

High Speed Train Network  
**station**  
design and development



## HST partners



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Utrecht workshop report

May 2006

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# foreword

James E. Brathwaite CBE, Chairman  
South East England Development Agency (SEEDA)

The two SEEDA led High Speed Train (HST) investment projects represent a substantial group of public sector partners in Belgium, England, France and Germany who benefit from the High Speed Train services provided by Thalys, Eurostar, TGV and ICE.

This benefit comes firstly from being connected in a better, faster and more sustainable way to other European regions, contributing to their socio-economic performance in a wider European and even Global market economy. Secondly, there are tremendous opportunities for our towns and cities which have an International Passenger Station to take full advantage of those stations and the improved connectivity they provide.

I was very impressed by the commitment and enthusiasm displayed by politicians, the railway industry and officers at an earlier HST event, jointly hosted by the cities of Liège in Belgium and Maastricht in The Netherlands. The occasion was an HST project 'inspection' and the awarding of a Best Practice Certificate for the development of the Calatrava designed Liège Station. It is astounding to see that we can still muster enthusiasm for our railways, and particularly that we can generate civic pride in our railway stations.

For the HST workshop in Utrecht we invited an impressive number of experts from the development and rail industry, together with architects from the participating countries and of course our trusted project partners. The main aim was to explore and understand the complexities, challenges and



James E. Brathwaite



Terry Mills

frustrations of making such complex development schemes come to fruition. It became clear that one single textbook solution is not possible in a European environment that has inherently different regulations, financial mechanisms and cultural backgrounds. However, a set of common denominators that can be observed at all levels of the development process does seem to be emerging. The identification of these transnational issues and the development of best practice measures to assist in addressing these issues jointly is not only at the heart of the HST investment projects, but also forms a core objective of the Interreg IIIB N.W.E program which funds this exercise.

Whilst I certainly wish to express my thanks to Detlef Golletz, the project director who developed the project partnerships in the first place, I must also make particular mention of Terry Mills, who chaired the HST Utrecht workshop.

Terry, as a long standing and trusted SEEDA Board Member, was very keen to engage in this transnational project as he firmly believed in collaboration at European level. He also had a very keen interest in sustainable transport and making 'rail work for the economy of our region'. Not least thanks to his charisma and easy-going personality in chairing this challenging workshop across nations, cultures, languages and professions, the outcome of this exercise was indeed a great success. Sadly, completely unexpectedly and at a far too early age, Terry Mills passed away just after Christmas last year. I trust that this report and its findings will be a suitable and lasting tribute to him.

*James E. Brathwaite CBE*



Detlef Golletz, Head of Planning and  
Infrastructure, Project Director HST  
South East England Development Agency (SEEDA)

Over the past 20 to 30 years, the role of railway stations has undergone a fundamental change. Not only have they become efficient, multi-modal transport interchanges with high speed rail connections across national boundaries, but they have also re-emerged as a central focus of urban social and economic activity and - in many places - as preferred investment locations.

Due to the earlier development of railways in the Interreg IIIB North West European program area, most of our towns and cities are graced with stations in or at least very close to the city centre. However, this spatial proximity of transport interchange and cultural, urban centre did not always gel well.

Nowadays, good access from a wide geographic area and by different modes of transport has transformed stations into transport and network hubs. Moreover, the increased movement of people generates new opportunities for commercial, cultural and service uses whilst at the same time demanding a rationalisation of space for movement in and around the station.

The keys to creating and sustaining a central, well functioning urban place at a railway station is similar to the city (town) centre: an effective spatial configuration, a healthy mix of uses and urban quality. Flexibility is the essence as cities are in a constant flux of development and re-development. The dynamic flow of people is one of the fundamental conditions for a liveable urban environment.

Designing and developing stations and station environments is therefore more and more a complex process where different



Detlef Golletz

interests and needs are merging and emerging. Attention should not only focus on transport services but also on the function of a station as a link between flows of people and different modes, as a connection between the city or town and the surrounding region, and as a beacon in the urban fabric. This means that the design and development process can no longer be dominated by transport planning issues, we need to instigate a much more holistic approach. City planners, architects, residential community representatives, local businesses, land owners, developers and investors all demand that their views be taken into account. Integrating all these different views and aspirations is a difficult task at the best of times, but particularly so in station related projects.

The two SEEDA led HST projects emerged from an earlier, ERDF funded HST Platform, lead by the Province of Gelderland (NL) and Prof. Luuk Boelens. The new HST investment project focus on small scale investments in station environments of International Passenger Stations, in improving access to these stations from town and city centres and in carrying out research into policy, investment and best practice issues.

The Utrecht workshop was the first event in a series of workshops and seminars that will look at the common issues we are all facing in this development process, irrespective of national regulation, culture, and the nature of our respective rail industry or planning systems. The aim of this workshop was not so much to answer all the questions, but rather to identify the common denominators that make or break a large-scale infrastructure project, and to draw knowledge from a comparison of best (and worst) practice experience across the project member states.

The success of the workshop is in no small way attributable to the enthusiasm and hard work of the HST Integration and HST

Connect project management team. Organising workshops on such a transnational scale, with such a complex agenda would not have been possible without the expert and dedicated help from the following members of my team:

- Lucy Prabhu, Joint HST Projects Manager
- Goesta Weber, HST Integration Co-ordinator
- Georg Werdermann, HST Connect Co-ordinator
- Celine Chambron, Joint HST Projects Officer

In addition I would like to take the opportunity to express my great thanks to Herma Harmelink, Gwen Boon and Sander Kooijman of Bureau BUITEN for their great support in organising the day, the event and producing this report.

Finally I would like to thank all working group facilitators as well as the 'external experts' for their excellent support and professional input, which formed the substance of this report.

A handwritten signature in black ink, appearing to read 'Detlef H. Golletz', written in a cursive style.

