networks. As an example, we are now seeing the formation of the Randstad/ Ruhrgebiet mega-city region, and the Belgian mega-city region around Brussels with Lille as its southern flank. The networked city crosses traditional political boundaries and calls into question accepted models of urbanity. It creates a new model which is both central and dispersed where each location defines their appropriate strengths, linked within a networked conurbation. The Randstad, a conurbation of over seven million, has points of intense concentration, alongside more dispersed settlements forming a low-density city in a high-density landscape <sup>25</sup>.

25. Frieling, D. in Cities New Millenium (Ech-enique, M. & Saint, A.) 95-104 (Spon Press, 2001).

31. City regions: The networked city is crossing political boundaries



Randstad: 7.1 million population high-density nodes in a 'parkscape'



Oresund: 3.5 million population multi-centred across political boundaries

### 3.2 UK Cities in the European Context

Professor Michael Parkinson's work with the European Institute for Urban Affairs has shown that most major English cities outside London<sup>26</sup>, with occasional exceptions such as Bristol, are lagging behind their European competitors. Improving the performance of these cities so that they match their continental counterparts could, Parkinson suggests, provide enormous gains for the national economy and ensure that the benefits of economic growth are distributed more widely across the nation. Continental cities over the last 30 years have been given a greater range of responsibilities for a wider range of functions from central authorities. The result is that cities have become more pro-active, entrepreneurial and competitive.

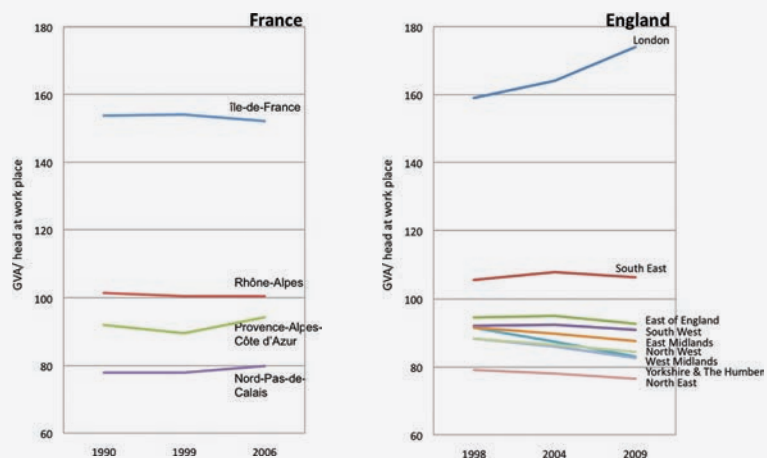
26. Parkinson, M., Meegan, R. & Karecha, J. UK City-Regions in growth and recession: How are they performing at home and abroad? (European Institute of Urban Affairs, 2014).

#### 32. Comparative divergence between the capital and the regions

**England:** in terms of GVA/head in the work place, the gap between the economic powerhouse of London and the other English regions has diverged in recent years, with London growing, and other English regions – even the south east – declining.

**France:** by contrast, the gap between Paris and other French regions has slowly narrowed. Although a notable and significant gap between the capital and the regions still exists, progress is being made.

Source: Chen, C-L., and Hall, P. Using High Speed 2 to Irrigate the Regions. Built Environment, 39 2 (2013).



European cities have recognised the value of size and also the need to collaborate in order to compete in a global marketplace. Since the 1970s France, supported by its ambitious TGV HSR programme, has successfully devolved power to the regions. Regional metropolises such as Lyon/Grenoble, Toulouse and Bordeaux, and smaller cities such as Montpellier are now outperforming Paris. Elsewhere, Helsinki, with an economy crippled by the demise of the communist block, has over a period of 20 years turned a vicious circle of decline into a virtuous circle of growth by focusing on education, innovation, and collaborative working.

In many European nations, there is widespread recognition of the need for collaboration and trust between cities to form city regions and also between cities and central government. Today, the United Kingdom is unusual in having one of Europe's most centralised governmental systems. At our expert workshop on governance and delivery, the UK's central government was typecast as being deeply fractured both within and between departments. An observation was that HM Treasury's principal concern was retaining revenue rather than offering a long-term perspective and central administrators were more concerned with defining policy than understanding the characteristics and needs of places<sup>27</sup>. It could be argued that this centralisation of power, combined with the adversarial nature of British politics, is a potential barrier to achieving the economic success and quality of life enjoyed by our continental European counterparts. HS2 has acted as a welcome catalyst for raising awareness of

27. Hildreth, P., and Bailey, D. Place-based economic development strategy in England: Filling the missing space. Local Economy 29: 363 (Sage Publications, 2014).



the value of collaboration and is helping to germinate policies that make this explicit. The recent growth strategies brokered by the Minister for Cities are an encouraging sign of a greater inter-departmental thinking and a step towards a greater level of trust between national and city governments.

### 3.3 Emerging Areas of Economic Growth

Since the great recession of 2008 the gap between North and South England (broadly defined by a line from Gloucester to the Wash) has continued to widen<sup>28</sup>. London's economy has grown by more than 12%, while the West Midlands has expanded by less than 3% and Yorkshire by less than 4%. At the same time, rapidly rising accommodation costs in London and Southern England have created a housing crisis whereby a very high proportion of the disposable income of young people and low/middle income workers is consumed by housing costs<sup>29</sup>. This economic disparity is largely the result of the strength of the London financial sector and the high level of job creation in the private sector in the South-East, compared with the greater reliance on public sector employment in the North, which is now constrained by budgetary needs..

Looking ahead, it might be myopic for Britain to continue to foster an economy overly reliant on financial services and the public sector. Future sectors where economic growth is predicted to be strongest include innovative technologies, the creative industries and advanced manufacturing<sup>30</sup>. With the inexorable rise of automation the added value of a product will lie in its creativity of design, its marketing and innovation in processing, distribution and servicing. Information and Communications Technology (ICT) now allows much work to be done remotely with teams coming together to interact and exchange ideas.

It is likely that more convenient, comfortable and faster national travel networks will encourage a reversal of current migration away from the North. Lower house prices and more attractive lifestyles could be particularly appealing for young professionals looking to bring up a family away from London and the South. Leeds, Sheffield and Manchester with lively city centres are already showing an increase in city centre vitality according to some measures<sup>31</sup>. The growth in the ICT sector has shifted from the machine to the applications (apps) and networks on which they rely. The 'app economy' it is estimated will

28. Gardiner, B., Martin, R., Sunley, P. & Tyler, P. Spatially unbalanced growth in the British economy. *J. Econ. Geogr. Adv.* Access 1-40 (2013).
29. Alakeson, M. & Cory, G. Home Truths: How affordable is housing for Britain's ordinary working families? (Resolution Foundation, 2014).
30. HSBC. *New British Landscape Unveiled* 2011. (2011).

31. Cohen, N. and Bounds, A. Manchester outstrips London as "vibrant" place to live. *Financial Times*. (2013).

#### 33. Return back to urban living: Manchester rated most 'vibrant' city centre

The former industrial cities of the North and the Midlands have seen a surge in students and young professionals, helping to make Manchester the country's most vibrant urban area. As abandoned textile mills and warehouses are being converted into flats and businesses, they are attracting a more youthful demographic with disposable income. Although London still has 6 of the top 10 most attractive demographic areas for businesses, the regional cities, with cheaper living costs, are gaining ground including Manchester, Leeds and Lancaster.

Manchester City Council. *One North: A Proposition for an Interconnected North* (2014).



contribute £4 billion to the UK economy by the end of 2014. This is currently centred in London for mobile phones, but shifting out from London as these apps are applied to other sectors, such as transport, health and education. New production technologies, such as 3D printers and laser cutters are also making it more cost effective to produce lower volumes of goods closer to the consumer through small and medium sized enterprises (SMEs).

#### 34. RATP and the changing paradigm of urban mobility

The digital and communications revolution of our era has also had an impact on transportation systems. Readily available timing and scheduling information, as well as automated journey planning on mobile devices, make the use of transportation networks easier than ever before.

RATP in Paris have acknowledged these emerging trends, adopting a business model incorporating ICT, transport economics, and users' expectations of social interaction. "Meaningful mobility" is a goal, with extended navigation, routing and coaching services. These complementary services are no longer



considered additional, but core to the role of transportation.

In one instance in 2009, RATP produced an iPhone app called "Transports Amoureux" (Loving Transport) for Tramway Line 3 in Paris. This would let passengers enter digital tags about Paris, transport, and other people. This type of social networking engagement could have significance in building relationships between passengers and institutions, strengthening business and transport networks.

Millat, Haselmayer & Rasmussen. Connected Cities: Your 256 Billion Euro Dividend. (Design London, Royal College of Art, 2010).

32. Livesey, F. & Thomson, J. Making at Home, Owning Abroad. (RSA & Lloyds Banking Group, 2014).

The report Making at Home, Owning Abroad, produced by the RSA with Lloyds Banking Group <sup>32</sup> argues that mid-sized manufacturing companies could have a significant role to play in the future of UK manufacturing, rebalancing the economy and reducing our negative balance of trade. To achieve this potential, however, will require a long-term strategy where a variety of SME producers work collaboratively across regions to produce locally the different parts for the final product. Inventing, making and consuming therefore become integrated processes. With a mobile phone, laptop and unbounded energy starting a business today is much more accessible than ever before. The CBI has noted that 59% of employers now offer the opportunity to work partly from home <sup>33</sup> from where they can travel to see clients or conference remotely. This also provides opportunities for small firms, which are lean, quick to respond, innovative and disruptive to established business models.

33. CBI. Navigating Choppy Waters. (2011).

34. Cox, E., Henderson, G. & Raikes, L. Decentralization decade: A plan for economic Prosperity, public service transformation and democratic renewal of England. (IPPR North, 2014).

The opportunities for additional economic growth right across the geography of the UK therefore exist and High-Speed Rail could be the catalyst that unlocks that opportunity. David Smith in a series of articles in the Sunday Times argues that to capture this opportunity will require more investment, innovation and infrastructure. By investment and innovation he means a more vibrant and entrepreneurial private sector. In London there are 1,266 businesses per 10,000 inhabitants with 1,119 in the South East and 1,056 in the South West, compared with only 835 in the West Midlands and North West, and 820 in Yorkshire and Humberside. Better infrastructure provision is also critical, with London at present getting the major share of planned infrastructure expenditure. The Institute for Public Policy Research (IPPR) calculates that London and South East England will receive roughly three-quarters of the planned infrastructure expenditure for the UK between now and 2020 <sup>34</sup>.

### 3.4 Capturing the Value of Infrastructure Investment

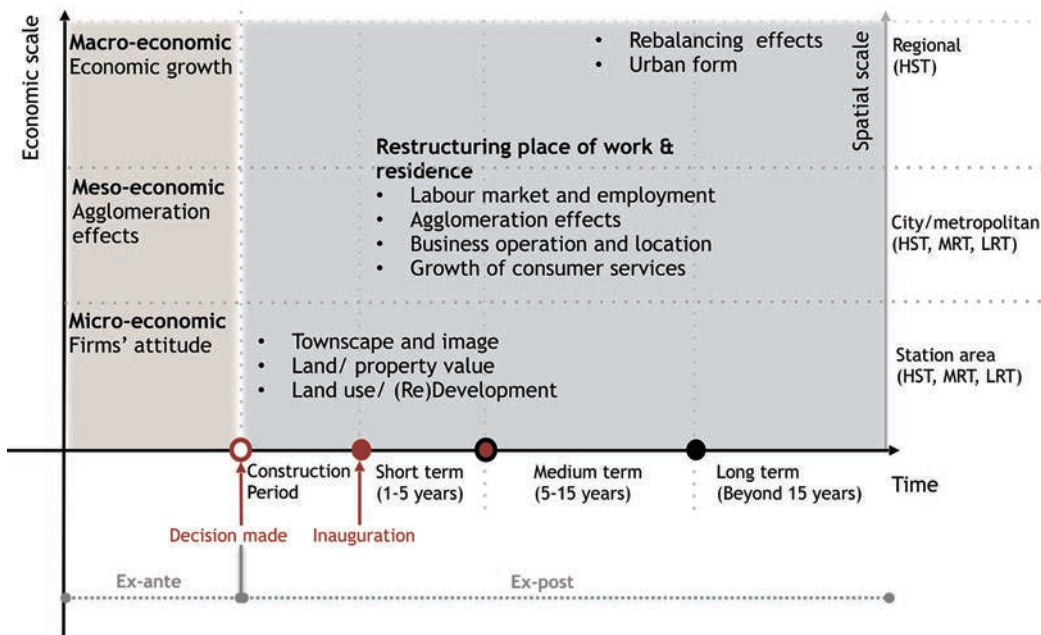
Capturing the value of large infrastructure projects is traditionally discussed in terms of increased land values through the generation of development opportunities. In the second of the ITC's expert panels (hosted by British Land 1 July 2014) we discussed how to create value from infrastructure investment, before capturing these additional returns, which should then be redistributed equitably to both private investors and the community.

Nicholas Falk, Director of URBED noted that there was much to learn from French infrastructure development<sup>35</sup>. He identified that the French system had a number of aspects working in favour of effective infrastructure investment, including strong local leadership through powerful mayors (such as in Lille and Bordeaux), the availability of low cost capital for local authorities, and an holistic appraisal and evaluation framework which encompasses a far wider range of criteria than the narrow cost-benefit approach used in Britain. Dr. Chia-Lin Chen, Research Associate at the Bartlett, UCL, referred to recent reports<sup>36</sup> that highlighted the importance of focusing investment on intra-regional transport links. The benefits of HSR investment are not limited to time-savings or productivity gains, but include long term land value increases, the stimulation of regeneration opportunities, improved public realm and image<sup>37</sup>, a more flexible labour market, improved business operations and rebalancing effects to reduce regional and urban inequality. Through the discussion it was recognised that greater economic power, the ability to raise and retain revenues locally and a strong inclusive local vision were necessary if cities are to capture the potential from HSR connections. Some participants noted that we have now to take the HS2 scheme and retrofit it with good planning reflecting the needs of each place served. It was suggested that HSR might be conceived as a national infrastructure spine funded, planned and delivered by central government, city regions would plan and pay for local connectivity and the private sector would develop the station and its neighbourhood.

35. See 18

36. Chen, C.-L. Wider impacts of rail-based transport investment on urban and economic development- Literature Review. (2014).

37. See 36



35. The spatial impacts of HSR investment over the development process, courtesy of Dr. C-L Chen



38. Future of London. Crossrail as Catalyst. (2014).

Creating and capturing the value took on a wider perspective at the ITC's other expert panels. The first of these explored place making and station identity (hosted by Space Syntax 18 June 2014). The station was seen as more than a functional space to arrive at and depart from, being also a gateway to innovation and a place in itself. The functions of a station are merging with those in the surrounding area. If projects such as HS2 are to generate long-term value they need to be seen as city area projects and not just transport projects. To create added value around the station requires collaboration between all stakeholders. A collaborative model along the lines of the Crossrail urban integration programme<sup>38</sup> was proposed.

In terms of appraisal, the cost benefit approach was felt to be an inappropriate tool when measuring urban realm schemes. This is because the benefits are realised over a long time frame and also reflect unquantifiable social and cultural values, which bring benefits through an uplift in the quality of place. Concepts discussed included mechanisms for early engagement with land owners by making them partners through community interest groups such as Business Improvement Districts (BID's), thereby preventing land being 'banked'. In addition, it is important to identify short term use for the development area, which can create an identity, attract activity, and make use of space which would otherwise lie empty causing blight. Finally, it was recommended that Design Quality Panels were used to provide critical insights and establish a long-term champion for the quality of the place.

39. See 9

The last expert panel on governance and delivery was hosted by Arup 17 July 2014, and the devolution of decision-making and fiscal independence was a recurring theme: "If the true value of HS2 is to be captured it depends on more than building a railway and capturing increased real estate value. First, it will be essential to create a proactive and collaborative governance system, to build an identity of place, an external image of what the city stands for and to win over the confidence of its citizens. Incentives, it was proposed, might be a combination of funding, power - decision making and identity - city character, focus and confidence".<sup>39</sup> Some suggested that if change is to happen, the first step must be to provide a motivation for cities to embrace change by giving them a sense of control over their own destinies. There is a need for greater clarity from government about what it is trying to achieve, which can then allow a large infrastructure project to become an enabler for what local places can do and empowers them in discussions.

*Learning from Europe: Exploring station types, locations and cultures*



London Stratford



Amsterdam Airport Schiphol



Rotterdam Central



Utrecht Central



St Pancras International King's Cross



Park Spoor Noord



Liège Guillemins



Gare de Bruxelles-Midi



Antwerp Central



Gare de Lille Europe

*'Think beyond the station to capture the additional value'*

John Worthington Commissioner ITC



Parc de Bercy



Paris Charles de Gaulle Airport



Gare de Lyon



Gare du Nord



Paris Rive Gauche



Gare de Lyon Part Dieu



Gare de Massy - Palaiseau



Gare D'Avignon TGV

# 4. Learning from Experience

The genesis of the development of HSR in Europe can be traced to 1964 with the commencement of a French SNCF research project to develop a high-speed train, inspired by the Japanese Shinkansen between Tokyo and Shin-Osaka. The SNCF saw high-speed connections as an opportunity to address the problem of congestion on existing rail lines by providing faster trains. The French government became engaged in the 1970s as they saw the potential of high-speed lines to develop the French regions by creating better connections to Paris and stimulating employment in the regions. Today these new high-speed lines are called LGV (Ligne à Grande Vitesse) and are seen as part of a European network<sup>40 41 42</sup>. Following the French lead, Germany, Italy, Spain and the Netherlands have since developed their own HSR networks, and in doing so provide us with over 30 years of experience from which we can learn. England is now also linked to the European network with its HS1 line from St Pancras International, London through Kent and the Channel Tunnel to Lille.

Although aware of national cultural differences, these years of experience provide a great source of evidence and as a result the ITC initiated several study visits during Spring and Summer 2014 to places that had experienced HSR investment in France, Belgium and the Netherlands, as well as a subsequent study visit to look at the UK HS1 line. Additional information was collected through desktop research and a series of expert panels<sup>43</sup>. This chapter will reflect on the observations obtained by providing relevant insights for the UK from each place visited. The following framework is used to structure these insights at each of the places visited:

- Observations (reading, hearing and seeing)
- Understanding the context
- What were the ambitions and expectations for HSR and what has been the reality?
- How did HSR impact the local identity and accessibility to improve economic performance?
- How were these HSR projects delivered and what supported their success?
- What would be the implications had HSR not been successfully delivered?