*Detlef H. Golletz*



# introduction

On 9 and 10 November 2005, approximately 40 people from five different countries attended an international HST (High Speed Train) Design Workshop which took place in Utrecht, the Netherlands. The background of the participants was quite diverse: those taking part in the discussions included not only transport and city planners but also architects, town and infrastructure planners as well as representatives of governmental bodies. The main focus of this international workshop was on best practice solutions for resolving common obstacles and complexities which are encountered when designing an HST (feeder) station and/or area. The workshop brought together project partners and experts on architectural design, town planning, transport and infrastructure and resulted in a fruitful exchange of visions and views in relation to station and station area design.

The workshop took place within the framework of two Interreg projects in the field of High Speed Rail Transport, namely HSTconnect and HST4i.

This report presents the information obtained from the event. The report will be disseminated to project partners and to a wider audience within the NWE region. The report uses design and transport expertise to examine common obstacles and best practice, helping partners to develop stations that achieve the best possible physical, social and economic integration with the surrounding area.

## HST4i and HSTconnect projects

HST Integration (HST4i) and HSTconnect are two NWE Interreg IIIB projects led by SEEDA. In both projects, partners come from England, France, Germany, Belgium and the Netherlands.

HST4i focuses on strategic policy integration at regional, national and European level and on the implementation of best practice investment projects associated with the high-speed rail network. HSTconnect concentrates on the development of the secondary network in regions and cities which connect with the primary network and high-speed rail facilities. HSTconnect stimulates the development of stations as spatial, social and economic crossroads in urban areas. Both projects concentrate on the High Speed Train (HST) network, its stations and station environments.

A number of studies are currently being carried out on behalf of the networks. These studies are described on the inside of the back cover of this report.



# the workshop

The HST Design workshop took place in Utrecht because the city's Central Station is the busiest rail transport interchange in the Netherlands and it is currently facing major redevelopment in order to cope with over 100 million future travellers per year. The process of the Utrecht Station Development project over the past 20 years provides good examples of challenges which are also faced by other HST partners.

Prior to the workshop, the HST Network partners prepared for the meeting by listing their main challenges in relation to station area development and brought them to Utrecht to discuss with architects, experts and HST project managers. During the day all speakers, contributors and delegates presented good practice examples and provided working examples of successful development stories, including results and the methods by which these had been achieved.

## Morning session

In the morning session, a presentation was given by Albert Hutschemaekers, managing director of the Project Organisation Station Area, an organisation that is taking the lead in the redevelopment process in the Utrecht Station Area. His presentation showed that the redevelopment process is a challenge that demands patience and great communication skills.

Professor Henk J.M. Bouwman of HKB Urbanists is also closely involved in the development of the Utrecht Station Area. One important aspect in the Master Plan was the involvement of the residents of Utrecht. A referendum helped to create a broader



Albert Hutschemaekers



Professor Henk J.M. Bouwman





Jan Benthem



Presentation of 'good' and 'bad' station designs

base of support. HKB Urbanists used this to work out a Vision Map that also included the principles of restoration, connection and identification.

The main conclusions of both Mr Hutschemakers and Prof. Bouwman were that making plans in a dynamic market requires that private companies have a major stake in developments and that the private business strategy should be leading. Planning should set boundaries, but its primary function is to make room for private initiatives. Furthermore, strategic choices have to be made on synergy, quality, progress, finances and maintenance. Finally, the city's main character should be reflected in any new designs of and around the station.

Jan Benthem from Benthem Crouwel Architects, who has substantial experience in station area design, presented his view on the principles of designing for HST & feeder rail stations. Benthem Crouwel is involved in a number of station development and redevelopment projects in the Netherlands. According to Mr Benthem, stations should be a public space and not a shopping centre ("space is the real luxury"), even though new designs often include many shops. Locating too many shops in already overcrowded station areas should therefore be avoided. The first priority for station design should be a good travel experience, not a property asset. Shopping is an essential service of a modern station but it must not impede passenger flow, ease of orientation (within the station and outside it into the surrounding urban fabric) and sense of place.

These presentations were followed by contributions from experts to illustrate examples of what in their opinion were 'good' and 'bad' station and station area designs, both in Europe and around the world. The first image shown was an example of 'good' design, something that struck the experts as extraordinary or provided a kind of mental reference point.



## Central Station

The City of Utrecht is the fourth largest city in the Netherlands (+/- 270,000 inhabitants). The city centre of Utrecht is divided in two by the railway station and tracks. Currently about 57 million travellers make use of the Utrecht Central Station. The number of passengers handled will double in the next twenty years to more 100 million travellers per year.

### Current situation

- 92 ha
- 331 apartments, 598 inhabitants
- 6,196 parking spaces
- 11.947 bike racks
- 57 million travel movements through Utrecht Central

### Future situation (15-20 years)

- 1,890 apartments (200.000 m<sup>2</sup>)
- 190.000 m<sup>2</sup> offices
- 35.000 m<sup>2</sup> shops
- 190.000 m<sup>2</sup> offices
- > 100 million travellers



© Projectorganisatie Stationsgebied Gemeente Utrecht



Photo: © Projectorganisatie Stationsgebied Gemeente Utrecht

## Utrecht Station Area

The City of Utrecht, the Ministries of Transport and Spatial Planning, and private companies Corio (owner of Hoog Catharijne shopping mall), Jaarbeurs Utrecht (Trade Fair grounds) and NS Real Estate, are working together towards a complete makeover of the Utrecht Station Area. To this end, a Master Plan was developed which has three main ambitions:

- to restore the historically significant Catharijnesingel canal in order to create one continuous waterway around the old city;
- to connect by creating 'natural' transitions between certain parts of the city on different sides of the station. The growth of the city of Utrecht also requires the development of more facilities and shops in the centre. Creating expansion possibilities on the western side of the city centre will help to relieve the old city;
- to assign meaning: the Master Plan intends to render areas meaningful. Areas which are now anonymous will be given significance; for instance the Jaarbeursplein square will become the new Station Entrance-West.