In visiting the various places in continental Europe impacted by HSR three spatial scales were taken into consideration:

**Regions:** Questions included what kind of factors have influenced the places served by HSR and how (i.e. urban centre, urban edge or 'regional parkway') and with what kind of outcome in terms of economic impetus/levels of use? What approach has been taken to the relative role of 'dedicated' and 'hybrid' (i.e. HSR+ classic) services in bringing the benefits of HSR to the wider provincial regions and with what result?

**City region:** Questions included what measures have been taken to promote the accessibility of HSR to/from those parts of the conurbation/city/city region which are not directly served by the HSR line? Has complementary action been taken to sustain the economic position of secondary centres, which might otherwise be disadvantaged?

**The HSR station and its immediate locality:** Questions included what view has been adopted of the role of the station in relation to the surrounding (central) urban area? What approach has been taken for the design and delivery of the HSR station and related developments and with what results?

40. Auphan, E. Les gares TGV Régionales: une exemple de contre aménagement du territoire. *Hommes et Terres du Nord*, nr1 (1992).
41. Malecot, D & Steinmann, L. Des Coupes claires à venir dans les projets TGV. (2012).
42. Plassard, F. & Derycke, P.H. L'impact territorial des liaisons à grande vitesse, dans *Espaces et dynamiques territoriales*. *Economica*. (1991).
43. See 9



Gare de Lyon-Perrache



The Confluence



#### 4.1 London as a Global Capital – HS1 as a catalyst for change

High-Speed 1 (HS1) is a story of grand visions, political setbacks, multiple conflicting interests, and uncertainty<sup>44</sup>. Yet, less than 10 years after Eurostar first arrived at St Pancras International (2007), many successes – some not planned – can be identified.

The long mooted Channel Tunnel project, after being cancelled in 1975 was resurrected in 1985 when the French and British governments agreed to a privately funded “fixed link”<sup>45</sup>. France, drawing on the Japanese experience of the “Bullet train”, was developing a grand vision of strengthening its regions and a Europe connected by HSR<sup>46</sup>. Britain had no such grand vision and more than 10 years were spent negotiating a route through rural Kent in the face of much local opposition. In 1994 the Tunnel was opened and the first trains, confined to existing congested routes within London’s built-up area, crawled into Central London at Waterloo.

#### Kentside and Javelin

A change in the plans, driven by Deputy Prime Minister Michael Heseltine’s desire to assist urban regeneration in East London, resulted in a change to the route of HS1, approaching London from the East and using St Pancras Station as the terminus. In 1996 London Continental Railways (LCR) was selected to deliver the northern option, and the high-speed link to St Pancras International was opened in 2007. The link, with its 6-minute connection from Stratford to central London, played a major role in winning the 2012 Olympic bid. In 2009 the domestic Javelin service to the Medway towns and the Kent coast was opened<sup>47</sup>, bringing with it a major reduction in journey times to/from this relatively unprosperous part of the South East.

The 30 years of uncertainty and negotiation between the 1970s and the opening of the final route have not enhanced Kent’s ability to capitalise on the opportunities offered by HSR, which are only now beginning to be recognized<sup>48</sup>. The out-of-town Ebbsfleet International Station built as part of the northern link and 18 minutes from St Pancras by HSR is just such an example. Located between Dartford and Gravesend, and well connected to the M25, Dartford Bridge and the wider motorway network, the neighbouring disused chalk quarries were recognised by Lend Lease, an innovative Australian developer,



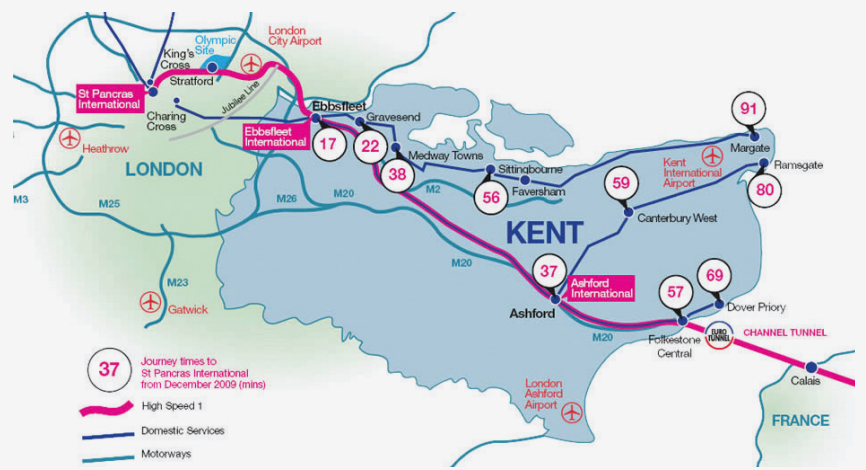
36. The Channel Tunnel Project grew out of the grand vision of a connected Europe

- 44. Faith, N. The Right Line: The politics, the planning and the against-the-odds-gamble behind Britain’s first high-speed railway. (Segrave Foulkes, 2007).
- 45. See 44
- 46. Takagi, R. High-speed Railways: The Last 10 Years. Japan Railway & Transport Review. March, 40, 4-7 (2005).
- 47. Kent Design. The impact of high speed rail infrastructure training. (2014).
- 48. See 46

#### 37. The regional impact of the Javelin network: Capitalise on HS1

HS1 has not been used only for Eurostar services. Southeastern “Javelin” services began in 2009, bringing high-speed trains to Kent, with Ashford to St Pancras journey times being cut by over half to 38 minutes, Ebbsfleet to 18 minutes and Stratford to 6 minutes. This has benefited Kent, which so far has seen GDP rise, tourism increase, investors, commuters, and homebuyers attracted, and rail patronage continually growing.

Kent Design. *The impact of high speed rail infrastructure training.* (2014).





38. Ebbsfleet International

Bluewater and Ebbsfleet International were envisaged as the well-connected anchors of a new community



39. Bluewater retail centre

as an area of opportunity for retailing and building a new community. Bluewater retail centre, the fourth largest shopping centre in the UK <sup>49</sup> was developed at the opposite western end of the quarries, some 3 miles west of the station, and opened in 1999 before being expanded in 2011. The master plan was to develop a major mixed use development with Bluewater as one hub of the

*‘The regeneration policy of the last 15 years confused the role of government as an enabler of regeneration with the market as the economic deliverer of regeneration’*

Stefan Webb; City Project developer, Future Cities Catapult

development and Ebbsfleet International the other. However, the intervening land remains undeveloped, with the international station an isolated park-and-ride facility with parking for 5237 cars.

Jackie Sadek, CEO of Kent Thameside Delivery Board (2003 -05), and currently policy adviser to Greg Clark MP, Minister for Cities, recognises HS1 as a huge success, but thinks that capturing the additional development value has been a failure <sup>50</sup>. Kent Thameside was set up as a regeneration company within the Thames Gateway, a flagship programme of New Labour launched in 2003 as part of the Government’s Sustainable Communities Plan <sup>51</sup>. In 2010 it was described in a review of the programme, by Stefan Webb, as an expensive disaster <sup>52</sup>. He points to a “struggle between politicians, bureaucrats and communities in the planning and delivery of public policy, especially regeneration.” and concludes that the failure was due to:

- Lack of clarity over strategy, objectives and goals;
- Poor understanding of market forces and economic geography;
- An over-centralised and confused approach to governance and accountability;
- A lack of consistent political and bureaucratic support.

HS1, in combination with the Javelin service and Thameslink, has created for Kentsiders an awareness of and accessibility to the work and leisure opportunities north of the Thames <sup>53</sup>. The proposed link of Ebbsfleet International to Crossrail, which then in turn links into the TfL Underground and Overground services, would increase the connectivity of North Kent and the attractiveness of the planned development for 15,000 homes announced by Chancellor George Osborne in 2014 <sup>54</sup>. The Kent Thameside story reflects the lack of a strong, ambitious and long-term vision for the area developed from within rather than planted from without. This is reflected in the limited exposure of the opportunities available and the sparse research literature on the valuable lessons that might be learnt.

### King’s Cross Central and St Pancras International

Go back 30 years and King’s Cross was a run-down area of transients and cheap hotels with a fine although underutilised industrial heritage bisected by the Grand Union Canal. In the boom period following the deregulation of financial services in the City Rosehaugh Stanhope, fresh from their success at Broadgate <sup>55</sup>, formed the London Regeneration Consortium (LRC) to develop the non-operational railway land at King’s Cross. LRC saw the development potential for a new office centre and BR the opportunity of gaining a £1.4 billion station through development uplift <sup>56</sup>.

49. Greater London Authority. Bluewater Shopping Centre Extension. (2013).

50. ITC HS1 Study Visit, 2014-09-08. (2014).

51. Office of the Deputy Prime Minister. Sustainable Communities: Building for the Future. (2003).

52. Webb, S. The Thames Gateway: Policy, Planning or Political Disaster. (2010).

53. Thameslink Programme. FAQ. (2014).

54. Department for Communities and Local Government. Ebbsfleet Development. (2014).

55. McGreal, S. European Cities, Planning Systems and Property Markets. (Routledge, 2003).

56. Hutton, L. Broadgate: a development by Rosehaugh Stanhope Developments in partnership with British Rail Property Board. (Rosehaugh Stanhope Developments, 1987).

57. Edwards, M. King’s Cross: renaissance for whom? Urban Renaissance and British Cities, 189-205. (Routledge, 2010).

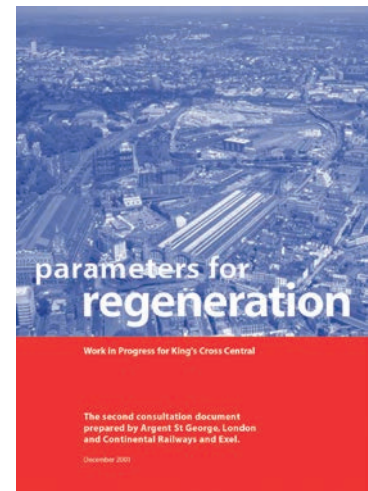
58. See 57.

During the economic recession of 1992 the scheme collapsed. However the area was in transition<sup>57</sup> and creative firms and new uses were moving in<sup>58</sup> causing a halo effect of change surrounding the site; this was given further impetus by the opening of the Thameslink cross-city rail service. When the Government's decision was taken in favour of the northern HS1 link via Stratford to a redeveloped St Pancras International Station adjacent to King's Cross



40. King's Cross at an early stage of regeneration

LCR (London and Continental Railways - a private consortium) was formed to build the line and develop the railway lands. LCR brought key sites together and held developer competitions. In 2001 a development agreement was signed with Argent St George, a joint venture between Argent (then owned by British Telecom Pension Scheme who remain an investor in King's Cross Central) and St George (part of the Berkeley Group) as the Developer. The development agreement provided for the Landowners, LCR and Exel (now DHL) to form a 50:50 joint venture with the Developer, which now exists as King's Cross Central Limited Partnership (KCCLP). On being appointed, Argent began a programme of masterplanning workshops and meaningful public consultation to establish the brief and principles for the development of the scheme. The



41. King's Cross: Development brief and strategy

*‘The failure of planning is not getting in early enough or thinking wide enough’*

Peter Bishop, Director of Environmental Services, Camden Council 2001 -2005.

outline planning applications that evolved from this process were submitted in 2004 and achieved permission in 2006. During this period it became clear that St George did not entirely share the long term vision and approach to developing the site and they withdrew from the joint venture. From 1996-2003 the King's Cross Partnership with £37.5 million SRB Government funding invested in developing the planning brief and fostering community understanding. In 2001, Peter Bishop from Hammersmith and Fulham was appointed Director of Environmental Services with a responsibility for the King's Cross project. Politicians within Camden realized that HS1 was far more important than just Camden and recognised they had to engage. They saw a developer who was committed to creating long-term value<sup>59</sup>.

By 2007 most of the requirements to attract long-term investors were in place.

59. Borough of Camden and Borough of Islington. King's Cross: Shaping the Future. (2012).



Outline planning permissions had been granted and were free of Judicial Review, Eurostar services were running and uses were growing up around the site, which were beginning to change public perceptions of the area. However the onset of the Great Recession in 2008 forced a rapid reappraisal. The strategy of implementing a large debt-funded first phase including major speculative commercial buildings that would be retained under single ownership was superseded by a new strategy. This involved disposing of some plots and recycling the receipts to implement the essential framework infrastructure and



#### 42. The master developer

The King's Cross development was unique in being relatively closed, with Argent taking a long-term view. A set of basic principles were established and have been maintained as the strategy for funding has adapted to economic cycles. Heritage was considered as fundamental to the development. Mixed use and placemaking were emphasised.

the public realm necessary to serve and attract occupiers (including University of the Arts, London) who would in turn populate the place. This recycling of receipts to deliver infrastructure continued until individual plots could be developed on a stand-alone basis and KCCLP reverted to its original strategy of retaining commercial buildings.

Through the anchor development of the University of the Arts and its 4,000 students, as well as transitional uses such as the Filling Station temporary restaurant and the Skip Gardens (a community project which was designed to move around the site as development progressed) Argent has repositioned King's Cross from being a derelict backland to a thriving commercial and residential community attracting occupiers ranging from the LB Camden to Google.

#### Stratford and the London Legacy Development Corporation

The decision to build the northern route for HS1 to St Pancras station, through Stratford and the large British Rail rail lands north of Stratford centre opened up new development possibilities and connections across the Lea Valley, which had historically been a barrier to London developing eastwards. In 1998 Stanhope was appointed by London and Continental railways (LCR) as the preferred developer for the railway sites and at Stratford City a development consortium of Chelsfield, Stanhope and LCR with Arup as master planners gained planning permissions in 2004<sup>60</sup> for what are now the Westfield Shopping centre, Stratford international and Olympic village areas. Winning the bid in 2005 for the 2012 Olympics had been aided by the accessibility to central London and the Continent afforded by HS1.



43. Westfield Stratford City

60. See 50.

The Olympic site was delivered by the Olympic Delivery Authority (ODA 2006-2012) and is now part of the London Legacy Development Corporation (LLDC) established as a mayoral development corporation under the Localism Act of 2011 with planning powers <sup>61</sup>. The first three-year programme is reconfiguring the Olympic site as the Queen Elizabeth Olympic Park, which will be a major London asset <sup>62</sup>. It will also develop small scale projects, many transitional on the surrounding sites <sup>63</sup> in order to stimulate the creative enterprises now becoming established in the area, enhance the public realm and develop

61. London and Continental Railways. About LCR. (2014).  
 62. London Legacy Development Corporation. Local Plan 2015 to 2031. (2014)  
 63. See 62.



44 & 45. Promote and deliver physical, social, economic and environmental regeneration of the Queen Elizabeth Olympic Park and its surrounding area

Reopening in April 2014, Queen Elizabeth Olympic Park is 560 acres – a similar size to Hyde Park. £300m is projected to be spent on transforming the former Olympic site into an integrated part of a developing East London.



connectivity within and between areas. In addition, the LLDC has appointed a development partner for the first neighbourhood of 850 homes, with the first 250 under construction. Currently the LLDC is identifying a development partner for sites for 1500 dwellings and progressing a scheme for 'Olympicopolis', involving cultural and educational quarters south of the Park.

*'How can private rail providers be enjoined to connect with the wider conventional rail network, which is the point of trains, but which (in)famously HS1 triumphantly fails to do at both Ebbsfleet and Stratford'*

Ralph Ward DCLG/ODPM, Regeneration adviser, Olympics and Thames Gateway, London Urban Visits

Great care was taken in planning for a long-term use for the site after the Games, with a legacy plan in place including infrastructure for future services, landscaping and movement. Despite this, we still heard how the post-Olympic planning team was left with commitments that reduced opportunities. The sharp contrast between the Westfield shopping centre, the Olympic village and the Olympic Park, despite the LLDC being the overall planning authority and development agency, is a legacy of different areas separated by roads, rail and service infrastructure. In terms of lessons to be learnt the story of the link





46. Design Quality Panel and policies

between Stratford International and Stratford station, separated by the commercially successful but inward looking Westfield centre, is salutary.

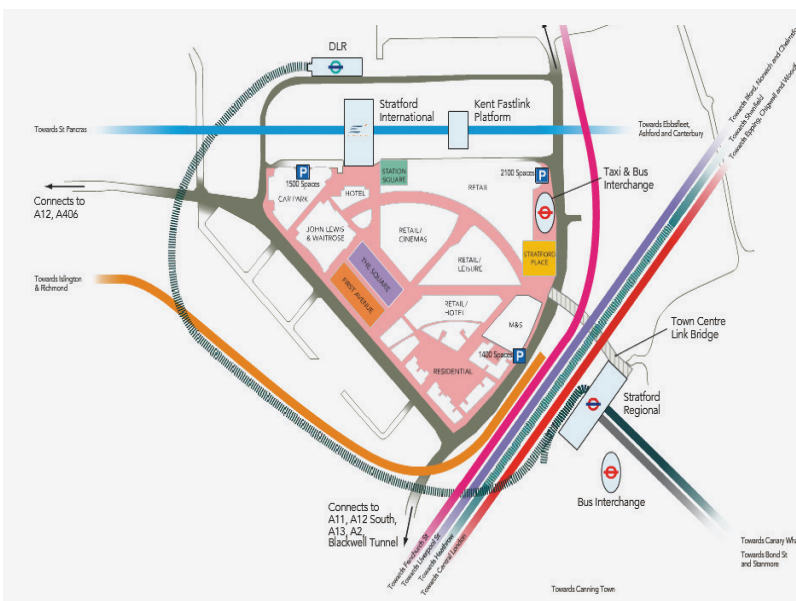
The original Stratford Central masterplan tried to make a virtue of a necessity by proposing a quasi-ceremonial route linking the old Stratford with the new. This was lost in the Westfield realisation, with Westfield turning its back on Stratford International station, and no clear route through. The HS1 cutting makes a heroic slice across the site before tunneling at either end. The site planning and relationships are interesting to compare with Lille International, Lille Flanders and the historical urban core beyond (see below 4.7). Lille provides a continuity of exterior and interior spaces and flow for those moving through. Although its redevelopment was started 25 years before Stratford, EurLille is still developing and maturing to become an integral part of the city. Stratford initially asked London Thames Gateway Development Corporation to fund a travelator but this was rejected. The final result was an extension of the DLR built and paid for by the government. The result has been a poor connection, leading to a fractured piece of city, and an uninspiring place. It is possibly a property bargain but also a missed opportunity to celebrate through intelligent planning and design East London's International transport hub and a station that could draw together a growing and thriving London district. The problems at Stratford deserve an in depth review since there are lessons here for the proposed HS2 stations.

**Capture the added value from HSR through shared aspirations and expectations between the Community and the Investor.**

The experience of Thames Gateway, the planning framework for supporting the regeneration of Ebbsfleet and Kentside, was a complex collection of agencies and planning authorities<sup>64</sup> with no single vision for growth sites such as Ebbsfleet and the role of HS1. In contrast, King's Cross Central, after some initial local concerns, found common aspirations and shared expectations between the community and developer as a result of intensive community engagement and dialogue between all interests. The long-term quality of the development is founded on the time taken to establish the goals and principles for the de-

64. See 52.

65. Smith, C. King's Cross. in ITC HS1 Study Visit (2014).



**47. A fragmented transport interchange network: Stratford Interchange**

Stratford International station is located in an open cutting with pedestrian routes across and road connections at each end. A DLR connection links the two stations as a spur. The main pedestrian route linking Westfield to the International station and Olympic Village is no longer on an axis to the bridge linking the retail mall to Stratford station and centre.



velopment and the respect and trust created between all parties <sup>65</sup>.

At Stratford the LLDC acts as both enabler through a participative planning process and regulator through the role of statutory planning. The LLDC Design panel acts independently as the champion for the aspirations of the plan and quality design, supported by an environmental appeal panel <sup>66</sup>.

**Invest in time, talent and transitional initiatives early to capture the additional value later.**

From 1989 King's Cross/St Pancras was recognised by creative businesses and innovative developers as an area with the potential for long-term transformation. Both the planning authorities of Islington and Camden were supportive of incremental change, with a halo effect of innovative development and enterprise emerging outside the boundaries of the designated King's Cross Central Development <sup>67</sup>. The former Landowners of King's Cross were host to a variety of short term uses, such as a golf driving range and discos, which brought activity and began to raise the profile of the area.

Today both Argent and the LLDC at Stratford are pursuing a programme of transitional uses that bring activity to earlier phases of the development, create confidence, and, if successful, can establish transformational activities and enterprises.

European experience shows that there is a 10-15 year time lag between the completion of HSR and major development being undertaken (Lille, Antwerp). By pump priming small-scale initiatives can this time lag be reduced?

**Be prepared to adapt quickly to unexpected outcomes and turn adversity into an opportunity**

Argent at King's Cross had a clear investment strategy and a robust spatial planning development framework and agreed design criteria. The financial crash of 2008 required a radical reappraisal of their funding strategy and development programme. The business was adaptable and could make quick decisions, and the consented plan had sufficient resilience to allow for change: as a result Argent was still able to deliver a mix of uses that have brought vitality to the area.

**Recognise the value of HSR as a catalyst to support and stimulate existing and planned initiatives. Use small and large-scale events as milestones to raise the profile and give urgency to the project.**

HS1 acted as a catalyst for the Olympic bid by opening up a neglected site and providing a major link between central and east London. Winning the 2012 Olympics then became a trigger to obtaining government approval for completion of the Thameslink connection at King's Cross/St Pancras <sup>68</sup>. At the Olympic bidding stage the committee was driven through the Stratford/ St Pancras tunnel to a site with cranes and bulldozers erected for the day giving a sense of reality to the project and instilling confidence <sup>69</sup>. Winning the Olympics set a challenge for the team and provided clear milestones for delivery of major infrastructure to support the regeneration scheme.



48. Find temporary uses that can move around the site as development progresses



49. Halo effect, Kings Place Small scale regeneration was stimulated around the site before planning permission was granted for King's Cross Central

66. See 62.

67. See 59.

68. See 65.

69. Madelin, R. Argent Interview. (2014).

## 4.2 Paris - Creating and Capturing value around transport interchanges

Paris Rive Gauche is a huge regeneration development (2,200,000 m<sup>2</sup> on 130 hectares of which 26 hectares is on top of rail lines) on the former rail yards from Gare d'Austerlitz all the way to the Boulevard Périphérique, along the river Seine. Starting with the National Library in the 1990s the development comprises a mix of residential, offices, retail, cultural and public realm programmes. The main axis of the development is the new Avenue de France,



50. Paris Rive Gauche, city as Masterdeveloper for long-term development

70. ZAC Zone d'Aménagement Concerté: an authorised development plan in which area the local authorities decided to take part in the public interest.

71. SEMAPA, Rapport Annuel 2009. (2009).



51. Rive Gauche connected with all levels of public transport

just on top of the rail line heading towards Gare d'Austerlitz from the east.

The site was in the 1990s a derelict area with former SNCF maintenance buildings, depots and industrial sites with some buildings listed as industrial heritage. The Gare de Paris Tolbiac, east from Austerlitz, was the car-on-train station to the south of France. In 1991 a planning permit was granted (ZAC <sup>70</sup> Paris Rive Gauche) and in 1996 the first buildings were delivered, in the area of the National French Library. Part of the development was a new bridge crossing the River Seine, the Pont Charles de Gaulle, connecting the area to the Gare de Lyon (TGV) and later on the Passerelle Simone de Beauvoir connecting to Parc de Bercy and it's well-regarded surrounding residential neighbourhood, both redeveloped areas in the 1980s <sup>71</sup>.

The Austerlitz former rail yards formed a barrier between the existing Quartier de Notre Dame de la Gare and the River Seine. The most prominent intervention is the removal of the barrier by building on top of the rail lines that run to the Gare d'Austerlitz and the RER through line along the river Seine. When walking along the Avenue de France today, one has no idea that one is walking about 12 metres above a running railway. The development links the southern quarters to the River Seine and beyond with typical 8-storey Parisian urban blocks, streets and boulevards as if it has always been like that. The re-use of former industrial buildings like the Grand Moulins de Paris and the Halle aux Farines for Paris-Diderot University gives the area the feel of a mature urban place, although it is not yet finished.



The development is led by SEMAPA (Société d'Étude, de Maitrise d'Ouvrage et d'Aménagement Parisienne or the Parisian development, project ownership and studies company). SEMAPA has an exclusively public shareholding structure, which breaks down as follows: Paris municipality 66%, Department of Paris 26% and Ile-de-France region 8%). SEMAPA can be seen as the master developer for the Paris Rive Gauche project, which has been running for 24 years and will continue for many years. SEMAPA has developed the great vision for the area on which the ZAC was granted in 1991: the remediation of the soil, reorganising and overbuilding the rail tracks, as well as implementing housing, education and commercial programmes (offices and retail). The initial plan offers a spatial structure for development with strict guidelines.

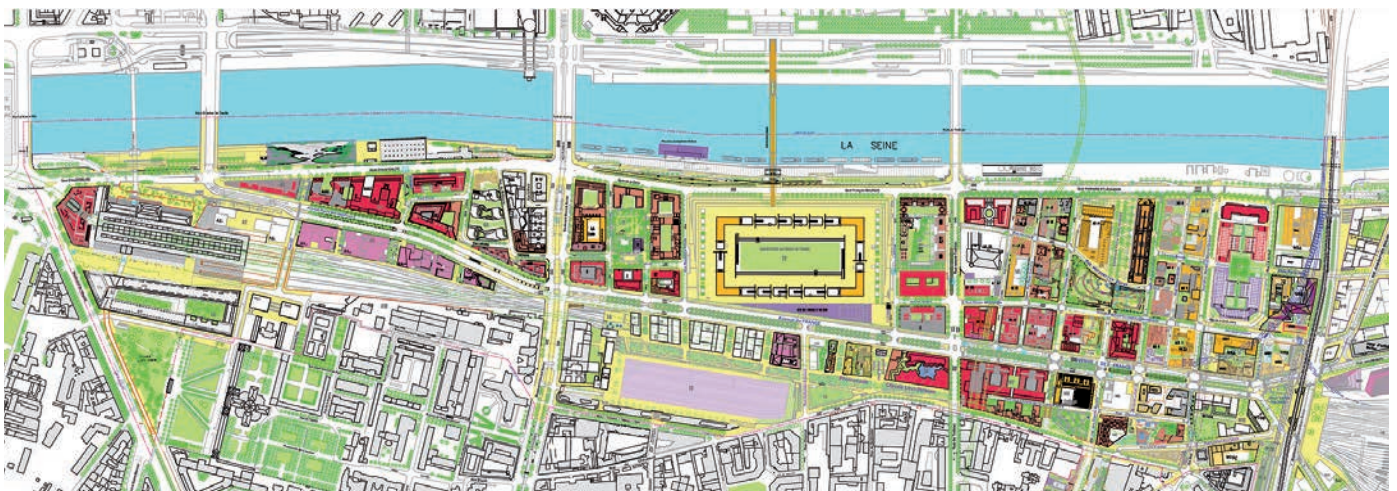
Being the owner of most of the land SNCF is an important partner of SEMAPA. It is interesting that SEMAPA does not acquire the land at the beginning of the development process, but only when the plot of land is sold to the developer or investor. This means that there is no additional interest charge for SEMAPA and this will reduce the overall development cost. SEMAPA acts as a project office, negotiating partner and intermediate for planning permissions etc. In case of overbuilding the tracks and the construction of raised street levels SEMAPA managing the project and provide the funding for the SNCF to realise the basement. The building on top of that is again only the developer's responsibility <sup>72</sup>.

The way of setting up the development project has already delivered an amazingly consistent and legible part of the city. The economic problems in recent years have slowed down the development. Now there is renewed interest in the area since it is extremely well connected by rail, including a TGV link to the south of France at Gare d'Austerlitz, within walking distance of the TGV station Gare de Lyon and connected with two major new metro trains: one east



52. SEMAPA as Masterdeveloper published a magazine including news items, proceedings and initiatives for all stakeholders. Treize refers to 13 arrondissement, where Paris Rive Gauche is situated.

72. SEMAPA, Rapport Annuel 2011. (2011).



53. Rive Gauche: Building over rail tracks to include: The National library, university, housing and commercial uses

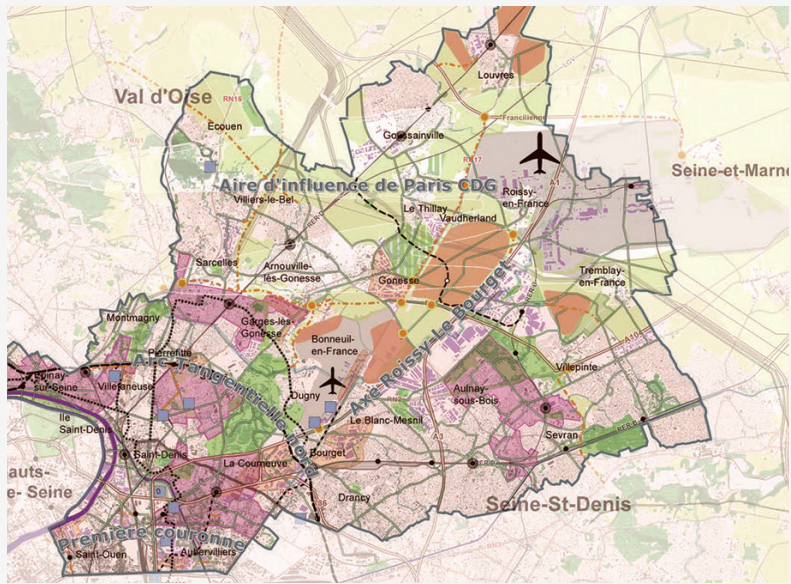
west along the river Seine, and the famous "14", connecting Olympiades (a high-density high-rise development) to Saint Lazare. This line runs straight underneath the centre of Paris connecting Gare de Lyon and Chatelet (the major, central Paris metro interchange). The line was built in phases and was finished in 2007, now servicing an average of 450,000 passengers on a working day. The two lines intersect at a newly built metro station at the new Avenue de France, underneath the existing railway. Overall, the area is very well connected to the main Paris stations and the airports Charles de Gaulle and Orly.



#### 54. The Gonesse Triangle - Paris

North from Paris, the area roughly between Charles de Gaulle and le Bourget Airports, has been identified as Europa City: a development corridor being planned to start past 2020. The Gonesse Triangle, within Europa City, will be the first development zone with a mix of residential, commercial and retail uses. The vision is to connect Paris with the agricultural land in the north, thereby creating a combination of 'healthy country living' in a urban setting. A new RER line running from Charles de Gaulle Airport, passing the development into the centre of Paris, serves the development.

The greater Gonesse Triangle development is a public development body under the authority of an intra-regional collaboration: 'Établissement public d'aménagement de la Plaine de France' between three departments, with 40 municipalities involved. It covers 6 existing, local collaborative communities, e.g. la Communauté d'agglomération de l'aéroport du Bourget. This body is responsible for the social and economic development of the area, acts as the master developer and is, responsible for planning permissions (ZAC's). On a lower level, there are many public/



private partnerships that deliver parts of the overall development.

The Gonesse Triangle development is seen as offering an opportunity to address the growth of the Greater Paris Region. The area is extremely well connected on the international and national level by the two adjacent airports, Paris le Bourget and Paris Charles de Gaulle. With regional and local

train connections under construction, the area will become an integrated part of the Greater Paris Region. Being a government-led development, the programming of the area is seen as complementary with the other Paris Region developments such as Paris Rive Gauche. [www.plainedefrance.fr](http://www.plainedefrance.fr)

#### Have a grand Vision and develop it incrementally

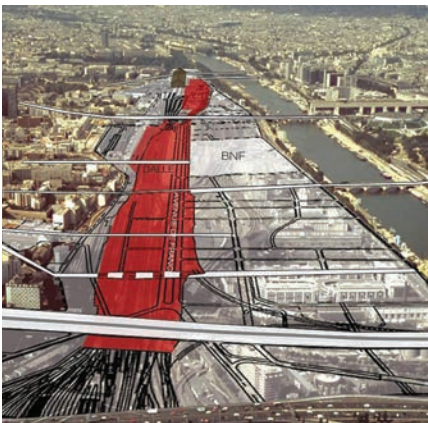
The Paris Rive Gauche development is based on a great vision with guidelines on principles. It is an 'open plan': meaning that it can adapt over time, but only with the final approval of the master developer. Even the construction on top of the railway is developed in a such a way that it can 'grow' step by step, leaving a pleasant city-scape in each phase.

#### Take an active role in implementing the most critical and necessary parts of the plan

At Paris Rive Gauche the public development company SEMAPA took an active role in constructing the new street level, on top of the railway, by taking part in a joint-venture with the plot developer on that specific and necessary part of the development: necessary because it serves the need to overcome the barrier between the southern neighbourhoods and the river Seine. The first time this was done was on the junction of the two metro lines at Avenue de France, one of the top locations. This provided confidence in the way of collaborating and taking risk at both sides.

#### The Master Developer should be local

In most continental examples we see the local authorities taking on the role of Master Developer. They can play the role of intermediary between the national level and local governmental institutions, the key stakeholders (e.g. the rail network provider), the 'local market' and the local communities and interest groups.



55. Paris Rive Gauche, Connecting the city back to the River

### 4.3 Randstad NL - Thinking beyond the Station to capture the additional Value

The Randstad or DeltaMetropool refers to a polycentric city region located in the west of the Netherlands, including the four major cities of Amsterdam, Rotterdam, The Hague and Utrecht. The urban areas are spread like a band of cities (a Rand) around a green heart.

Historically, the cities in the west Netherlands were relatively independent and in competition with each other. They each fought against the threat of flooding from river and sea, and at the same time they were protected by water and relied on it for commerce and trade. In shaping the Dutch Nation in the 19th century, mutual interests took the upper hand over the local, and together in planning their industrial development the four biggest cities won their own individual role within the whole. The mutual interest also led in the twentieth century to the so-called 'Poldermodel': a method of consensus based policy making involving employers, trade unions and the Government. In the case of spatial planning this is the basis for collaborative planning, decision-making and land management.



56. Randstad - Deltametropool: a network of cities, towns and villages with a population of 7 million

The name **DeltaMetropool** refers to an ambition to see the Randstad conurbations as one metropolitan city region positioned in the river delta of the Rhine and the Meuse. It does not have an official legal status and it includes three provinces and several cities and towns. The area is not defined by precise boundaries and offers a home for **7,5 million inhabitants**. It is one of the most densely populated urban areas in Europe.

In this publication all spatial developments are set into the DeltaMatropool context: The Dutch Metropolis, Maurits de Hoog (2013) publ.: Toth.

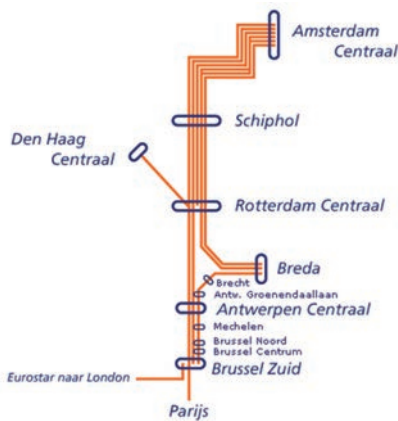
After WWII holistic spatial objectives for the Netherlands, and in particular for the Randstad, were defined on a national level thereby rationalising urban transformation and regeneration in order to strengthen the economic position of the Netherlands as a whole. The further specific and detailed development of this policy was left to the regions and cities on the understanding that the best knowledge of local assets and economic opportunities is at regional and city levels themselves. This policy has created the opportunity for cities/regions themselves to use their assets and develop economic growth, in collaboration with the national government. Key elements in the national spatial policy document are not only to 'facilitate and stimulate' but to 'induce' (cities and regions) as well <sup>73</sup> in order to create added value to national (infrastructural) investments.

The Randstad infrastructure network comprises a dense road and rail network, including different public transport modes such as HSTs, Intercity trains, regional and local trains and tramways.

73. WRR. Public affairs in the Market Society. December (2012).



57. Dedicated freight rail line Rotterdam - Ruhrgebiet



58. Randstad connected to the European HST network



59. High speed line infrastructure

Four major railway projects have been developed in the Netherlands since the 1990s:

1. The freight rail line connecting Rotterdam Harbour with the German hinterland. This released additional capacity for the existing road and rail network.

The dedicated cargo rail line from Rotterdam Harbour into Germany was a new piece of rail infrastructure and it has released extra capacity for the existing rail network. The line Rotterdam - Utrecht - Arnhem into Germany was often congested because of the combination of freight and passenger traffic, and caused problems (such as congestion and safety concerns) for Utrecht Central Station.

2. The HSR line from Amsterdam to Antwerp

This HSR project was planned as a through line from France - Belgium to Rotterdam - Schiphol - Amsterdam - Utrecht - Arnhem - Germany. Constructed as a new direct line through the densely populated Randstad and 'Green Heart' it was, compared to the Freight line, a very sensitive and complicated process. The construction turned out to be relatively expensive because of the complicated bridges and tunnels that were required. For this reason the government decided shortly to cancel the HSR connection from Amsterdam to Germany and to run the HSTs on the classic rail lines (see Case Utrecht). After the delivery of Randstad Rail additional capacity was released for the existing tracks between Amsterdam and Utrecht. It was an inefficient solution to stop the HSTs at two extra stations relatively close to Amsterdam, and because of the short distances it was not possible for the HST to reach speeds of more than 160 km/hr. An additional challenge was to decide which cities should be connected by the high-speed line. After announcing the development of the Randstad Rail all the cities along the line would have rapid access to high-speed stations.