The plans have been bundled in two zones: the City Corridor and the Centre Boulevard. The Centre Boulevard will accommodate large-scale functions with a national meaning, such as the Jaarbeurs and Hoog Catharijne. Together with the old inner city centre these will form the Centre Boulevard. The dominant functions of the City Corridor are living, shopping and culture.

The Master Plan opts for gradual transitions between the various parts of the city. The plans are in line with the existing city, which has different 'moods', e.g. the pleasant mood of the canals versus the large scale of the Jaarbeurs Trade fair grounds. The new streets, corridors and entrances between the different areas will be lively and safe thanks to shops and businesses at street level.



Guided site visit

The second image was of the complete opposite, an image that pinpointed everything that station and station area design should not be. The experts briefly explained to the audience the reason for choosing these pictures.

### Guided site visit

A guided site visit of the Utrecht Station Area provided the contributors and delegates with first-hand information and an example of a 'design story', including results and the methods by which these were achieved.

A team from the Utrecht Station Communications Centre took the participants around and through Utrecht Central Station.

### Afternoon session

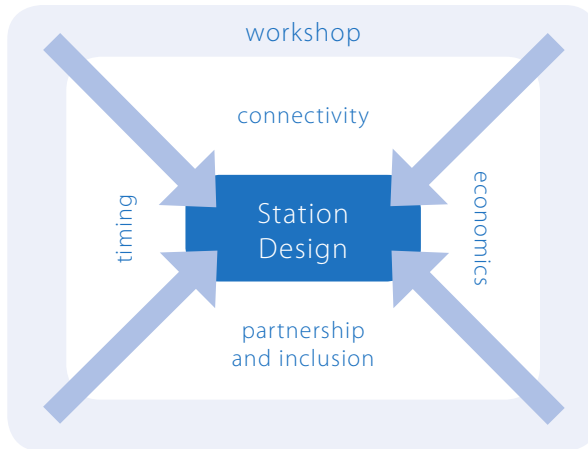
The afternoon session focused on exploring specific issues and themes in smaller working groups to generate in-depth debate between the participants.

The topics were:

- identifying the principles of good station design and the necessary pre-conditions for successful station developments;
- resolving gap funding;
- using design to improve security, aid capacity and accessibility, and influencing the commercial viability of a station;
- considering design and the surrounding townscape – with links to other transport modes, conservation, heritage and social inclusion.

The challenges were divided into four groups:

- connectivity;
- economics;
- partnership and inclusion; and
- timing.



Each group chose two challenges which were discussed in more detail. Possible solutions were provided for these issues.

At the concluding plenary session, chaired by SEEDA Board Member Terry Mills, the outcomes of the discussions were shared with the other working groups. This report presents the main outcomes and findings of the workshop.



Scale model of Utrecht

# CONNECTIVITY

**STIMING**

**PARTNERSHIP**

**ECONOMICS**





New plans for Rotterdam Central are being made because the station has become too small to accommodate expected future passenger volumes. Even nowadays it is crowded with 140 thousand travellers per day. The tunnel beneath the platforms, in particular, is a bottleneck during peak hours. One of the ideas is to create different levels for different modes of transport. A pedestrian balcony or bridge will be built above the tracks, metro and parking places will be underground, and an underground tunnel will be realised for car traffic. In a previous plan, trams were also to be located on the basement level but in a more recent plan the trams stay at ground level with the railway tracks and extended pedestrian areas.

The first plans for the new Rotterdam CS were made by the architect Alsop. He described his impressions when visiting Rotterdam for the first time: "That's when I discovered what an interesting city Rotterdam was. But also a city without an entrance. We arrived at the central station by train and we both wondered: What are we doing here? Where do we go now?"



Photos: © Benithem Crouwel Architecten BV bna



So the connection with the inner city was one of the main characteristics in his plan. A pedestrian bridge crossing the railway tracks and the street on which the station is located (Weena), took away the barrier of the railway and thus connected north side and south side of the city. Weena itself would become a more pedestrian friendly boulevard, twice as wide as it currently is, and the fragmentation of the Hofplein area would be reduced by intensive building programmes, partly above the railway tracks. Alsop wanted to build two buildings in the shape of champagne glasses to create a clear visual identity. Because of budget reductions at a later stage the plans were altered and the glasses disappeared.

## workshop findings - theme one

# connectivity

A station could be considered as simply the starting or end point of a journey, but a wider perspective is necessary for two reasons. Firstly, it is essential to optimise the station area from the point of view of transport chains thereby integrating the pre and after transport (transport to and from the station). This would mean connecting the different elements of the transport chain from door to door. Secondly, the station functions as a transport hub and determines the layout of a city. The railway station is located at the crossroads of various functions.

### → QUESTION

*Is the station properly embedded in the wider urban structure?*

The issue is the need to combine a high level of physical integration of infrastructure for different modes of transport with an attractive and logical position and layout of the station building and its surroundings in the urban environment. To guarantee the function of a station as a transport hub there should be a balance between:

- the complexity of the transport modes coming together in the transport hub (as a link in the travel chain);
- the way the station 'fits' into the urban pattern as a place of destination and urban function.

### Conflicting functions in a confined area

Many different activities are taking place at and around stations. In addition to rail transport, other transport infrastructure such as metro lines and facilities for bus and car transport demand



Working group Connectivity



Zurich Central Station

Photos: © Stadtraum HB, SBB

their own share of the station area. Furthermore, many different supporting and ancillary services have to be accommodated at and in the vicinity of a station. In some approaches and views, even non-core functions not related to the station or rail transport as such, are assigned to station areas. Grandi Stazioni S.p.A., in Rome, Italy tries to develop the station into an 'urban piazza': the aim is to make the station not only attractive to train travellers by expanding the range of services provided in the station, but also to turn the station into a venue for art exhibitions, concerts etc.