3. The doubling of the 'ring' rail in the Randstad

The ring rail network is the equivalent of London's Crossrail and Paris's RER. It connects the four major Dutch cities and their conurbations. The existing 'circle' line between the four Randstad cities was doubled so that two tracks are now reserved for the faster InterCity trains and two tracks for 'regional trains' and suburban stations. The latter operates without a timetable but with a fixed-time frequency.

Doubling the ring rail has permitted relatively fast connections between all the major economic centres in the Randstad as well as to the HST system. The doubling of the ring rail obviously provided relief for the through lines, thus opening capacity for HSTs to run on these 'classic rail' lines.

4. Timetable and operational upgrades. This fourth major infrastructure project is being implemented after a delay due to the economic recession. The project will change the existing train operating system from using pre-set timetables to a metro-like system as on the London Underground. Benefits include achieving a higher network capacity and commuter convenience. People can also have their main workplace close to house in their suburban living environment and commute to their 'base-office' in the city centre only a few times a week. This could reduce the need for floor space in the city centres and pressure on the road and public transport networks.



The national public transport policy ambition was to increase economic opportunities and address the negative environmental and economic impacts of road congestion. By announcing the main public transport hubs as 'Key-projects', the national government allowed cities to benefit from the economic opportunities offered by the rail infrastructure investments. These Key-Projects were led by an 'Atelier' run by the State Architect's Office within the Ministry for Housing, Spatial and Environmental Development (now partly integrated in the Dutch Ministry for Infrastructure).



60. Integrated levels of rail in Northwing Randstad

The public transport in the north-wing of the Randstad (Amsterdam) is very well linked to the HSR network. It includes the pilot project for using metro-like trains into the wider region, all organised around the existing 'classic-rail' network.

### Start with a big vision

The holistic economic and spatial strategy for the Randstad developed from the 1950s onwards is even more relevant now in a globalised world. It offered the Netherlands the opportunity to compete with other mega-cities and agglomerations across the world.

### Transform a line into a network

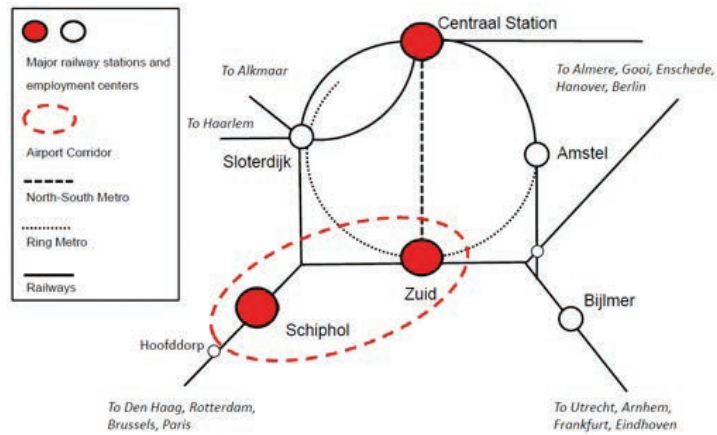
A successful urban region will have cities, towns and villages working in collaboration to develop a coherent transport system. The ring rail is one of the infrastructure projects that consider the rail network as a whole rather than a system of lines.

### Balance both Strategic Structural Plans from the centre with local plans in the city-regions

The Randstad is operating on a global scale but the decision-making and detailed planning happens on a local level. Central government formulates the general policies for the Randstad (top-down), nowadays divided into the North and South Wing, but within this network each city, town or village can operate independently (bottom-up).

#### 4.4 Schiphol Airport from Airport-City to City-Airport

Initially, airports were planned as engineering projects, as gateways addressing mostly technical objectives. Paris Charles the Gaulle Airport (CDG) and Schiphol Airport near Amsterdam were built in relatively remote, predominantly car-orientated, locations on 'the edge of the city'.



61. Amsterdam Metropool: Three main centres connected with HST, train, metro, trams and buses

From the 1990s onwards some airports have been developed into 'Airport Cities' and have moved from offering predominantly airside retail and services for transferring passengers into Airport City developments of commercial activities both at air- and landside as well as outside the airport boundaries (eg Hoofddorp near Schiphol Airport). They offer a variety of commercial programmes and activities, and established businesses have taken advantage of the great connectivity such places offer by plane, car and public transport. Airports are currently recognised as nodes within the mega-city regions, functioning as a meeting place at a local and global scale and functioning as a distinct 'City' or 'Aerotropolis'<sup>74</sup>.

74. Schaafsma M., Güller M., Armkretz J., Airport and City, Schiphol Real Estate. (2009)

Schiphol Airport

*'Airports leave the city, but the City follows the airport and the Airport becomes a city'*

Maurits Schaafsma, Schiphol Airport Group

Apart from being a major international airport interchange, Schiphol Airport is today also functioning as a regional shopping and international business and conference centre (ca. 500 businesses and shops). These activities do not only benefit from the excellent air connections but from bus, and high-speed and regional train connections as well. At Schiphol Airport HSR is not critical to the airport's function, but it optimises its role as a major international transport hub, adding extra, high-quality land accessibility and bringing even more people to and from the airport. The rail links offer direct accessibility across international borders as well as to the Zuidas business district of Amsterdam, boosting the city's international competitiveness.

In the last decade the rail network in the Randstad (4.3) has been optimised.



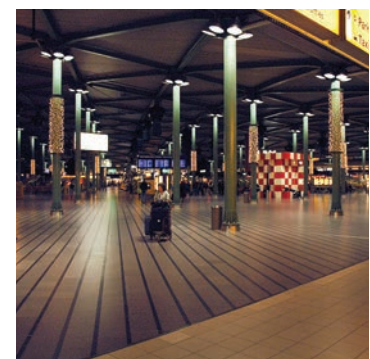
62. The airport as a city: the city airport becomes a destination in itself and is linked with the city centre, the Zuid-Axis business centre and the flower industry with an annual turnover of € 3 bn.

This was essential to develop and expand the ‘airport city’ Schiphol. Being centrally located on a public transport hub, Schiphol Airport offers the highest retail and commercial development value per foot within the Netherlands. It is taking advantage of its direct and fast connections towards the centres of Utrecht, Amsterdam, Haarlem and The Hague.

HSR and HST have considerably extended the hinterland of Schiphol with new connections to France, Belgium and Germany serving additional passengers to and from the airport.

The airport’s HSR connectivity is now changing the geography of the rail network in Amsterdam, generating extra demand at Amsterdam South at the expense of Amsterdam Central, where capacity is now being released for local and regional services. Currently, the terminal is congested at peak hours due not only to its popularity as an airport hub but also as a shopping destination. The airport terminals are ‘wrapped around’ the railway station with direct physical and visual links between all the transport modes, resulting in a very compact and legible logistic system for passengers. The buses, taxis and private cars are located on the ground floor in front of the main terminal’s airport entrance. There are plans in the future to link to the direct fast North-South tramline, connecting Schiphol to the business district of Zuidas and continuing towards Amsterdam North.

The HSR line is integrated with the ‘classic rail’ network before it enters the tunnel and stops at the underground airport station. The various railway transport modes are integrated in the station at Schiphol, including rail and intercity links serving the whole Randstad conurbation (4.3). Although the mix of train modes offers flexibility it also contributes to congestion during peak hours and the station has now reached its maximum capacity.



63. Schiphol Station Plaza HSR integrated in the airport



The construction of the HSR connection in Schiphol Airport was the result of collaboration between the airport, the cities of Amsterdam and Hoofddorp, and the regional and national planning authorities. In this collaborative process the economic development and logistic systems of airport, cities and region were key.

There are now proposals for High-speed Freight (HSF) services on a network around Europe that links high-value airfreight with HSR. At Schiphol this has huge significance because of the time-sensitive Dutch flower market. Airports should consider the opportunities that HSR brings for freight and the ways in which airfreight containers could be loaded directly onto freight-dedicated HSTs. Through pilot projects HSR freight transport opportunities are currently reviewed whereby airfreight containers are loaded directly onto HSTs.

#### **Optimise added value by integrating HST services and HSR into the wider transport network**

The benefits of connecting HSR and aviation were achieved by embedding a HST station in the airport and by integrating the airport into the wider network of (regional) public transport. At Schiphol Airport the train connections, especially the HST, are not seen as a threat but have helped to increase the demand for air transport and are supporting Schiphol's function as an intercontinental air transport hub.

#### **Make HSR an integral part of the local economy**

The benefits from HST services will be maximised if these are well integrated both locally and regionally. The airport benefits directly from the integrated HST link, but the image of Schiphol Airport as the best-connected place in the Randstad, with a HST stop, supports a much wider regional economic development. Not only Amsterdam, but also Utrecht, Haarlem, Hoofddorp and the large neighbouring flower industry gain from this image of being extremely well connected. Collaboration at all levels of planning between authorities and businesses is key to this success.

#### **Offer resilience through an incremental decision-making process**

Layered planning and decision-making will offer flexibility and the opportunity for continuous change. Over time the development strategy for Schiphol Airport has changed from being a place of arrival and departure, to an important commercial node as a city in its own right. On the national level Schiphol Airport collaborated with the rail provider and the Transport Ministry to create the transport hub as part of the Randstad network, while on the regional level Schiphol worked with neighbouring cities and the region to make sure that the airport's development programme was seen as complementary.

#### **Be realistic on the goals of HSR**

HSR services provide improved national and regional accessibility, extra capacity at the airport, and through the extra demand it generates it will also boost the viability of a range of intercontinental destinations at the airport<sup>75</sup>. The economic development of Schiphol Airport as a city has increased further as a result of the arrival and integration of HST services. These are seen as complementary with other modes of transports as part of the airport's accessibility. HSR is seen as catalyst and amplifier of an already successful development<sup>76</sup>.



64. Amsterdam Zuid-Axis development (education, residential, commercial and retail) linked to HSR network

75. Schaafsma, M. ITC Lille Symposium. in ITC Lille Symp. (2014).

76. Colella M. ITC Lille Symposium. in ITC Lille Symp. (2014).

#### 4.5 Liège - Regeneration across Boundaries

Liège is a city situated on Belgium's eastern borders with the Netherlands and Germany and located in the valley of the river Meuse. For a long period Liège was part of the industrial backbone of Wallonia, being one of the most important steel-making centres in Europe. However, after the Second World War, the city and its districts suffered from the collapse of the local steel industry<sup>77</sup>.

The city of Liège is today a member of Eurégion Meuse-Rhin, which includes Aachen, Maastricht, Hasselt, Liège and Eupen and comprises 4 million inhabitants. A key objective for the Eurégion is to generate collaboration cross boundaries and to share resources, facilities and knowledge. International working groups are actively involved in the development of regional policies with a focus on economic development, employment, education, mobility and infrastructure.

Liège (196,000 inh.) is the financial capital of Wallonia and is the centre of the third biggest agglomeration in Belgium with 600,000 inhabitants. It is an open-minded city with aspirations to improve the quality of life of its residents, to develop the city and to play an important role on the global stage. The city has been changing its mentality and its approach to culture in order to become more outward facing; the HSR station Liège-Guillemins represents this ambition. There are also other inspirational civic projects planned and delivered, including the Opera House, Theatre of Liège and the Olympic Ice rink. The City of Liège is also attracting new emerging industries in various sectors including transport and distribution, the audiovisual industry, high technology and research centres, broadcasting and tourism.

The grand Liège-Guillemins railway station designed by Santiago Calatrava is a new symbol not only for the city but also for the Eurégion. The station is an impressive point of departure and arrival and is an excellent interchange to local and regional public transport. Together with the HSR station in Aachen it is the gateway for the Eurégion Meuse - Rhin and offers access to the HSR line running from Brussels to the Ruhrgebiet, Berlin and northern Europe. On the



65. The City Liège: Centre of the third largest urban agglomeration in Belgium

77. European Commission: The new Guillemins district in Liège, Belgium. (2009).

66. The City of Maastricht as a key-player in the Eurégion Meuse-Rhin Maastricht

Maastricht (121,000 inhabitants) as part of the Eurégion and only 20 minutes travel away from Liège found a new identity as well by transcending its industrial legacy of a declining ceramics and mining economy. Building on the unique characteristics it has inherited from the past it has established an international presence in the trading of fine art, healthcare, tertiary education, fashion and culture.

Maastricht gained international recognition through the Treaty of Maastricht in 1992, which led to the creation of the European Union and a single European currency. In 1976 the Dutch government needed to fill shortages in the medical profession and to revitalise a declining region at the periphery. Today the University of 16,000 students is



ranked by Times Higher Education to be within the top 100-worldwide universities. Just under 50% are foreign students, with 50% of the undergraduate and all postgraduate teaching conducted in English. Although a new university it has used redundant spaces in the medieval core of the city, which has enhanced its attractiveness and brought vitality to the whole metropolis.



regional level there are ambitions to improve access by public transport from the various city centres to the two HSR stations.

To accommodate HSTs in Liège all the railway tracks have been modernised to allow arrivals and departures in the midst of the town centre. To incorporate HSTs within the city the local government developed an Area Development Plan in 2002. The plan captured the regeneration potential for the Guillemin district and reconnected the station back with the centre. The main objectives for this urban project were to improve public spaces, expand the mobility network and deliver new housing and commercial development. To maximise the regeneration and to optimise the regional transport network an 11km tramline with 21 stations is planned and will connect city activities, as well as existing and new communities.



67. The station has been integrated into the city centre through spatial development, the regional tram network, and excellent connections to the adjacent motorway.

#### **Initiate cross-boundary collaboration and communication**

The Eurorégion Meuse - Rhin program is promoting regional economic and environmental opportunities, and developing policies and strategies that can be implemented across geographical and political boundaries.

#### **Plan the station as a civic asset for the city**

Liège-Guillemins Station is an iconic civic asset for the city, but it is predominantly a transport interchange with limited additional uses, including smaller commercial and retail uses, restaurants and the station square. The urban plan will stimulate the development of mixed-use activities including commercial residential and retail activities.

#### **Recognising the power of icons is only one component of successful regeneration**

To maximise the transformative effect of an iconic HST station it should also be accompanied by social and physical regeneration. It is important to rationalise urban transformation by defining holistic spatial objectives in an early stage in the planning process.

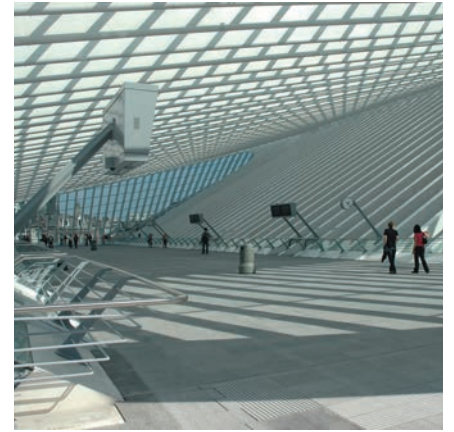


### Integrate and combine all modes of transport

An integrated transport solution has been developed around the station including parking, kiss and ride facilities, bus stops and cycle and pedestrian connections. Permeability is an important feature; access is maintained at all hours and the station is open 24/7. To ensure wider city development there is a new tramline planned with interchanges along the esplanade and station square.

### Reinforce continuity and commitment as key drivers of change

The initial planning process for Guillemin station and its surrounding areas started in the 1990s. For almost three decades the local and central government and stakeholders have been actively involved in the planning process. Leadership and long-term commitment played an important role in a successful planning process. Willy Demeyer has been the mayor of Liège since 1999.



68. The spacious rail crossing permits better orientation

*'An integrated transport solution was developed around the station to ensure wider city development'*

Elizabeth Hunter, Leeds City Council



69. A new public destination for the region

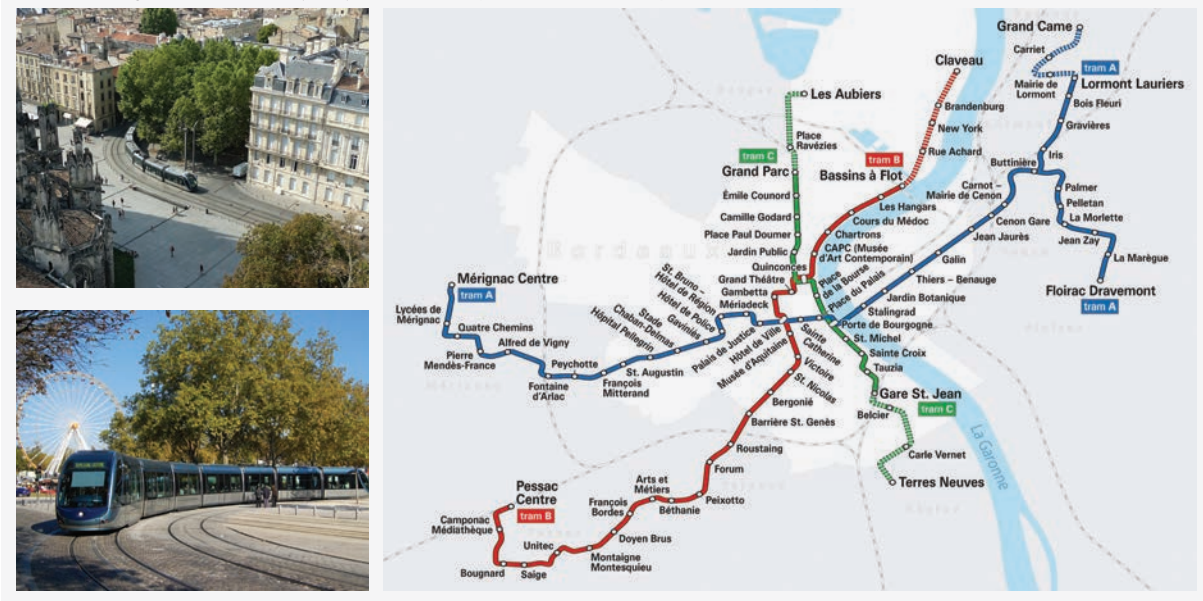


70. Plan the station as a civic asset for the city

#### 4.6 Bordeaux Euratlantique - Communication as an Initiator and Driver for Change

Bordeaux is a proud historic trading centre, but it is also a city on the periphery of France, and has recently been redefining itself in order to become an integral part of the network of European city regions. Over the last 20 years Bordeaux has been revitalised and has given new identity to its fine historic centre through the construction of 47 Km of tram network and associated public realm developments. In 2017 the TGV from Paris, currently running on classic rail for the last 100 km, will open permitting super high-speed train services to Paris in just 2 hours. A second phase is planned so that the HSR line is extended to Toulouse (1 hr journey by 2024) and Bilbao (1hr 45 min journey by 2032). The first phase of the new tram system has given confidence in the role that

71. Local and regional tram network (47km) and associated public realm, as a catalyst for urban developments



transport investment can have in stimulating the economy and improving the quality of the environment <sup>78</sup>.