## → QUESTION

*With all these functions concentrated in a confined area, how can conflicts be avoided in an area where different transport modes are converging in what is often a limited space?*

Inevitably, a mixture of functions causes a certain level of 'chaos', particularly in a station or a station area. Segregation of functions on different floor levels can give a clear distinction between passenger and non-passenger traffic. Good examples are Zurich Central Station, Montparnasse in Paris and Liverpool Street Station in London.

## Linking the station to the city centre

Naturally, the station derives its right of existence from the presence of travellers. In the nineteenth century, stations were built as close as possible to the centres of the city even though competition between rail companies and the presence of existing buildings and natural barriers could lead to less than optimum locations. Still, most of the major central stations were located within walking distance of a city centre. Unfortunately, the connection between the station and the city centre proper is sometimes far from perfect. Changes in use of the intermediate buildings or areas have sometimes led to mixed areas with a variety of low-value functions or even no-go areas.



## → QUESTION

*How can the connection between station and city centre be improved and how can this connection be made more 'natural'?*

The improvement of the city centre and station connection cannot be limited to improving the ease for users of the station to find their way into the town centre (information and legibility for visitors). More importantly, it should also include changing and influencing the land use around the station and in the area between city centre and station. This is a difficult and often protracted task for all stakeholders involved in the station's development and redevelopment. City Councils, residents and business communities as well as land owners should be convinced that developing the station includes a more comprehensive approach to developing the surrounding area. Convincing these stakeholders that changes in the land use of the surrounding areas will also be profitable for the area as a whole, and therefore for the owners of the land in these areas, should start at an early stage.

It is important for a station to have easy access to the city centre, but reality shows that this is not always the case. As it is not feasible to change the city lay-out, alterations will almost always focus on signposts, environmental improvements or smaller scale physical changes. By creating viewpoints and sight lines, a connection between the city centre and the station can be realised. Another way to strengthen the connection is by using uniform paving, signage or street furniture to suggest quality and unity of place. However, where the station provides the focus for comprehensive and new development, such as in Lille, Stratford and Ebbsfleet, the challenge lies in large scale master planning to create a cohesive urban framework.

### Integrating different transport modes

#### → QUESTION

*As different modes of transport converge at stations, how can a smooth integration of different modes be ensured and how should the integral transit function (interchange) be secured?*

A good secondary feeding system for HST stations is essential: HST stations should provide multi-modal access to cars, buses, coaches, taxis and/or regional train systems. New initiatives such as Rent-a-car, Rent-a-bike, car-sharing and valet parking should be considered as well. The linkage between the modes should be made as clear and explicit as possible, not only by providing information but also by the design of the public space and the signage between the different facilities and modes. If possible, train and bus times should be attuned to each other. Integrated ticketing for onward journeys on the day of arrival in a specific city is a great advantage for travellers; such a facility is provided by Deutsche Bahn.

Besides the linking with the 'normal' connecting commuter modes (bus, metro), the combination with long-distance modes such as air transport must not be neglected. At a number of stations facilities are offered where HST travellers can check-in for their connecting flight in advance. A full integration of HST services and air travel is achieved where a station is built in the Airport. Frankfurt, Charles De Gaulles and Lyon have already been integrated into the HST Network and Schiphol is expected to join in 2007.

Although integration of the different modes seems to be the goal to strive for, looking at the situation from a safety perspective, separation of the different transport users is desirable. This refers to the segregation of the different rail and road modes. Separating vehicles from pedestrians, in particular, can be a

## case study

# Stratford, United Kingdom

Stratford is an urban centre in East London located between Central London and Essex and East Anglia. As part of the Channel Tunnel Rail Link (CTRL) work is currently underway to construct an international station on the Stratford Rail Lands, a site of 79 hectares of developable brownfield land immediately to the north of Stratford regional station. The station will serve both international and domestic passengers and is due to open in 2007. During the 2012 Summer Olympics it will serve Stratford's Olympic Park.

The Stratford City development partners, Westfield, Multiplex, Stanhope plc and London and Continental Railways, have been given planning consent for a major mixed-use development. This will consist of 175,000 million sq m of retail and leisure development, 4,800 residential units, 450,000 sq m of office space and up to 2,000 hotel bedrooms. The total development is estimated at 1,170,500 m<sup>2</sup>. When combined with the Central Line, North London Line, Jubilee Line and a bus station, the completion of the Channel Tunnel Rail Link and the future implementation of Cross Rail will make Stratford station one of the best served public transport locations in London.

The successful integration of the existing town centre and the Rail Lands will be fundamental to the success of the new metropolitan centre. The best way to achieve this integration is to consider the development of the Metropolitan Centre as a whole. As in the Rail Lands large parcels of land are controlled by relatively few owners, there is a significant opportunity for a comprehensive approach. Whilst the perspectives and objectives of the individual stakeholders may differ, all parties recognise the importance of creating an integrated solution linking the Town Centre with future development on the Rail Lands.



Photo: © CTRL

## case study

# Lille Euralille, France

In Lille the TGV is seen as the main contributor for urban and economic development. The New Lille Europe station, an HST station, should function as the development base for a cluster of high-value service industries, commerce and leisure facilities. The station and surrounding area were designed by Rem Koolhaas. In his design it was important to connect Cité des Affaires (Lille Europe Station, WTC and Crédit Lyonnais office towers), the Euralille centre between the two stations (with offices, housing and a shopping mall and educational, cultural and recreational facilities) and the Grand Palais congress and exhibition centre.

At the moment the connections with the inner city, between the three areas, and with other neighbourhoods are still not optimal. The station and the rail infrastructure continue to form a barrier. The area around Euralille is rather fragmented and pedestrian access is difficult. But on the whole the effect of Euralille has been positive. The processes of revitalisation and economic transformation and an improvement of Lille's image are visible.



Photo: © SEEDA

## case study

# Frankfurt am Main, Germany

In operation since May 1999, Frankfurt Airport's new high-speed train station (a.k.a AIRail Terminal) connects the airport directly to the European high-speed rail network. Some 150 ICE and long-distance trains serve the main line rail station every day. The AIRail Terminal is also the starting point for the new ICE high-speed line to Cologne, connecting Frankfurt with the Rhine-Ruhr region in about one hour. With the further expansion of the high-speed rail network, Frankfurt Airport will become one of Europe's key integrated transportation complexes.

In March 2001 the pilot „Zug zum Flug“ started. It is a joint venture of Lufthansa (German Airline), Deutsche Bahn (German railway) and Fraport (private company operating Frankfurt Airport). With „Zug zum Flug“, the flight begins at the check-in desk at Cologne or Stuttgart main station. When passengers arrive at Frankfurt, they require no further check-in and they can proceed directly to the departure gate. The luggage arrives at the airport in sealed containers that are forwarded to the plane. A transfer time of 45 minutes is guaranteed.

The aim of the German government is to shift more and more domestic short haul flights to trains. A milestone in this process is the cooperation framework that Lufthansa, Deutsch Bahn and Fraport signed in the late 90's to replace 10,000 short haul flights per year by trains from Frankfurt Airport to Düsseldorf, Cologne, Nuremberg and Stuttgart. Fraport is keen to free flight slots for economically more valuable long distance flights.

Travel time between Cologne Central Station and the AIRail terminal is only 57 minutes, and between Stuttgart central station and Frankfurt Airport 73 minutes. With 16 daily ICE-train connections from Cologne and 7 daily connections from Stuttgart, there is a well-timed feeder service for practically every international Lufthansa flight from Frankfurt Airport. AIRail passengers have reserved seats on the ICE train. Passengers flying first or business class travel first class and passengers flying economy class travel second class on the train.



Photos: © Deutsche Bahn AG



Photo: © Benthem Crouwel Architecten BV bna

## case study

# Amsterdam, the Netherlands

Amsterdam Central Station is currently being transformed. A new North-South underground is being built which will connect the centre of Amsterdam to the South-Axis (important redevelopment area for offices). The station will also be extended to the waterfront at the rear side, which will make it easier to access the station by ferry. With this development all means of transport (metro, bus station, motorway, ferry) and the public area will be interlinked at the central station.

problem in a station area where the different flows of transport users converge (e.g. at a square in front of a station building). Over the past 80 years, urban environments have been designed and adapted with the car user in mind, with less attention being paid to the so-called 'slow modes'. The best way to deal with this conflicting modes issue is to create a clear distinction between the different pathways/roads and their access to the station (for instance by using different kinds of paving materials). In this respect, passenger flow modelling could be a useful tool to visualise bottlenecks and pedestrian flows. The challenge is to design a station and station area from the perspective of the travellers, predominantly pedestrians, who must manoeuvre between different transport modes.

### Transforming rail journeys into door-to-door travel

#### → QUESTION

*How can all aspects / elements of the entire door-to-door trip be taken into account and not just the transport by HST?*

Connectivity is also about trying to connect the different links of a transport chain. In order to improve it, all aspects and elements of the entire journey must be examined, from origin to destination (travel time, time to transfer, etc.) and not only at the station as a transport hub or just at the station building itself.

Integrated chain management deals with the smooth interchange from one mode of transport to another. Customers are interested in a journey from door-to-door and not from station-to-station. Studies<sup>1</sup> point out that it is often better to invest in 5 minutes of improved access than in 5 minutes of improved

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<sup>1</sup> For Example: EU White Paper "European transport policy for 2010: time to decide" (Intermodality for people; Continuity of journeys), 2001 or Franchise Replacement Guide, Strategic Rail Authority, May 2000 or Donald Hatch (NS Reizigers, Dutch Passenger Rail), Examples and Suggestions from the Dutch Railways on Improving Interchange between Modes.



Dresden Station

## Traffic guidance

Kajima Corporation, an international architectural design and construction corporation from Japan, is working with electronics manufacturers to develop new traffic guidance systems. These systems seek to induce travellers to use remote parking areas and arrange for the required number of vehicles to arrive in front of the station at the required time, reducing the bus stop and car parking space adjacent to stations. This will free up more space for pedestrian areas, cycling and bicycle storage.

HST travelling time. Improvement can be found via 'hardware' strategies (infrastructure related, e.g. by adding transport links or parking places), 'software' strategies (service focused, e.g. improved interrelated scheduling, valet parking) and 'orgware' strategies (strategies aimed at improving information and communication such as the PITA (Personal Intelligent Travel Assistant) information system, a pre-trip information system, integrated ticketing, international signposting, decentralized check-ins etc.).

Information and communication are important aspects in this respect. People tend to experience their door-to-door trip more as one integrated trip if combined information is available on all parts of the trip, preferably via the internet or their mobile phones. An example of a website which provides integrated information on public transport trips in the Netherlands is [www.ov9292.nl](http://www.ov9292.nl). Via this internet site people can see in advance how long the whole journey is going to take, what modes of transport (bus, train, tram, subway etc.) are needed, which platforms trains will leave from, what the transit time is and what the walking distance to and from the station or bus stop is.

## Other points made at the workshop

- Connectivity depends on the quality and role of the hub in the wider city.
- Connectivity is not only about physically connecting modes of transport or station and city centre, but also about connecting via improved information and communication.
- Stations are both destination sites as well as a part of a chain. Try to look through the eyes of the people who use the stations.

- To guarantee the function of a station as a transport hub there should be a balance between the complexity of the transport modes coming together in the transport hub (as a link in the travel chain) and the way the station 'fits' into the urban pattern as a place of destination.
- Retrofitting additional modes of transport pushes the urban area away from the transport interchange.