The Greater Bordeaux region (CUB) is growing rapidly with a labour market of 1.1 million. Employment is shifting with the town supplanting its image of a

The Financial Leverage of Bordeaux-Euratlantique

- €650 million developer's budget
- €550 million commercial revenue
- €100 million of public investment (35% State, 35% CUB, 20% City of Bordeaux, 7% City of Bègles, and 3% City of Floirac)
- €5 billion in public and private investments

*'Places of connection are places of change and accelerators of transformation involving a multiplicity of actors'*

Francois Noisette, Bordeaux Regional Authority

sleeping beauty offering good food by the sea, to an economy based on aerospace, small high-tech businesses and a growing University sector. The second phase of the tram development is planned to coincide with the arrival of HSR services in 2017, and will connect the centre to the economically thriving but sprawling low-density housing and business parks. Bordeaux Euratlantique, which was established as a public development agency in 2010, consists of the station redevelopment site as well as the surrounding markets and waterfront. Its focus is also on the development of 50,000 homes associated with the expansion of the tram network of which 16,000 units will be within the Euratlantique development zone <sup>79</sup>.

78. Bordeaux Atlantique. A Metropolitan and European Project. (2013).

79. LaCub. 50,000 Logements autour des axes de transports collectifs. (2011).



Bordeaux Euratlantique aims to attract and redistribute the added economic value gained from HSR connectivity. This requires not only physical connections (local and regional infrastructure) but also “human connections” (social, political and organisational networks). It aims to become the showcase for the transformation of the wider metropolitan region. The project has been in gestation since 2005 with a district project steering committee between local



## 72. Bordeaux-Euratlantique

The new HSR will be completed to Bordeaux by 2018. It is, however, already served by HSTs via the LGV-Atlantique: France's second high-speed line, which opened in 1989 between Paris and Le Mans/Tours.

With the opening of the new high-speed infrastructure a renovation has been required to the existing station, with a new extension, a second station, accessible multi-modal interchanges, and 2000 m2 of new retail . The station is seen as being at the heart of the “Bordeaux Atlantique” project. Features of the development include 400,000 m2 of new office space, 16,000 new housing units, an estimated 20-25,000 jobs, and a network of parks along the river. Furthermore, Bordeaux has aimed to learn from, and adapt, the positive lessons of Lille. Building on Lille's proven success, “Bordeaux Atlantique” has used Lille as an example to convince investors.

government and the railways. In 2008 the Bordeaux Euratlantique design seminar was held between, politicians, entrepreneurs, academics, potential inward investors, as well as cultural and sports leaders. In 2010 the Euratlantique Consortium was formed comprising local and national companies as well as the railways. From 2010 to 2013 there has been a continuous process of developing the metropolitan design strategy through a process of collaborative working between all the parties. The next step for the development company is to look outward in order to start communicating with the metropolitan region and to ensure Euratlantique is “perceived and experienced as a project, which aims to be of service to all, and accepted by all those involved”.

### Start early and include all interests

The process of agreement between all interested parties was begun 10 years before the arrival of HSR (2017). It has been a process of building trust between public, private and civil society. Leaders from the national government to the smallest village scale have been actively engaged.

**The City acts as the initiator, inducing active engagement of the community**  
The Bordeaux Public Development Agency has put in place a consultative charter consisting of public meetings, “dialogues”, urban walks, training for residents and a “project house”. This ensures strong local support.



73. Bordeaux: 2012: a year to celebrate collaboration



**Ensure communication is clear and factual, so that outcomes can be assessed and adapted at each stage of the development**

Use the expectation of HSR connectivity as a catalyst to develop citywide transport initiatives and the station development as a flagship for city-region regeneration. The Bordeaux Euratlantique is not a concentric area around the station but a development zone along local transport routes where the opportunities for development have been identified as greatest and this is where high profile pilot projects have been located.

*'Bordeaux Euratlantique,, a vehicle for the transformation of its territory, has the culture of change in its DNA. Next to the big scale infrastructural project, change is undertaken step by step'*

André Delpont, Bordeaux Regional Authority

**Start with dialogue to build trust and collaboration**

The Saint-Jean station enlargement project at Belcier has a two year period for the public enquiry and the release of land, and two years for construction. It is planned to be ready for 2017. The project is being undertaken by Gares and Connexions (a subsidiary of SNCF) in partnership with the State, Regional government, Bordeaux CUB, the City of Bordeaux, RFF (French Railroads) and Bordeaux Euratlantique. The parties have been in dialogue since 2005.

**Concentrate on both large-scale, long-term projects, and short-term, incremental projects**

Bordeaux Euratlantique is a 15 year programme which includes European, national and local projects. Some of these are new build while others involve reuse or refurbishment. They are long-term programmes such as the ONI programme spread over the life of the Development agency, or adaptation projects aimed at stimulating transformational change.



74. The HSR line from Paris crossing the river Garonne into the to be refurbished central station, linking the historic centre (left) and new developments (right)

#### 4.7 Lille Euralille - Responding to unpredictable change

Lille, a city of 227,000, is part of a larger metropolitan region with a population of 1.6 million. The conurbation, crossing national boundaries, is made up of 85 municipalities, 50% with a population of less than 5,000, and four roughly equal sized cities of Lille, Roubaix, Tourcoing and Villeneuve D'Ascq. In the 1970s Lille was faced with multiple challenges including regenerating a declining textile and coal mining economy with high unemployment, addressing great social and spatial disparities and improving a damaged environment. Although it is located at the heart of Europe it also was overshadowed by the dominance of the Paris city-region to the south.

The story of Lille's renaissance begins with France's HSR development programme initiated in 1964 with SNCF's visit to see the Shinkansen in Japan. The outcome was France's commitment to major rail infrastructure investment and, later on, a political desire for devolution to the regions.



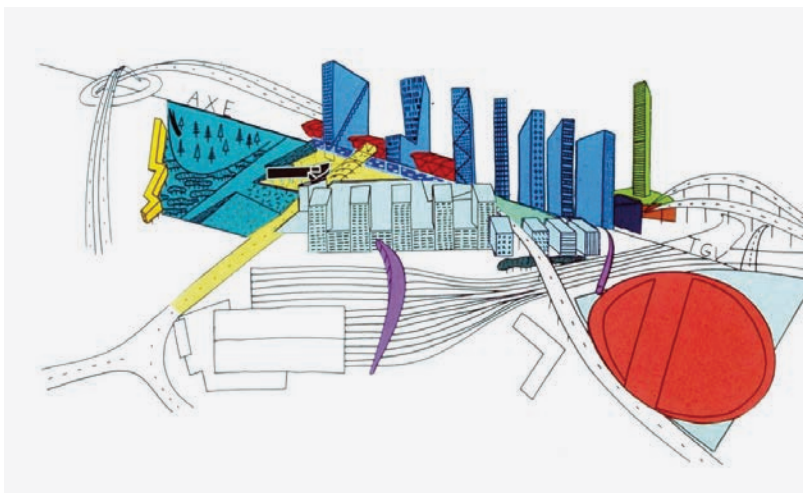
75. Lille Euralille is strategically positioned

*'The City is wondering if the two stations, after further densification, are big enough to accommodate a growth in transport'*

Thierry Baert, Lille métropole

In 1985 a metropolitan-wide economic development agency was formed under the inspired leadership of the former Prime Minister, Pierre Mauroy, then Mayor of Lille, who lobbied hard for a TGV line to pass through the city with its own station. Lille, historically socialist, with its declining economy, suffered from an increasingly fractured community and faced problems with extreme right-wing movements. Mauroy brought together the four cities in the region and negotiated the realignment of the route through the centre of Lille. The € 800 million budget was halved with two-thirds being paid by the region and a third by the City.

This early lobbying was a good example not only of committed and visionary leadership but also collaboration. The Mayor worked closely with Jean Paul Baietto, previously the chief executive of Marne la Vallee (a Parisian new town), who approached Mauroy with the vision that a French version of the Japanese "Bullet train" could be a symbol of a new Lille for the electorate, while the Channel Tunnel and its links to London and South-East England could be the catalyst for a new economic dynamism in the region. Baietto was appointed to drive the project forward, initially through an Economic Devel-



#### 76. Developing an iconic vision for the city of Lille: Vision and Strategy

In 1989 Office for Metropolitan architecture (OMA), Rem Koolhaas, were appointed as masterplanners for Euralille, and to provide through the station design the overarching idea that would become the icon for the project. OMA had three goals, to create:

- An international hub for the SNCF's vision of a European High-speed rail network;
- The focus for a regional service centre;
- An alternative to the current urban sprawl of metropolitan Lille.

opment Agency consisting of the metropolitan government and the chamber of commerce, and later with the association TGV Gare de Lille. A period of setbacks and disappointments was faced, yet the vision had been grasped and in 1988 the Euralille consortium was formed of local governments, banks, the chamber of commerce and the rail company. In 1989 the Office for Metropolitan Architecture (OMA) and Rem Koolhaas were appointed as masterplanners, to provide through the station design the overarching idea that would become the icon for the project. OMA had three goals, to create:



77. Inspired leadership as the driving force for change, Pierre Mauroy

- An international hub for the SNCF's vision of a European HSR network;
- The focus for a regional service centre;
- An alternative to the urban sprawl of metropolitan Lille.

As SEAM Euralille developed to encompass a wider area the goals became more broadly defined to:

- Attract international firms;
- Create greater accessibility within the region;
- Raise urban quality;
- Support physical and economic development;
- Foster social and territorial cohesion.

The regeneration strategy was developed in parallel to the existing public transport system of metro and tram in order to create a connected continuous

78. Lille metro and tram local and regional network



network across a polycentric city region; to intensify development around transport hubs; to create green enjoyable public places and to focus on cultural regeneration through events such as becoming the 2004 European Capital of Culture and the reuse of redundant industrial buildings for cultural uses.

The first phase of the project comprised a mixed-use development of 800,000m<sup>2</sup> that included the international station, a congress centre and retail mall (m2) with associated housing and offices at its centre, which was completed shortly after the opening of the HSR station in 1994. The retail area acted as a link between Euralille TGV, the existing Lille-Flandres station with TGV services to Paris and the surrounding region, and the historic town centre



beyond. Today the key elements of the 110-hectare Euralille development are complete.

However, a number of the original ambitions such as attracting International firms and reducing commuting to Paris have not happened. With the catalyst of HSR, Lille has instead become a tourist and cultural centre with a rejuvenated historic quarter, while the tertiary education sector has grown in so doing attracting international and French students from other regions. The logistics sector has increased and diversified employment. Above all the identity, prosperity and confidence of the Lille metropolitan region has been improved, and it is recognising its new position in Europe as an important nexus looking west to London, north to the conurbations of Belgium and the Netherlands, and east toward the Ruhr.

#### **Ensure strong leadership with a long term commitment and shared vision**

Pierre Mauroy (President of the Lille Metropolitan District 1989 – 2008) was a politician who came back to his city after being Prime Minister of his country. He recognised the need to be close to his electorate, and to create an uplifting vision for the future of the city. He created alliances between competing communities, searched out the best administrator and designers and through the Comité Grande Lille (case) established a forum for dialogue.

#### **Be adaptable as new opportunities emerge**

The Euralille team recognised that the first phase master plan by Rem Koolhaas was the Grand Project, which set the agenda and placed Lille in the lime-light. With the first buildings and the HSR connection to Brussels completed by 1996, the Euralille team concentrated on more incremental projects. Some of these were physical such as the Saint-Maurice district: a high density pilot project close to the centre aimed at setting a benchmark for the quality and character expected in central Lille. Other projects were events such as the bid for the 2004 Olympics.

#### **Recognise the value of public space and the power of place**

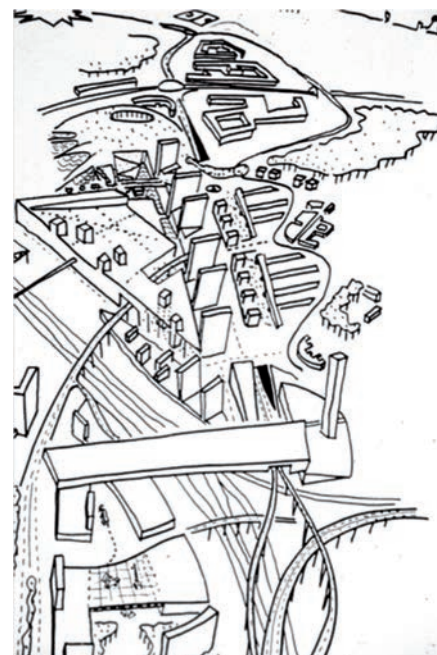
Considerable effort has been made to develop an open public space between the two stations, to create a positive public realm and ease the interchange between Lille Europe and Lille-Flandres. Public space around the station is enhanced by works of art, water and trees, and access is provided to shops and catering facilities within the centre.

#### **Allow for the continuity of flow within and between functions**

The masterplan also included re-organisation of the infrastructure and transportation system. The regional railway system in the Nord-Pas-de-Calais region was upgraded, as emphasis was placed on achieving a seamless interchange with Lille, the dominant regional hub<sup>80</sup>. Both stations can be reached by bus and tram, meaning that these stations have been well integrated with existing surface transport infrastructure, increasing accessibility for large proportions of the population<sup>81</sup>.

#### **Allow places time to mature and intensify**

Plans for the next decade are focused on intensifying existing uses, and linking Euralille back into the existing urban fabric. Initial expectations were for major international firms to be attracted and new industries to emerge. However, the reduced journey time to Paris has increased commuting, and the higher value service sector has taken time to develop.



79. Rem Koolhaas' first sketches: "Using 'modernist' architectural forms to bring back complexity in the urban development", Thierry Baert, Lille



80. Recognise the value of public realm



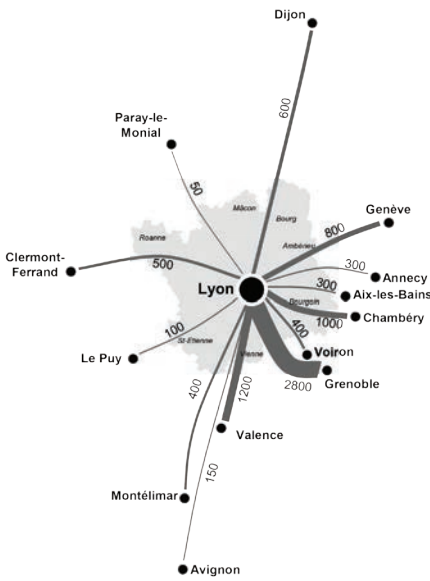
81. Continuity of flow, Gare de Lille Europe

80. RTP. Transport infrastructure investment: Capturing the wider benefits of investment in transport infrastructure. (2014).

81. International Union of Railways. High-speed rail as a tool for regional development: In-depth Study. (2011).

#### 4.8 Lyon - Building on a process of Transformation

The first HSR/HST line in France was built between Paris and Lyon, connecting the two biggest city regions in the country. Lyon Part-Dieu is the main HST station and currently connects to Paris and towards the south of France, Germany, Switzerland, Italy and Spain. It is remarkable that Lyon Part-Dieu has an airport code as well; LYD, thus acting as an airport terminal directly linked to Paris CDG Airport.



82. Lyon and Metropole GrandLyon public transport links into the region, feeding into the HSR network



83. Continuous change: The next generation of developments at Lyon-Part-Dieu

There are similarities between Lyon-Part-Dieu and Utrecht Central Station (4.9). Both stations were originally planned along the edge of the existing city and as part of a larger scale development. Initially, the development of the Part-Dieu business district started in 1970 at the West side of the station and over-time it has been expanded towards the historical city centre.

The station is nowadays incorporated within the city centre: The concourse under the platform gives access to the platforms as well as forming a link between both sides of the station. These two uses conflict since the concourse

*‘Although it is hard to isolate the impact of HSR, it seems as though it has had a positive economic impact in Lyon’*

Tanya Bhattacharyya, HS2 Ltd

has already reached its maximum passenger capacity during peak hours. The Lyon-Part-Dieu station today exceeds almost daily its maximum capacity and is having to be redeveloped in order to cope with increasing passenger numbers and France’s rapidly growing HSR network.

When the original station was built the expectation was that passenger usage would reach 35,000 passengers per day in 1983, expanding to 80,000 passengers per day by 2001. The station was redeveloped in 2001 and currently it is handling 140,000 passengers per day. Problems have arisen because there are too few escalators and passenger inconvenience is caused by the need to carry luggage and bicycles up and down stairs to access the platforms. To deal with future capacity growth the station will need to be refurbished again.

Three alternative studies are being undertaken to explore solutions to dealing with the massive growth in passenger numbers:

1. A tunnel link at the northern part of the city, linking an additional TGV line to the station, thereby creating more rail capacity;



84. Part-Dieu station concourse will be renewed



2. Building an underground station, because at present above ground there is no more space available to expand the current station;
3. Increasing use of the airport HST station Lyon Saint-Exupéry in order to release capacity at Part-Dieu.

The intention right from the start was to create a second modern business centre around the Lyon-Part-Dieu station. For the future expansion of the station the city will not permit the use of additional land. It is instead promoting the development of a compact urban station, which allows and facilitates development opportunities adjacent to the super-connected station.



85. Lyon Part-Dieu, from second city centre to main Metropole and regional hub

The vision developed, “Re-inventing La Part-Dieu”, involves restructuring the existing business and commercial buildings, refurbishing the public realm and intensifying the station district with commercial and residential programmes. The imperative is to provide an economic base upon which the new city centre can flourish. The number of different players involved in the Part-Dieu project is a major constraint, but it has also multiplied energy and innovation<sup>82</sup>. The Plan Guide was validated in 2011 and is the framework for further development. Since many stakeholders and community groups were involved the present realisation has attracted great support.

Not only the railway station but also the city is reconfiguring its transport landscape, focusing on car, tram and bus, which are currently having a negative impact on the quality of the public realm. Transport changes across all the modes need to be carefully integrated in the urban context and pedestrian flows will be prioritised.

Not all the transport modes are fully integrated in the urban context when compared with Utrecht Central station. The public transport systems spread across various locations around the station generate a lively use of the public realm. Plans are developed to guide future regeneration of the Part-Dieu Commercial and Business district, benefitting from the fantastic international, national and regional connectivity of the area. The intention is to create a mixed-use area and include and expand the housing and cultural activities.