Working group Connectivity





# ECONOMICS





SANDWICHES		PASTA	
BUT	2.80	BROCCOLESI	1.80
BUT & EGG	2.10	VEGG TABLE	1.80
TUNA SALAD	1.10	BACON & HAM	1.80
CHICKEN SALAD	2.20	PASTA SALAD	1.80
TURKEY SALAD	2.10	POTATO SALAD	2.80

FRESHLY SQUEEZED JUICES

FRESHLY MADE JUICES

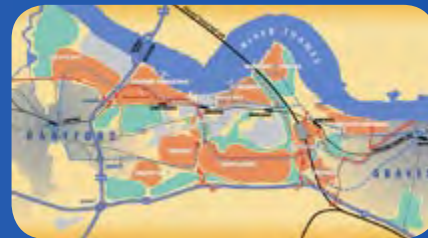
## case study

# Ebbsfleet, United Kingdom

Ebbsfleet Station is the new international and domestic interchange for the Channel Tunnel Rail Link due to open in 2007. The Ebbsfleet station will be connecting Kent Thameside to mainland Europe and to London (15 minutes). It will be served by Eurostar international trains and new, much faster commuter trains between London St Pancras, Stratford, Gravesend and the Medway towns and east Kent.

In Ebbsfleet international trains will link to existing, upgraded national rail network services and to improved public transport like Fasttrack. Fasttrack is an innovative, enhanced bus service which will run on core express routes on which only Fasttrack services will be allowed to move. It is positioned in the hierarchy of public transport between the railway service and current bus services. The Fasttrack network will link local train services and international and fast London services at Ebbsfleet Station, making this station a major international transport hub.

Around the Ebbsfleet station and along the valley, 3000 new homes and about 790,000 m<sup>2</sup> of commercial space are planned in a green setting. To support this planned growth, a fully-integrated land use and transport policy has been developed. All new major development schemes are required to be designed around principles of Public Transport Orientated Development (PTOD). PTOD encourages higher density development along public transport corridors and enables people to live close to good public transport links, particularly Fastrack.



© SEEDA

## case study

# Ashford, United Kingdom



Photo: © English Partnerships

Design and functionality of stations: public perception is important but so is longevity of design. High status and expensive station designs are not the focus for the UK government, which seeks to provide the basics. The role for designers is to encourage investment in high quality, long life design solutions but leadership and investment are also needed. A long-term perspective is needed but is not always available. In Ashford, for example, the design of the new station would need £80m but only £14m was available at the time.

## workshop findings - theme two

# economics

Wherever buildings and infrastructure are built, money is involved and HST stations are no exception to that. However, investing in developing HST means not only costs but also benefits: the increase in real estate value in the surrounding area after the development of a new HST station can be considerable.

But as always, costs have to be incurred before gains can be expected. And this is where problems often arise. Several risks and uncertainties must be dealt with, as the development of HST stations and infrastructure tends to be a time-consuming process, and one that often involves many owners and stakeholders.

This is even more pertinent when the investments are planned in an urban regeneration area, as is often the case when developing older station areas. Although in some circumstances there are clear benefits to be derived, this does not automatically mean that such benefits can be used for the project itself.

In many cases, it is the public authorities and delivery agents that have to meet the costs beforehand. Public funding in these areas is often essential to set up an infrastructure that creates an economic uplift. When we look at some of the risks involved, such as extended timeframes, multiple stakeholders, unforeseen planning or nature protection issues, cost escalation can easily occur and spin out of control.

### → QUESTION

*How can HST investment projects be managed to optimize economic development, to keep costs under control and to improve social spin off?*



Working group Economics



Frankfurt Central Station



Frankfurt Airport Station

### The question of up-front funding

One of the key issues is that in many developments, infrastructure has to be provided up front, long before any development gains can be realised. Due to the relatively high cost of this 'up-front' investment, new methods of front loading an entire funding package must be devised jointly with developers and those that ultimately enjoy the financial benefit from the overall development package.

An approach that could help in this respect is trying to identify so-called 'early-wins' that can provide some funding contributions to the overall scheme and can guide the way for other investments that will have to follow. Given favourable market conditions, it should then be easier to attract investments at a later stage.

Another essential aspect is to build confidence: by involving major public bodies, by demonstrating commitment, by celebrating milestones etc. Reluctance to invest can be countered and even turned into enthusiasm if visions are made transparent. Moreover, a clear and long-term public commitment is considered essential for a regeneration programme. This could even justify building landmarks, often a costly aspect of development plans; the extra investments serve as a signal to the market and the public to facilitate a shift in expectations and value.

### Avoiding escalating costs

Since development initiatives in station areas are time-consuming processes where many stakeholders are often involved and time delays regularly occur, the risk of cost escalation is clearly present.



## → QUESTION

*How should the potential escalation of project costs be controlled and managed?*

There is a clear need for realistic cost estimation, for negotiating the risks between the public and private bodies involved, and for effective risk management. Ensure proper planning and engineering before starting the tender procedure. If everything is not set out in the contracts right from the beginning, problems may arise.

The construction process should be managed in such a way that time delays can be anticipated. Here, too, well-defined plans and procedures (and responsibilities!) are crucial. Not only building and construction processes have to be planned particularly well, but the tendering process itself needs to be structured and well-considered. A detailed tender can prevent cost escalation by defining the different parts and elements of the project in detail and indicating the costs and risks involved for each part.

Phasing the project is also a way to deal with cost escalation. By communicating and facilitating gradual changes, flexibility is assured and cost rises can be detected at an early stage. Later phases can be put on hold, if necessary, in order to prevent costs rising further.

A creative but realistic solution is to build in a reserve 'optimism bias'. UK public bodies, the Department for Transport for example, put an 'Optimism bias' of 40% on top of their budget estimations. A similar method is used in major infrastructure projects in The Netherlands.

As station development naturally involves rail transport, and therefore rail tracks, problems specifically related to the continuity of train services are unavoidable. Often, unexpected disruptions of the train schedules occur and costly compensation

has to be paid to train operators. Therefore, the risk of damaging tracks during construction should be insured. Additionally, planners should be realistic when it comes to the cost implications of keeping the trains running during construction phases.

Another way of avoiding cost escalation is trying to shift the risk back on to the developers. However, in this case it is very likely that a premium will have to be paid. Developers will often include that potential risk in their bid offer.

#### Investing in 'low-profit areas'

Regeneration areas are sometimes included in plans for the development of stations. Often the areas 'at the back' of stations or between city centres and stations have turned into under-developed areas. These neighbourhoods were originally developed as industrial zones or areas for housing poor labourers, but have now lost that function. Additionally, stations can have evolved into barriers between city quarters. The station in this case only has a front side facing the city centre and 'turns its back' on the neighbourhoods behind the station. The involvement of these regeneration areas, or an attempt to integrate an isolated and physically segregated urban area, is often a costly exercise which makes it even more difficult to generate investments beforehand.

#### → QUESTIONS

*How should investments be attracted to projects in regeneration areas where land values are low and where multiple interests and landowners are involved? When a station is part of a regeneration area, how should regeneration benefits, potential land use values and associated land use be measured and quantified? How can the rear side of a station be transformed into a second front side?*

One organisational approach to addressing challenges of physical urban integration is to establish a new body which has a number of tasks and responsibilities. A Project Delivery Agency,

## case study

# Den Bosch, the Netherlands



The station of Den Bosch is the major public transport junction in the city. In the 1990s the existing 1938 station was seen as an obstacle in the city: it caused traffic problems, it was a barrier to the areas behind the station and there was no space for new functions. The station did not function as an entrance to the city. Plans were made for restructuring the station.

The restructuring of the station was used as an opportunity for improving the whole station area. The western side of the station (rear side) was a former industrial area. Plans were made for the redevelopment of this area. The area, renamed Paleiskwartier, is a showcase of high quality urban redevelopment in the Netherlands and demonstrates that investing in low profit areas can be successful. Since the start of the project (1994), the former industrial area at the 'back-side' of the station has been transformed into an area with a mix of different functions like office buildings, shops, educational institutes and residential areas. High quality architectural buildings were designed such as the new Palace of Justice. By the end of the project in 2010, a total of 1,610 houses, 184,000 m<sup>2</sup> office space and 34,000 m<sup>2</sup> for retail, cultural and public functions will have been developed. For the development of the Paleiskwartier the city of Den Bosch worked together as an equal partner with several major private parties.

A better connection with the city centre was also necessary. Therefore a wide pedestrian bridge 'Passarelle' (referring to passage) was built over the railway tracks. This pedestrian bridge functions as station hall, shopping area and pedestrian way at the same time. It connects the city centre (eastern side) with the western side (Paleiskwartier) and functions as the entrance to the city.



Photos: © Gemeente 's-Hertogenbosch

## case study

# Hannover, Germany

As far back as the late 70s, Hanover City Council faced two dilemmas: firstly the station separated the industrial and low cost residential area behind the station from the city centre and secondly city centre retailing experienced a boost and needed space for expansion. The urban development solution was to create a 'basement' street with shops that continues underneath the station and ends in a new, large department store on the other (reverse) side of the station. This almost doubled the retail space on the main shopping artery of the city, provided a large 'anchor' store at the other end and instigated large scale redevelopment of the 'area behind the station'.



Photo: © Deutsche Bahn AG

the independent sole purpose of which is to acquire, regenerate, develop and deliver in a regeneration area, often helps to bring together different actors and interests. Another option to tackle the problem of multiple landowners is the introduction of a Compulsory Purchase Order. In this way, individual landowners can be forced to sell in regeneration areas, although costly compensation is often necessary and the political will to force and pursue these issues is often absent.

A specific problem related to this is initiating new development or regenerating urban areas that lie behind – or on the ‘wrong’ side of the station. In this case an image shift is only feasible if an appropriate mix and volume of functions (living, work, leisure, retail and cultural) and/or a shift in the centre of gravity of functions is realised. However, due to the lower land and rental values of these areas, they have sometimes become the focus for immigrant communities which, over time, have actually established a thriving residential and above all business community. The additional challenge here is to achieve not only a physical, but also a better social integration into the ‘rest’ of the city.

#### Other points made at the workshop

- Acknowledge that land values are not sufficient to fund infrastructure improvement projects, so
  - focus on viable uses;
  - create a landmark building to build confidence;
  - demonstrate commitment, by especially public authorities;
  - set aspirations high and achieve early wins.
  
- To manage escalating costs:
  - impose an ‘optimism bias’;
  - put the risk or part of it on the shoulders of the developer (Design & Build);
  - formulate a tight, detailed brief;
  - set time aside for value engineering.



- Station projects are unique and have their own specific problems. They are often faced with ongoing operations. Track access costs and downtime costs are very expensive.
- If you want to tackle severance impact of railway infrastructure, you have to persuade people to cross boundaries and shift centres of gravity (a new attraction, alternative land use, etc).
- Market uncertainty:
  - is beyond your control, but try to be as flexible and prepared as possible;
  - be ready to respond as and when the market recovers.
- Increase in land value from HST development could be helpful for the sustainability of the area.



# PARTNERSHIP



For the comprehensive redevelopment of land around Reading station it was decided to use planning control mechanisms in the form of planning guidance to supplement the Local Plan and to work up a development framework. This enabled the Borough Council to engage at an early stage with a variety of landowners, in the absence of the Council owning any land in the area. In addition this early involvement of the landowners in a 'formal' planning process reduces the risk of 'surprises' later on, and the adherence to government policy can avoid later 'call in' by Government.



Photos: © SEEDA

## workshop findings - theme three

# partnership

## and inclusion

The process of getting all partners together to create an attractive station and station area is a difficult one. One of the complicating factors for HST station area development is the number of stakeholders involved: railway track services and operators, other public or private transport organisations (for other modes), investment and development companies, local and regional authorities, real estate companies, commercial organisations, residents and visitors of the station areas and specific interest groups.