82. Grand Lyon. Part-Dieu Notebook 1: Mission Part-Dieu. (2011).



86. A new public destination for the region



# GRANDLYON

communauté urbaine

83. The Greater Lyon / GrandLyon community (Public body established for cooperation between local authorities representing 59 civil parish. Grand Lyon. The Greater Lyon Business Website. (2014).

*'The Land value is increased through investment in local and regional connectivity'*

Kirsty Austin,  
Department for Transport

For the transformation of Part-Dieu the city of Lyon formed a development company<sup>83</sup>, which is responsible for the implementation of the masterplan and creating spatial and economical opportunities. There is strong collaboration between all the stakeholders, and this includes the organisations responsible for local, regional and national transport.

GrandLyon takes an important role in the regeneration process and acts as the master developer. It not only gives priority to the short-term objectives but also ensures that long-term urban change will be planned correctly and delivered. These ambitions are reflected in the commitment and enthusiasm behind the Part-Dieu development plans and branding strategies.



87. Proposed Part-Dieu regeneration area. A symbol of the success of the city since the arrival of the TGV

### **Aim for active collaboration with clear roles and specific responsibilities**

In Lyon Part-Dieu a new local mission was created, GrandLyon - Mission Part-Dieu, which involved many stakeholders and community representatives. In short, the first step was to understand each other's constraints and ambitions, the second was to establish a shared vision, and the third was to define each role to deliver. By doing this from an early stage, a wide body of support is created throughout the lengthy process of realisation. The metropole (so not the City) GrandLyon has a leading role as Master developer.

### **Bring planning, design and delivery together by establishing a transparent, flexible and paced decision-making process**

Since the process of further planning and delivery will take a long time, the decision-making process should enable adaptation of both physical aspects of the plan (e.g. changes in demands, constraints) and intangible aspects (e.g. political changes, socio-economic changes). In Lyon the GrandLyon is the Master-developer and is probably the only party that is able to deal with long-term policies and projects.

### **In high-intensity areas build on the existing footprint to maximise high-value development land**

Intensifying existing urban areas is complex in the making but rewarding in the result, since it uses the existing assets, the connectivity and knowledge of a place. By 'piling up' investments in a single place it can form a lever to enhance and accelerate developments.



88. A growing tramnetwork feeds and follows urban regeneration and developments



89. Bicycle rental as a service for travellers is included in most French city developments

#### 4.9 Utrecht - Managing Continuous Urban Change

The station in the city of Utrecht is a classic example of a Dutch railway development. The original station was built in 1843 and, after a fire, rebuilt in 1938, as a station on the edge of the city centre. The complementary modes of transport were situated in front of the station (city centre side), which led in the 1960s to traffic congestion. In 1973 a new station was opened, connecting the inner city and neighbourhoods at the rear of the tracks and integrating the station with a huge new shopping mall.

All pedestrian flows were situated within the station concourse and separated from the street; this allowed traffic, including buses and trams, free passage at the ground level.

Shortly after the station was finished there were some key challenges that need to be addressed:

- The combination of a railway station and a shopping mall. Attracting high numbers of travellers and shoppers led to problems in managing flow through the station;
- The increased capacity and separation of public transport at the ground level led to dangerous conflicts, especially for pedestrians and cyclists. It also led to a very unattractive ground level public realm;
- The nationally important transport railway corridor, which ran through Utrecht Central Station, disconnected both sides of the city and was disrupting transport from and towards the station.

It took the City of Utrecht two decades to develop and agree the right approach to address these challenges. Currently the city is in the process of implementing its overall strategic masterplan using a step-by-step approach:

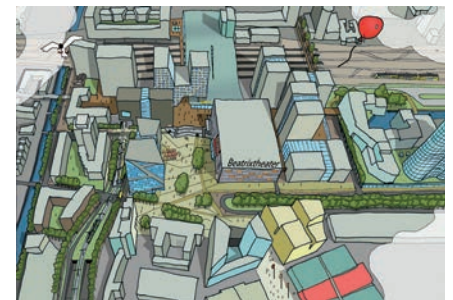
1. Separating the station from the shopping mall, and developing the former into a stand-alone station building (in contrast with the existing integrated station);
2. Re-arranging all modes of transport and developing a more intelligent transport system. This included the introduction of 'Randstad ring rail', removing the bus and tram depot and transforming bus and tram termini into through lines, and a new rail control system to increase rail capacity;
3. Providing sufficient bicycle storage effectively integrated in and around the station (27,000 public transport related bicycles);
4. Improving the quality and legibility of the public realm;
5. Optimising way finding for all modes of transport;
6. Delivering a dedicated public transport hub with a maximum level of convenience and comfort for travellers.

Utrecht Central Station as the most important rail interchange in the Netherlands has been designated as a national 'Key Project' (4.2). The national government and local authorities agreed on the necessity of an integrated Masterplan for urban development. This addressed not only the needs for the new station and the planned integration of HSR, but also the integration of the station into the urban context, including a shopping mall, an Exhibition Centre and extra capacity for traffic to and from the station.

The masterplan to regenerate Utrecht Central Station was not a conventional 'blue-print' for future development, but rather a framework addressing values and principles shared by all the stakeholders and the communities. To capture these values and principles a referendum was organised by the local council in



90. Station District Masterplan as 'Open plan' defining public realm and development sites



91. Initial vision turning 'rear access into 'second front access'



92. Realised new station entrance with new Townhall as new programme and bike storage underneath station entrance





93. New Station (under construction) linking both sides of the city centre and including HST connection on 'classic' rail (and HSR reservation)

2002. The aim was to stimulate and allow continuous urban change by framing the network of infrastructure and steering development through straightforward guidelines. This approach has enabled the development to survive the current economic crisis.

Stakeholder participation and support has made it possible to implement major changes in the existing urban context; optimising and expanding the transport interchange and addressing the local needs of the stakeholders. The project is growing in success through continuous small-scale developments. The station does effectively integrate all modes of transport and accessibility for the passengers is optimised: this includes the implementation of an inclusive signage scheme. The proposed station layout was not affected by the decision to cancel the implementation of the HSR connecting Amsterdam to Germany and it does allow HSTs on the 'classic rail' network with the construction of a short-cut ('Utrecht boog') allowing a continuity of flow (Schiphol - Utrecht is 25 minutes).

*'Our core business is managing the spirit of change'*

Albert Hutschemaekers, Utrecht City

To deal with the complex logistical challenges of handling 150 million passengers per year the station design gives priority to the passenger. An optimised flow of passengers will have a positive impact on maximising the capacity and will reduce the disruption on the rail network.

In the plan the station concourse was extended to connect two major urban programmes on both sides of the station: the National Exhibition and Conference Centre, and a huge shopping mall as part of the city centre. The station hall provides extra space for this flow, next to two separate rail crossings beside the station at both ends of the platforms.



Because the tracks and the station are embedded in an existing urban context, extra space for growth of the rail yards was impossible. Increasing capacity on the existing rail lines was achieved by redesigning the rail yards and moving the buffer space for waiting trains elsewhere, and by 'adding intelligence' to the system as part of the development of Randstad ring rail (4.3), including an improvement of the safety system and new ways of operating the rail. Finally, because the development of the station is only part of a bigger vision, both the integration of other means of transport and the accessibility of the station could be improved and fully integrated into the development of the wider area. Through this process of development a Quality Team (with state and local members) continuously checks whether the incremental steps are supporting the bigger vision and are generating social and economic improvements.

#### Be honest about the position of your city

It is important to understand the ambitions and, in particular, the strengths of your city area and to be realistic about them. Do not always consider yourself in competition with other regional cities. A successful urban region will have cities working in collaboration to develop a coherent transport system that will allow these ambitions to grow. Utrecht has developed a clear idea about its position in the Randstad, particularly in relation to Amsterdam – where they have chosen to be complementary rather than competitive in attracting different kinds of business.



94. New East Square: Public space connecting the station with the city centre



95. New West Square; Le Grand Départ 2015 of the Tour de France as a supporting event

*'The developing success of Utrecht reflects the importance of understanding the ambitions of your area and being honest about it'*

David Harding, Network Rail

#### Think of HSR as the catalyst for revitalising the entire city-region

The promise of HSR in Utrecht was the initial driver for the redevelopment of the station. Although the promised HSR line to Germany has not been developed, national connections have nonetheless been improved and have become a key factor in the development of improved housing, education and new businesses.

#### Retaining major assets is helpful

Dutch Rail still retains many of their assets, particularly land, so their borrowings needs are limited. Their main source of revenue is from hub rail developments, such as in Utrecht, where retail can play a crucial role in making a station economically successful.

#### Develop an overall strategic framework, which is adaptable to respond to incremental change

In this 'Plan' three strategic maps were developed (although the word map was not interpreted in the conventional meaning of the word);

1. The Physical Framework, clearly defining the principle public and private space, was partly based on essential public programs such as infrastructure.
2. A Programme Map which gave the types of activities and their zoning, rather than floor space etc;
3. A Map with City Sphere, showing what type of public space was desired.



96. Call of the Mall art project (2013) as a way to involve the communities, initiated by one of the stakeholders

#### 4.10 Antwerp - From Terminus to Throughway, supporting a vision

## HAPPY BIRTHDAY DEAR ACADEMIE

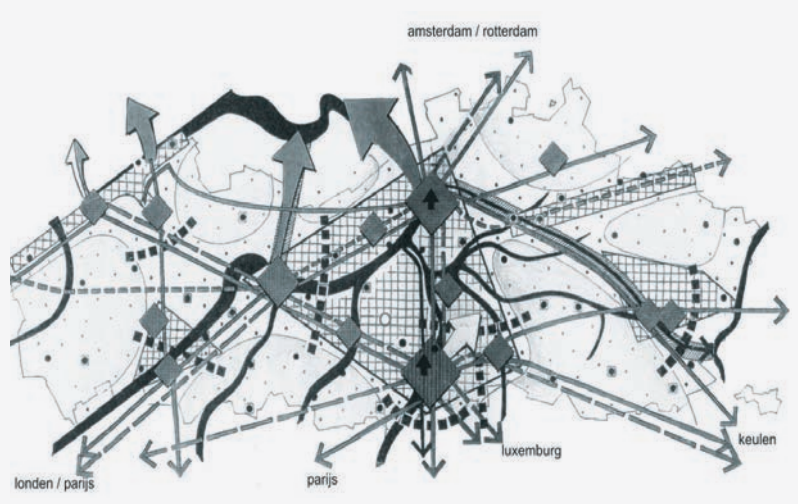
97. 50 Years of fashion at Antwerp's Royal Academy

The city of Antwerp occupies an important economic position within Belgium; apart from its value as a seaport, it is also a centre for the chemical industry, diamond trade, and the creative industries such as fashion<sup>84</sup>. The port of Antwerp is the seventh largest in the world and the second largest in Europe. Over the years the city has taken an active role in developing a coherent economic and spatial strategy. The initial Global Spatial Structure Plan (GSA) and the concept 'City on the Stream' were developed in the 1980s. A decade later the city of Antwerp started dealing more actively with urban issues and attracted European and national funding. It was able to develop and deliver short and long-term spatial projects and to establish a local department for spatial planning as well as a design and development Quality Team chaired by the City Architect.

#### 98. "Flemish Diamond"

Over 5 million people live in this conurbation, with a population density of more than 800 per square kilometre.

Antwerp has a population of approximately half a million inhabitants; the city is positioned within the "Flemish Diamond": an agglomeration of Brussels, Leuven, Ghent and Antwerp. The conurbation of over 5 million residents is one of the larger and densest European metropolitan regions, with 800 inhabitants per square kilometre.



99. Antwerp Central Station celebrating the 19th century Belgian railway development (1895)

The spatial structure plan also acknowledged the importance of public transport and incorporated the theme "Antwerp a Railway City" in collaboration with the Belgian Railways NMBS. The ambition was not only to integrate the HSL within the city centre but also to expand the tramline and complete the cycle route network. In addition, it created an opportunity to continue the urban renewal around the railway stations as well as providing development opportunities and transport facilities<sup>85</sup>.

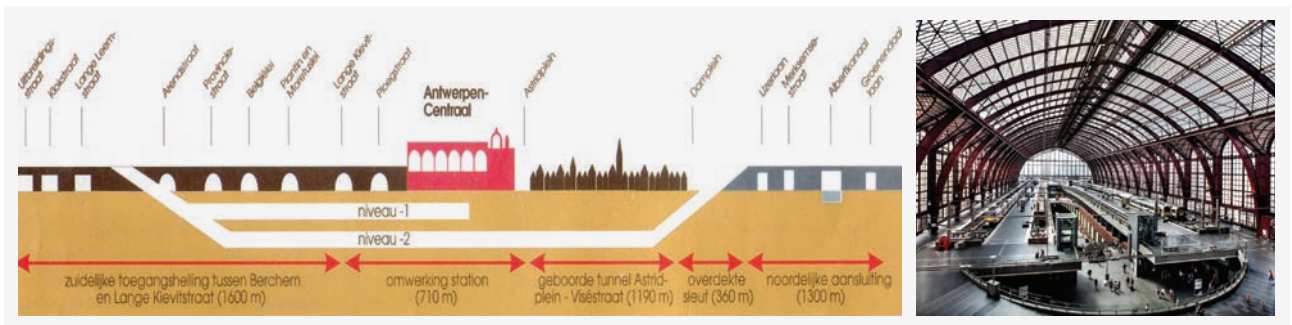
After the Channel Tunnel was commissioned in the 1980s there existed an initial idea to expand the HST network into Belgium. In 1992 the government decided to construct three radial lines from Brussels: leading south to Paris, heading east to Germany, and heading north to the Netherlands. The City of Antwerp is positioned along the northern line, close to the Dutch border<sup>86</sup>. Initially Antwerp was not convinced that the high-speed network would bring benefits to the city.

Antwerp Central is positioned within the city centre and was built in 1895; the listed station cathedral includes a 75 metre spectacular high dome. Currently 40,000-60,000 passengers use Antwerp Central each day and 800 trains arrive and depart, including 128 international trains.

84. Stad Antwerpen. Antwerp Central Station Area and Park Spoor Noord. (2014).

85. Stad Antwerpen. Urban development in Antwerp: Designing Antwerp. (2012).

86. EN, HSL, 300kph on the Belgian rail, Vol 2. The history of a Challenge. (Agora, Uitgeverijscen-trum, 2009).



100. Railway tunnel from Antwerpen-Berchem to the Damplein (to Netherlands) adding an extra platform layer on top of the HSR platform

Due to the need to link through to the Netherlands, the station needed to be transformed from a terminus into a throughway railway station. To deal effectively with the urban integration a 3.8 km tunnel was built between Antwerp - Berchem and Dam square (figure: cross-section tunnel). The new tunnel to link HSR (north) to the Netherlands needed to be constructed very deep under the existing main building, thereby leaving an extra intermediate level for new traditional platforms, giving a total of 14. This opened the possibility of expanding the station and its network to integrate the HST (south) to Brussels on classic rail.

The new central concourse provides natural daylight and is an extraordinary place for arrivals and departures. The station was awarded the European Union Prize for cultural heritage, the Europe Nostra Award 2011. The judges noted that "The monumental architecture of the station has been meticulously restored and integrated within a new structure creating a dynamic blend of old and new, of stone, and brick and concrete"



101. Antwerp Central station embedded in city neighbourhoods, the zoo and great public spaces

*'Open Access through the station concourse meant it was not a barrier to communities on either side and helped create a greater sense that the station was an extension of the city'*

Elizabeth Hunter, Leeds City Council

Antwerp Central is an open-station with no barriers and many entrances along three sides; it is integrated seamlessly within the urban context. Of all the people visiting the station 31% were not taking a train and of this number 8% used it as a thoroughfare. To respond positively to the growing passengers, and to accommodate regeneration opportunities, the existing Koningin Astrid square entrance has been upgraded and the second South entrance has opened to facilitate the developments in the Kievit wijk.

**Integrate the station seamlessly within the urban form and function of the surrounding neighbourhood**

Antwerp Station is not only a transport interchange but with its various urban activities inside it acts as a node in the wider urban neighbourhood network of retail, shopping, commercial, tourist and temporary activities. The new station literally and figuratively has opened up this part of the city centre as meeting place, community space and place of connection.



102. The new Southern entrance, Antwerp Central Station



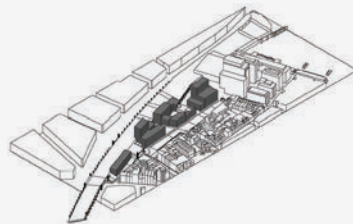
### Establish a Quality Team to promote high-quality social, economic and spatial projects

Since 1999 the city of Antwerp appointed a city lead advisor who is responsible for the quality of the architecture and urbanism in the City. This 'City Architect' and his team are responsible for the selection of the talented designers for the urban projects and advise city departments including the Mayor. A re-organisation has caused a U-turn and affected this quality mechanism, so that the design team has been reduced to three members. However, the team is still operational, and it aims to continue to guard the spatial quality of projects in Antwerp.

#### 103. The Kievit wijk: Mixed use development of a station quarter

A development site at a new south entrance to the station was created to provide a gateway to the HSR and open up a depressed area of the city for regeneration. The area for the development site was subject to an urban design competition won by MVRDV Architects who responded positively towards the ambition of creating an open station. Although this ambition was incorporated into the area framework guidelines and functioned as a tool for the city's Urban Quality Team, it was not realised. The developer for this first phase of the Kievitwijk rejected these guidelines in order to maximise its commercial return. The opportunity to attract international investment was an important driver for the local politicians to compromise with a poorly

implemented and uninspiring scheme. This has left the first phase of the Kievitwijk without an active public space and poor links into the existing city network. The overall dominated commercial development only attracts sufficient footfall during office hours. For the next stage of regeneration the city is considering rebalancing their development strategies and allowing for more mixed-use activities including residential development.



### Develop an overall strategy, which can be delivered by incremental changes

The regeneration of Antwerp Central Station and its surrounding area was perceived by the public as one project; however, in reality the regeneration was divided into numerous smaller urban projects. For example, a new library, Carnot Street and the AG Vespa housing programme were catalysts for turning a 'no-go' area into a place that is now used by residents and office workers. At the same time, the city decided to create Park Spoor Noord: a new community park located between the Antwerp Station and the Harbour.



104. Community participation 'Open Spoor Tunnel'

*'I was attracted to the idea of 'Open Spoor Tunnel' – taking residents on a guided tour of the tunnels before the first trains arrive'*

Alun Hughes, Department for Transport

### Participate early with stakeholders in order to define shared project objectives

At an early stage of the station regeneration process the city and NMBS made it a priority to participate closely with the surrounding communities. When the tunnel was finished after years of noise and disruption the residents of the city were invited to walk through the tunnel before any trains or opening ceremonies. The opportunity was widely welcomed and 70,000 people turned up to see the new infrastructure.

#### 4.11 Rotterdam - The Station as an Icon for Transformation

During the Second World War, the city centre of Rotterdam was almost totally destroyed. Instead of rebuilding following the historical pattern the local government decided to develop a framework for a modern city centre. This ambitious urban project included the Groothandels gebouw, a new trade centre concept, and the Lijnbaan as an ultra-modern shopping mall.

This redevelopment not only improved the road network but, in addition, it shifted the city centre to the west by developing a former side station into the new Central Station at Rotterdam. The ambitions for the new station and its surrounding area were captured through a long-term spatial and economical vision which had the aim to develop a well-connected city centre gateway and mixed-use business district.



105. Rebuild a new city centre for Rotterdam (1950)

*‘Rotterdam station has excellent connectivity for all modes to both sides of the city, to the wider region, and all delivered elegantly. This has stimulated a quality of destination attractive to high-level investors’*

Keith Mitchell, Peter Brett Associates

In line with the original 19th century railway being built on a safe height above potential floods, Rotterdam Central was built as a raised “viaduct”. This provided an exceptional opportunity both to integrate the railway infrastructure and to connect the neighbourhoods on each side of the station.

In the 1990s the Central Station was appointed as one of the National Key-Projects to deliver transport capacity growth and incorporate HSR. It resulted in a new station building and rail layout. It is currently one of the most important Randstad interchanges, with 110,000 daily passengers; the expectation is that this will increase to approximately 323,000 by 2025. The front facing the city centre is regarded as a City Room that can be used for civic events and not just travel purposes (for instance, the Rotterdam Philharmonic organises free concerts in this City Room).

By entering the spacious transparent concourse the passengers gain an exceptional travel experience; there is a direct relation between all transport modes including metro, tram, bus and trains. The wide passage beneath the tracks is a natural continuation of the concourse. A parking garage for 750 cars and a bicycle shed for 5,200 bicycles are positioned under the station square.



106. Rotterdam Central Station (1984)



The station as an iconic symbol for the city



Defining the city's 'cultural axis'

#### 107. The new city gateway

The new transport interchange is larger, brighter and more efficient than the former railway station. But even more importantly it has become an international, national and local icon. The tall impressive glass and timber entrance opens up towards the heart of the city and defines the gateway with its 'cultural axis'.



108. Rotterdam Central Station as a “City Room” and here as a concert hall at the official opening of the station lifting the spirits

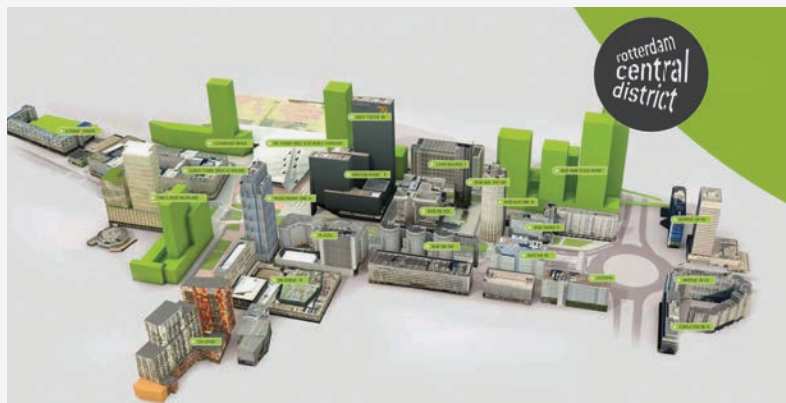
The station is well integrated with the urban network and civil society; it is not only a place for mobility but also a ‘room’ for the city. The civic asset Rotterdam Central Station functions as a space for interaction and intervention. The residents in Rotterdam have embraced the new Station and it has acquired various nicknames as expressions of their affection such as ‘the shark mouth’ and ‘the pointy bag’.

For many decades there was an active approach towards strategic planning in and around Rotterdam Central Station. The impacts of having a long planning history are noticeably visible in the city; nevertheless, the Rotterdam Central District Area formed a public and private partnership to deliver the next stage of the development.

After a failed top-down development plan it was agreed to start a process to understand better each other’s interests. These interests varied: for the State and Rail operator it was to create a logistics hub with increased capacity and integration of HSTs; for the Rotterdam Business Development Board it was to increase building opportunities in order to benefit from a centrally located and very accessible location; for the communities in surrounding neighbourhoods, they wanted a station that connected the two sides of the city in a safe and pleasant way; and for the City of Rotterdam there was a desire to support this all and to re-position Rotterdam on an international and national level.

The city aims to continue the development of high quality outdoor public spaces and attract a mix of multinationals, local businesses and metropolitan housing, as well as creating a dynamic European portal in the lively centre of Rotterdam.

109. Public-Private Partnership Rotterdam Central District (RCD)

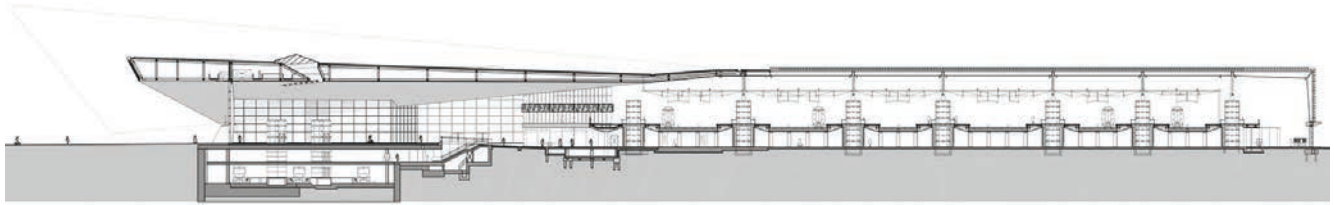


- With total investment of 3 billion euros it is in the top 3 largest developments in the Netherlands.
- Total development: 600,000 m2
- Development will provide 20,000 extra jobs in the city centre.
- In 2025, the public transport terminal will process 75 million travellers per year

**Use the station as a catalyst to raise real estate values and trigger wider regeneration**

The City of Rotterdam was actively involved over many years in the planning process of Rotterdam Central and the surrounding areas. Strong political leadership in local and central government has contributed towards a successful regeneration. The Rotterdam Central station area has, over the last two decades, been transformed from a deprived area with a high crime rate into a ground-breaking and attractive new gateway to the city centre.





110. Sectional view of Rotterdam Central Station: The refurbished station optimises the passenger experience. It uses the existing tracks.

**Integrate all modes and levels of transport**

The station is an exemplary transport interchange where local and regional transport links are seamlessly linked with national and international transport connections. Intense regional planning has contributed to the provision of optimum travel connectivity while offering direct links to the regional and city metro, tram, Randstad rail system, all of which is providing extra convenience for passengers.

**Use the transport interchange as a symbol of change**

The new station is the gateway to the city as well as to the world. Rotterdam Central Station is directly connected with the local residential communities and city centre, and at the same time has strong national and international links towards Schiphol, Brussels, Paris and London with Thalys services (HST to Paris). The iconic station derives its new international, metropolitan identity from the transparent spacious station hall. The station now offers a comparable capacity, comfort and allure, with the grand central stations in Madrid, Paris, London and Brussels and has been declared one of the world’s eleven “most spectacular train stations”<sup>87</sup> by CNN.

87. CNN Staff. 11 of the world’s most amazing train stations. (2014).

*‘There is established long-term leadership and strong governance in the City of Rotterdam’*

Jen Rickard, Sheffield City Council

**The HSR station is not only about transport**

The station can also be a desirable destination in itself and an important linking node for the city. Rotterdam Central Station was conceived as the heart of a cultural axis (‘red carpet’) through the city, providing a link between the residential area at its rear and the city centre to the front.

**Co-produce a vision between the public, private and civil interests in order to raise values and stimulate wider regeneration**

Land value increases are created by public investment in HSR and are a lever that can be used to secure long-term participation in the development of the surrounding area. In Rotterdam the public, private and community stakeholders came together to agree a vision for the area as a gateway to the city in which the mutual benefits were clearly defined.



111. Optimised passenger experience



112. The public concourse - City Room



113. Long-term development: TGV station built on new, undeveloped land, and linked by train to the city centre and region

#### 4.12 Avignon - From a National Project to a sub-regional transport node

The Avignon HSR station is a typical regional station, serving both the adjacent city and the wider region (Provence).

Originally, there was only one station planned to serve both the cities of Nimes and Avignon on the LGV Méditerranée line from Lyon to Marseille. After determining that 'local markets' were large enough to generate strong demand SNCF decided to establish separate HSR stations in both cities.

The historic character of Avignon (a World Heritage Site) and the existing railway alignment made it difficult and too costly to integrate HSR in the ancient historic city centre. Instead SNCF decided to build the station in the peninsula of Courtine, 3km south of the city. As a result, the station was not directly combined with the 'classic' rail network, although it was relatively easy to integrate the station in the local landscape. The award-winning design of the station, led by architects Jean-Marie Duthilleul and Jean-François Blassel, has clean elegant lines allowing light to flood the concourse, reflecting the sense of space and sun associated with the Provencal landscape.

Although Avignon HST opened in 2001 it took the city more than a decade to develop a direct train link, the Virgule, linking Avignon TGV and Central stations and connecting the 'classic' network. Currently, this train is only running twice an hour outside peak hours. The new line is currently used by regional trains (TER) and links local and regional stations further east towards the Provence. Before the transport link was realised the Avignon HST station was accessible only by car; this is still reflected in the current very high level of car use to access the station and the extensive parking facilities.

*'Avignon felt less about the city and much more an arrival and departure point from/ to somewhere else i.e. Paris and Provence.'*

Ken Harrison, Solihull Metropolitan Borough Council



114. The stations' architecture resembles Kew Gardens with landscaped surroundings, and it has excellent station services

The development of the LGV Méditerranée HST and HSR for Avignon was planned and developed by SNCF. The participation with the three adjoining 'Départements' and several municipalities was limited with the result that the development was directed through a 'top-down' approach.

The initial masterplan focused mostly on commercial development for the area surrounding the TGV station. Severe flooding in 2003 demonstrated that large parts of the land surrounding the station were not suitable for development. As a result, the original masterplan was not implemented or delivered. The station has retained the character of a regional transport hub and, with the exception of some small-scale businesses and retail outlets, it does not function as an economic centre.

Only recently has a new masterplan been approved, with the ambition to extend the development towards the urban edge of Avignon. This proposes a balanced programme of housing, offices and workshops. The new Virgule link has already changed the perception of the TGV station and its relationship to the city centre and its regional network.

Despite a difficult start, the station today acts as a successful 'tourist-hub' for wealthy Parisians using the station to visit their second homes in Provence, and for international tourists visiting the Festival and Palais des Papes. The

Avignon TGV station has been used by SNCF to test commercial formulas and, as a result, luxury retail and dining is available in the station to serve its affluent customers. The station is regarded as one of the best-served stations in France and offers excellent maintenance, signage, services and retail.

**Understanding the position of a station is necessary to define its characteristics and its eventual function**

The success of a station is dependent on its position and location so understanding both the physical and economic contexts is key to meeting expectations and developing a successful environment.

**A regional transport hub can be a successful characteristic of a station and helps to create a positive perception of HSR/HST**

An HSR network is not only successful when it connects main, central stations in big cities. Regional stations like Avignon are important to feed the large, city centre stations, but also they connect to a region that is a great destination in itself. Avignon is now a gateway to Provence and the Côte d'Azur, both very popular weekend destinations from the dense urban conglomerations of Paris, Ruhrgebiet, London, etc. Travel by car or air from these places has been increasingly supplanted by the TGV as a convenient, swift and environmentally sustainable way of transport.

**Collaborating on a local level is as important as collaborating between national and regional levels**

Although SNCF delivered the Avignon TGV station quickly after constructing of the railway line, the success of the station as an economic zone failed due to the lack of an interesting and viable context. If collaboration on a local level had been stimulated it could have increased the initial use and success of the station.



115. Avignon: A dedicated HSR station as a regional node on the line between Lyon and Marseille - Nice - Montpellier



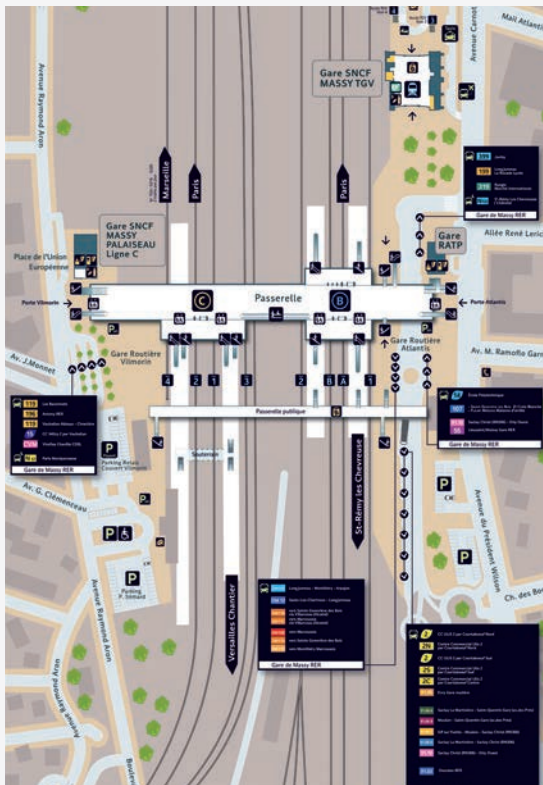
116. The station as a long-term catalyst for local and regional development on a regional-city scale (city centre is top right)



*'Massy demonstrates that the connectivity of HSR to other modes is crucial, and that HSR should be planned as part of a wider transport system - this is a vital part of its role in urban development'*

Clr Jane Urquhart, Nottingham City Council

117. Paris Gare de Massy, a node in the Paris Region



Massy station is located in the south of Paris and is a classic suburban station. It combines two stations: Gare de Massy-Palaiseau (1854) (and former Grande-Ceinture) for regional trains (RER B and C) and Gare de Massy TGV (1991). A maintenance workshop and train depot is located on site.

In 2013 the Passage Bridge was opened connecting the RER (and cargo) tracks and linking the bus and HST station. It was a joint development by the city of Massy and SNCF, creating new housing and workplaces on both sides of the station.

In 2018 a terminus is planned for the Tram Express Sud crossing Greater Paris. This line will be integrated within the existing RER platform area and directly connected with the passage bridge.

The introduction of the HST (or LGV Atlantique: la Ligne Grande Vitesse Atlantique) to Bordeaux has increased the number of passengers to 45,000 a day. This interchange station serves the southern part of Paris, and provides passengers with the opportunity to avoid the crowded city centre.

The link to CDG Airport bypassing Paris Centre Development has been slow, but is expected to start when the line to Bordeaux opens and more services begin bypassing the centre of Paris.

# 5. Applying the Lessons

This research study has searched for insights into the factors required for HSR to be successful in regenerating our cities and regions. From our tour of European experience we have frequently seen how major infrastructure investment can transform urban landscapes and their hinterlands. As we look to expand the UK's HSR network, the ITC recommends the following lessons for those aiming to capture the benefits:

## 5.1 Lessons to be learned to capture the benefits

- **Take a long-term perspective.** Building major infrastructure is a long and gradual process, and the benefits it can bring are realised over decades rather than years. In Bordeaux and Utrecht we have seen that by planning regeneration projects early these cities have reaped dividends before the arrival of the High-speed lines.
- **Use the station as a symbol of the ambitions of the city it serves.** The station complex is not only a gateway to a city but can also represent all that is great about a location. In Rotterdam the ambitious and striking station is emblematic of the vibrancy and modernity of this city of trade, while the spacious and majestic new station at Liege-Guillemins has become an internationally recognised symbol of the city.
- **Enable people to work in partnerships to share objectives.** The most successful cities at capturing the benefits of HSR have been those that have involved the entire community through partnerships and networks. With Bordeaux Euratlantique there has been a process of building trust between public, private and civil society. Leaders from the national government to the smallest village scale have been actively engaged.
- **Create greater opportunities for development and stimulate market demand.** It is vital to create the right climate for private sector investment if the full benefits from HSR investment are to be captured. At Schiphol the airport has focused on becoming a commercial node of the Randstad, with the terminals wrapped around the railway station. As a result, international businesses have located offices there, creating a vibrant new business district in the region.
- **Search out funding from multiple sources with a balance between local, national and international.** A range of funding streams can ensure that redevelopment schemes are robust enough to withstand temporary economic problems. At Bordeaux and King's Cross the involvement of range of funding partners has helped these regeneration schemes to weather the financial crisis.
- **Planning should provide certainty whilst being able to adapt.** Because of the long-term nature of major projects, it is likely that initial assumptions will have to be revised due to external changes. Building flexibility into planning schemes will help places to accommodate such change. In Lille, the masterplan provided a clear framework for development, yet a number of the original aims, such as attracting International firms and reducing commuting to Paris, have not occurred. Over time, the plans for Lille have adapted and it has instead become a tourist and cultural centre with a rejuvenated historic quarter, a growing higher education sector, and a centre for logistics.

- **Invest early to achieve greater benefits later.** This lesson is particularly important in the context of local transportation links, which will enable the benefits of HSR connectivity to be spread widely. In both Paris and the Randstad early investment in local transport links has ensured that the full value of HSR stations and interchanges has been captured.
- **Think big; act incrementally.** It is crucial to have a strategic vision for regeneration associated with HSR, but the achievement of this vision is a stepwise process. For instance, the public perceived the regeneration of Antwerp Central Station and its surrounding area as a single scheme; however, in reality the regeneration was divided into numerous smaller urban projects.

## 5.2 Principles for governance and delivery

### 1. **Build in Resilience** - Create an open system, which allows for adaptation over time

Stations such as Utrecht Central station or city regions such as Bordeaux have created an approach that is open, inclusive, looks beyond the project and recognises change as continuous and incremental. The objective, whether designing a station or establishing a strategic framework for managing the development of a metropolitan region, is to identify those elements that will be hard to change once built. It is important to champion a culture of questioning and to leave sufficient slack in the solution in order that change can later be implemented.

Richard Sennett <sup>88</sup> describes successful cities as “open systems”, continuous, unstable and evolving. They are never complete but always adapting and self-organising over time. He contrasts this “open system” with a fixed “closed system”. The latter is often the end game sought by planners and architects, with their vision of perfection, completeness and harmonious equilibrium, but this rigidity comes at a price.

88. Sennett, R. The Public Realm. (2008).

118. Ensuring long-term resilience



In assessing HS2, we should ask:

How will it add to the functioning of the UK's rail infrastructure over at least a hundred year period? Recall that this is a period only four times longer than what it has taken to conceive, design and construct.

What degree of connectivity linking to the existing rail network has been afforded now and for the future? Has sufficient sight, height and the capacity to upgrade technical systems been allowed in order to accommodate the possibility of growth in demand and changes in technology?

In assessing a City Region we should ask:

How might the city leadership and administrative structures respond to crises and opportunities? In terms of adaptation to climate change it is cities that are focused on instilling a culture of resilience.

At the Station and city neighbourhood scale we should reflect on the following:

Can the station and its surrounding area be perceived and used as one contiguous set of spaces? The station which is “open” such as Liege, Antwerp or Massy, has advantages since those not travelling can also move through and use the station as a place since a variety of non-operational activities are accommodated.

Does the station allow for semi-public access through the station so that city neighbourhoods are connected across the rail tracks? Is the design of the station conceived to allow for future expansion, change of use and new connections?



**2. Evaluate a project for its ability to create continuity** – Create flow, within and between places and organisations.

In the twenty-first century we live in a networked society supported by the high-speed technology of the Internet. Cities have shifted from being concentric, contained places to polycentric, well-connected economic agglomerations of distinctive places. Organisations are today similarly networked across boundaries and businesses <sup>89</sup>. The Victorians built their rail lines to terminate at the edge of the compact, concentric city centre. However, today our cities need a network of different modes and levels of transport that connect and can pass through places of connection. Easy connectivity should be assessed for its ability not only to connect the station to the city centre (4.7 Lille and 4.10 Antwerp) but also how it joins the station to its wider region (4.5 Liege and 4.8 Lyon).

89. See 88.

**119. Abellio - Campaign for Better Transport: Connecting the Station to the City**

In much of the discussion about High Speed Trains and their destinations the ‘last mile’ of journeys by active travel from station to final destination is often overlooked. The Campaign for Better Transport, supported by Abellio, have applied a methodology developed in the Netherlands to assess the walk from the station to the city centre under four criteria; human scale, legibility, safety and comfort each with three further characteristics (Exhibit).

The methodology identifies shortcomings in the UK experience and recommends solutions. These include making the walk more attractive so that those who visit “will stay longer, spend more money and be more likely to return if there is a welcoming route for the walker from the station to the town centre”.

Abellio, drawing on their Dutch experience have also focussed on the needs of cyclists. GOING DUTCH Cycling in the UK the Abellio way (Need link). Case studies include Chelmsford Cycle Point which provides secure storage, cycle rental, and retailing; and

Bike and Go, a service based on successful Dutch experience and now being trialled at three Northern Rail stations, with a view to developing nationwide.

	Average Score of Dutch Towns	Average Score of English Towns	Ely	Colchester	Ipswich
<b>Liveliness</b> <i>A lively scene with people on the street, attracted by a variety of uses and places to sit down and watch or be watched</i>	8.11	7.12	7.33	7.20	6.83
<b>Human Scale</b> <i>A physical setting that matches human scale and walking speed</i>	9.26	8.22	8.67	7.75	8.25
<b>Legibility</b> <i>The ease with which people can orient themselves and see the route into town</i>	8.81	8.10	8.20	8.40	7.71
<b>Safety and Comfort</b> <i>Pedestrians must have priority and the route should feel safe, protected from traffic, well maintained and overseen</i>	8.87	5.89	5.67	7.00	5.00
<b>Overall Score</b>	<b>34%</b>	<b>24%</b>	<b>25%</b>	<b>21%</b>	<b>26%</b>

**3. Instill a culture of collaboration** - Ensure continuous improvement by setting expectations based on shared aspirations

Successful cities are built on the foundation stones of an open dialogue, a diversity of ideas and the opportunity to innovate. The “Open City” relies on collaboration, working together to build long-term relationships and trust between different interests and groups (4.6 Bordeaux and 4.9 Utrecht). Lyon Part- Dieu Regeneration Company has created a forum for dialogue between all the stakeholders.

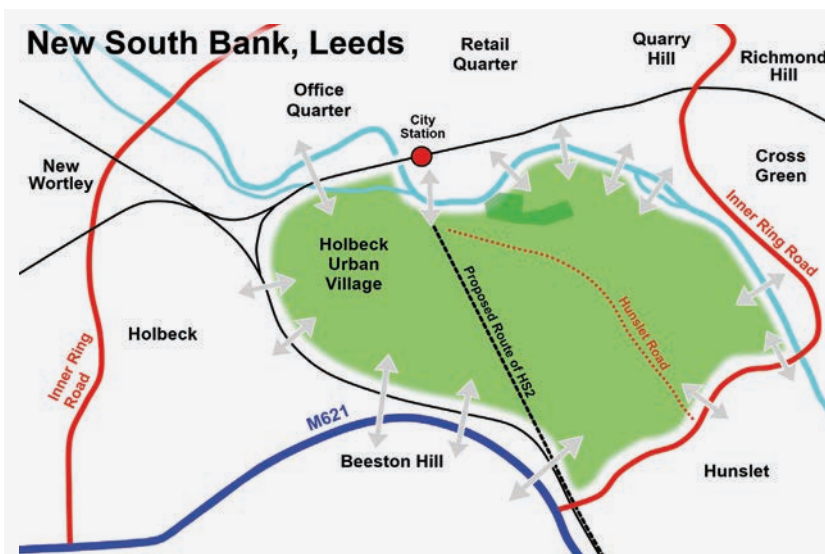
120. GrandLyon: Culture of collaboration  
 GrandLyon (Greater Lyon) is a public body established for the cooperation between local authorities who in their turn represent 59 parishes. It manages (amongst other issues) the development of small and big projects throughout the Metropole de Lyon. The development of Lyon-Confluence, Lyon Perrache station area and Part-Dieu station area are three of their main projects, in which they organise the collaboration between private, public and community bodies. Their frequently published magazines keep all stakeholders and citizens informed.



**4. Search for and celebrate the unique features that create a distinctive identity by building on your existing assets**

As cities become conurbations the identity of places becomes blurred and the distinctive character and role of each place may fade. Centralised policy can create similarities of strategies with each city competing for the same market. We encourage cities to seek and identify your unique strengths and features, developing a role that complements the other cities around you<sup>90</sup>. Leeds Sustainable Development Group is an example of how a proactive civic groups can act as a focus for community interest and initiating early action.

90. Leeds Sustainable Development Group. The New Southbank: A Vision for Leeds City Centre South. (2013).



Leeds Station  
 Bridgewater Place  
 ASDA Head Quarter

National City Centre Park  
 The Tetley (former Brewery)  
 New Dock & Royal Armouries

121. A Vision for Leeds City Centre South

The Leeds Sustainable Development Group (LSDG) 'a network of interested parties' was established with the objective of furthering Leeds as a sustainable city and initiating a new community on the "New South Bank".

The LSDG has facilitated the provision of a free school, is progressing a new pedestrian/cycle route and encouraging the adaptation of a framework that would provide investors, landowners and potential residents with a degree of certainty for the delivery of community facilities to support a significant, new culturally-enriched, sustainable, inner-city neighbourhood.

Leeds College of Building  
 The Printworks (Leeds City College)  
 Crown Point Retail Park

# 6. A way forward

In Chapter 1, Changing Perceptions, five crucial themes on 'HOW' were mentioned: Continuity, Commitment, Collaboration, Communication and Control. These themes were introduced to understand better how urban change could be achieved. Our study visits provided a clear sense that HSR has brought economic growth and prosperity only when it was locally embedded in a long-term greater vision, supported by local stakeholders, communities and governmental institutions, often as part of a wider regional planning agency, such as the Northern wing of the Randstad or the metropole agency of GrandLyon. The ITC is aware that this statement is hard to 'measure' in accounting terminology. Questioning places on the benefits of being linked to the HSR network rarely provides answers that are easily quantified. By raising the question, however, of what would have happened without a HSR connection, answers became clearer, though still measured qualitatively rather than numerically.

*'We have learned that major transport infrastructure investment can be transformational'*

David Prout, High Speed 2 Group, DfT

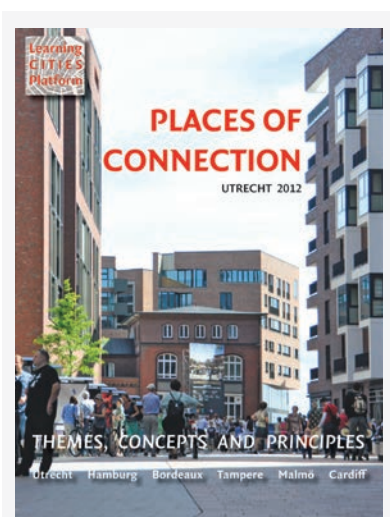
## 6.1 Insights for Action

From our tour of European experience, it is clear that HSR has changed the perception of cities in the minds of businesses, residents and investors, geographically 're-positioning' settlements by travel time rather than by distance. We have seen regional economies growing, aided by improved transport links linked to HSR investment, which has often provided a common focus for the city, as with the iconic station in Liège. We have also seen through these visits how people's lives have changed for the better as they have used HSR for daily commuting, networking between different cities, going on holiday or travelling further afield for business.

However, we have also seen examples where the opportunities from HSR investment have not yet been fully captured, as at Ebbsfleet. In order to realize the benefits from such investment, a variety of initiatives are needed over the life of the project. In the short term, the focus should be on establishing a clear delivery structure and responsibilities, and use this to develop a strategic plan which can be initiated with small-scale temporary uses until the rail infrastructure is complete, as we have observed at King's Cross. Over the medium term, it is important to develop local consensus and engagement for continuing development of the plan, as we have seen in Utrecht. The long-term imperatives are to ensure that local transport initiatives are properly connected to the high-speed nodes, and for planners to remain flexible and able to adapt to changing needs and economic circumstances, as in Lille.

From discussions during the field trips and the expert workshops we have identified four groups of agents who, each in different ways, will have crucial roles as HSR projects progress. Insights for action have been identified for each, all of which could be undertaken in the short term and yet have a long-term impact.





122. The European Learning Cities Platform initiated by the Academy of Urbanism and INTA was established to provide a learning network for cities to share experiences, identify common problems and bring together public, private and community partners. Places of Connection is the outcome of a workshop hosted by the City of Utrecht, where the six invited cities reviewed their ambitions and reflected on their flagship regeneration projects to reshape infrastructural space into meaningful places of connection.

For further information, see [www.LearningCitiesPlatform.eu](http://www.LearningCitiesPlatform.eu)

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### 1. Central Government has key roles, including:

- Providing the national infrastructure for cities and their citizens to thrive
- Giving strategic guidance that can steer, enable and regulate development
- Providing certainty, making decisions in a timely manner and helping to establish a long-term perspective.

#### Insights for action:

We recommend reinforcing an integrated vision for UK Infrastructure, including giving more weight to the integration of various infrastructure projects and sectors in the National Infrastructure Plan. In the Netherlands the Ministry of Infrastructure and the Environment has the spatial planning role of VROM (the now defunct Ministry of Housing and Planning) and benefits from being able to provide joined-up strategic guidance over the whole range of infrastructure issues, including transport and spatial planning. In the UK, the DfT with a mobility perspective could be given a leadership role and help to integrate thinking from other Departments and public research bodies, such as DCLG, BIS, the Government Office for Science and the Future Cities Catapult.

Central Government has a leadership role in encouraging initiatives by local and regional bodies (see below), as it has done with the recent 'One North' report. As we have seen in Lille and Bordeaux the Government has successfully partnered with local agents to implement strategic national projects, EuroLille and Euratlantique.

### 2. Cities and their regions have key roles, including:

- Providing long term vision and leadership
- Supporting the success of their citizens through participative dialogue to ensure equitable outcomes for all.
- Developing the vision which reflects a common ambition of each city, unlocking opportunity and providing continuity

#### Insights for Action:

Cities and local government can usefully establish forums for working across interests, boundaries and levels in order to capture the benefits from HSR investment. We have seen how local forums in Bordeaux and Lyon in France, and the Delta Metropool agency in the Netherlands, have all contributed towards the successful implementation of spatial planning in their cities around HSR investment.

The proposition by Sir David Higgins for a Transport for the North forum is a good start. We would also encourage building on the Core Cities and Key Cities networks and interlinking these. There is also a potential for LEPs to work together across boundaries to create such forums. New initiatives through these bodies could include a programme of study trips to Europe to review station neighbourhoods, subregional integrated transport and regional governance and planning. In an inter-connected world we need to learn how to co-operate in order to compete, and one way to assist this process is to create a network of European places to share and learn from experiences of regeneration.

Cities can work together to harness the Higher Education expertise in their Universities in order to create an academic "Urban Observatory". This can collect and coordinate data on regional infrastructure and places of connection in ways that provide robust data and information to decision makers. Successful examples of such initiatives include the Liveable Cities Programme, an academic project supported by several Universities.

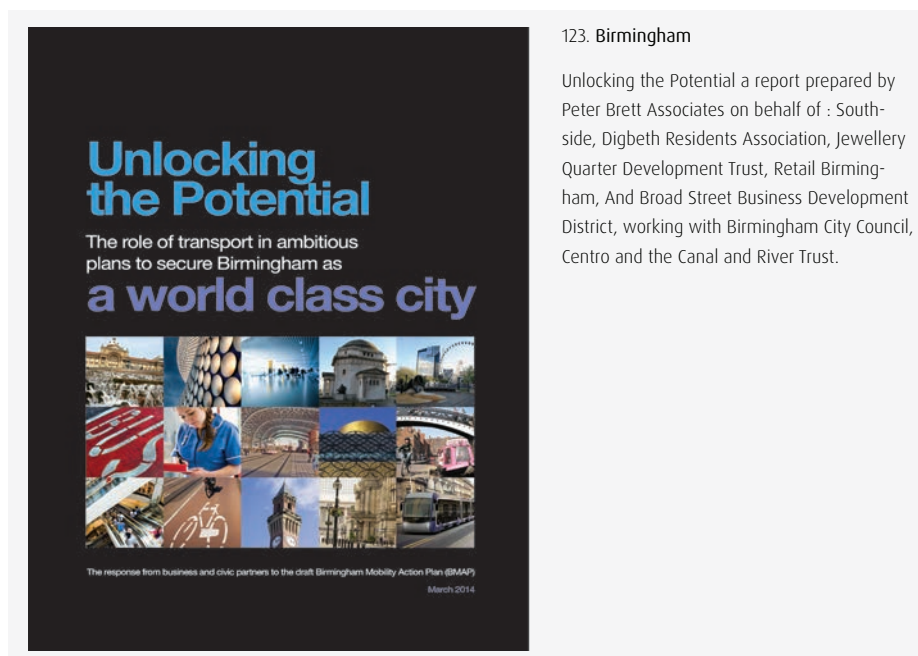
**3. Providers and agents for delivery** (including HS2 Ltd, regeneration companies, engineers, property developers and transport organisations etc.) should

- Deliver long term opportunities for success
- Use resources in an effective and timely manner
- Foster collaboration between different suppliers and client bodies
- Establish strong networks of communication

**Insights for Action:**

Providers and Agents for delivery can take the initiative by acting collaboratively on small-scale projects in those areas earmarked for development into HSR stations. These pilot projects will help to avoid planning blight and some initiatives can become transformational, as we have seen at King's Cross Central and London Legacy Development Corporation.

Providers can be encouraged to create a fund (perhaps in partnership with the public sector) to supporting local innovation in spatial planning. Such funds, which do not need to be large, can help to spark community-led initiatives and improve local engagement.



**4. Civil Society and the Citizen** have roles including

- Providing support and contributing to the ambitions of the city
- Being pro-active and able to feed their ideas into development plans
- Undertaking inclusive work with all interested parties

**Insights for Action:**

This study has shown how the promise of HSR connectivity can generate a range of revitalising local initiatives. Often, these are low-cost but high impact; nonetheless they often require some seed funding in order to have a catalytic effect. A good example is the report prepared by business and civic parties in response to Birmingham Mobility Action Plan, entitled Unlocking the Potential: The role of transport in ambitious plans to secure Birmingham as a world class city. The vision developed by local people is now helping to shape Birmingham's plans for capturing the benefits of improved connectivity, including through HS2.

## 6.2 Themes for the Future

As the project has progressed the discussions with participants from the city regions have expanded to include wider issues of economic regeneration.

Potential themes for future consideration include:

- The location and characteristics of stations depending on whether they are located in the city centre or periphery, and the respective advantages of through stations or termini. The conclusion from our tour of European experience was that for the greatest economic impact stations are best located in those areas with the highest agglomeration of economic activity and where local, regional and national connectivity is strongest. However, a well-connected location at the periphery with land that can easily be developed for a mix of business, commercial research, learning and housing purposes, serving an accessible sub-region of cities, can act as an interchange and future growth point although this may take several generations to mature. Schiphol in the Netherlands was an example of the airport for environmental reasons moving to the city fringe then over a longer period for the city to grow outwards to capture its advantage as a place of connection.
- How can we encourage greater civic participation in the planning for High-Speed Rail and its associated initiatives in our cities and regions? We have seen in the tour of European experience that High-Speed Rail investment brought greater benefits when accompanied by strong civic leadership as well as local support and participation.
- The integration of High-Speed Rail infrastructure with the wider transport network and where connections should occur. Should there be strategic junctions along the line linking with the classic rail network, or at out-of-city interchange stations or at the centre city stations? Should we ensure that HS2 and HS1 are properly connected to provide a 'bypass' of central London, much as France enjoys with its HSR line skirting past Paris, helping travelers avoid an inconvenient crossing of the city centre?

### Next Steps

The ITC will now focus on the dissemination of the lessons learned from this tour of European experience of High-Speed Rail. This report will be available to local city and regional leaders. Discussion is encouraged around the following themes:

- Identity and placemaking
- Creating and capturing the value
- Governance and delivery
- Integration

The study team would be pleased to work with interested parties to discuss the findings further.



# Appendices

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### Acknowledgements:

This report was authored by a team led by Professor John Worthington, in consultation the ITC project Steering Group, comprising Alan Baxter CBE, Sarah Kendall, Dr Matthew Niblett, Peter Headicar, Mary Bonar and Bright Pryde. The publication was produced and designed by Henk Bouwman, Urban-imPulse.eu and Honoré van Rijswijk, Frontwork. Assistance was also kindly provided by project volunteers Michael Bredin and James Hodgson.

The ITC would like to record its thanks to all those who discussed and reviewed the work with the Steering Group, especially Liz Hunter, Roger Madelin, Kathryn Firth, Jackie Sadek, Keith Mitchell, and Andre Gibbs. We are also grateful to those who participated in the many events the ITC has held as part of this process: a list of all who participated is given in the Appendix.

Finally, the ITC would also like to record its gratitude to all of our Core Benefactors: a list of whom can be found on the main ITC website <http://www.theitc.org.uk>. Their generous support has made this research possible.





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