Investment in regional or suburban stations can be even more difficult, as they are not located in the town centre; this sometimes makes them appear to be a secondary priority for local or regional governments. Investments can also be more complex when a station is designed or redesigned in a deprived area which leads to the necessary involvement of even more stakeholders, it can, however, be very difficult to motivate the various parties for such complex and often time-consuming processes: partnerships may therefore be needed to develop a consensus.

### → QUESTIONS

*What good practices can be identified in terms of the organisation of the development process? Are there any golden rules with respect to public involvement mechanisms? How can we bring all parties together for one vision and how do we work to deliver a single project together with a multi-stakeholder group with divergent objectives?*

### Bringing stakeholders together in partnerships

As there are often many individuals or lobby groups involved



Working group Partnership and Inclusion



Mr. James E. Brathwaite hands over HST Certificate of Excellence to Mr Willy Demeyer, Deputy and Mayor of Liège



Site visit Liège Guillemins Station

in the design and development of stations and station areas, it is useful and worthwhile to establish a good relationship with all parties concerned. The key to a successful partnership lies in recognising and accommodating the different interests of small businesses in the area, investors and residents.

The situation can become even more complex when not only local but also regional bodies are involved, as in the case of feeding lines. Opinions and plans can differ, even within governmental bodies; urban planning policy and transport planning strategies are often not aligned. The views and interests of different transport operators can also vary considerably.

Although not applicable in all countries and in every situation, it can sometimes be a solution to get local political buy-in, or - even better - political buy-in at all the levels involved. One should, however, beware that this can create additional deadlines or milestones in election periods. When there are conflicting policies between national, regional and local levels, keep negotiating and use regional bodies to help mediate between national and local policy differences.

#### The involvement of private parties

A combination of public and private partners can also lead to complications: how can public authorities keep third parties on board when private partners are already frustrated by the delays, funding issues and policy changes? Aspirations differ between the public sector and commerce. To minimise this, PR and persuasion could be used to manage expectations and motivate land owners and developers at the right time and in the right tone.

The situation can become even more complicated when private parties are the owners of the land needed for the development or redevelopment of the area. How, if it is not the landowning partner, can the public sector facilitate development? Local



authorities often own little property in station areas. How can development be facilitated without a landowning stake? Here, surely, is another need for the formation of a partnership.

Another possibility is to establish a private-public partnership (PPP), but even in this case the different parties tend to have different interests. There is also a mismatch between public funding and private sector timetables; the latter need quicker results while complex projects take time to develop. Private partners can become frustrated and even drop out. Policy change can also occur in long-term project planning. At the 'Interchanges' conference at Stratford in February 2006, a major developer made it clear that the costs to cover for rail security and the enormous lead time for station developments are a major obstacle for getting involved in train infrastructure developments. Stakeholder management is important here. Despite this, in the last couple of years a number of interesting forms of PPPs have proven to be successful.

### Creating recognition and commitment

#### → QUESTION

*How to connect all the stakeholders involved and keep them involved?*

By creating recognition, developing a common, long-term vision and, above all, keeping all parties informed and involved, it might be easier to persuade actors to co-operate successfully. Defining a long-term vision can also help to smooth out the different ideas of different parties without endless discussions.

Creating a project identity that is different from the interests/identities of the individual partners (through a project delivery company like CTRL in the UK, for example) helps to divert criticism and stimulates a sense of common interest. Partners are kept informed via regular personal contacts, newsletters and

other means of communication. Continuous dialogue keeps them on board, reduces frustration about delays and maintains confidence in the project. It is important to have a vision to create a long-term perspective. When delays inevitably happen, it pays to be honest and to explain the reasons, whilst at the same time suggesting a plausible way forward.

Another way to get and keep partners involved and co-operating is not only to share the efforts but also to share the success and the credit. Organise a partnership board and get all actors (especially the most reluctant) to act as promoters and champions of the project. Establish good relation with other stakeholders for successful negotiations (land ownership and funding). Local communities can be the driving force in establishing the above.

#### Keeping the project alive over a longer time horizon

As already mentioned, developing and designing stations and their surroundings can be a time-consuming process. Even in the case when a partnership of actors has been established, the long-term timeframe of the overall project can lead to problems during the process and it can be difficult to keep everyone on board along the way.

#### → QUESTIONS

*What can be done to tackle difficulties in the process of a project?  
How to coordinate stakeholders and their agreements, personnel and changes of mind?*

Creating a strong and stable partnership is a pre-requisite. A next step could be to adopt a staged approach. This can help the public to see early improvements, but it can also contradict the needs of the private sector developers (Utrecht versus Amsterdam – phased versus ‘big bang’). The use of flexible strategies could also help. In this way, necessary changes and adjustments can be made more easily during the project. The



## Dortmund, Germany

With over 40 million passengers a year, the Dortmund Hauptbahnhof is one of the main transit hubs in Germany. The current station is struggling to meet the demands and expectations of contemporary transit users. This is going to change. Under the motto '3DO: shopping, recreation and transport', Dortmund's main station will be transformed into a shopping, recreation and entertainment centre (multi-theme centre). The complex will provide a total of 88,000 square metres floor space: 36,000 square metres retail, 35,000 square metres leisure, 10,000 square metres food + drinks. The transit-hub itself will use 7,000 square metres.

To realise this new station a public-private partnership was established between the City of Dortmund, the Deutsche Bahn (rail operator) and a Portuguese developer Sonae Sierra Imobiliária. Sonae Sierra has been brought in for the commercial components of the development. The process has not been easy and, in fact, Sonae Sierra changed its plans several times. Deutsche Bahn tried to keep its share in the financing as low as possible. They even proposed building a functional station by themselves. The City of Dortmund was 'attacked' by the inner city retail owners when research concluded that 3DO would pull away 6% of the inner city's purchasing power. As a consequence, set deadlines were no longer feasible. Sonae Sierra was unable to attract sufficient interested parties for the shopping area and the City Council was not enthusiastic about the high spec plan. As a result the public lost faith in the project.

At the end of 2004 the situation changed suddenly when the Ministry of Traffic of North Rhine Westphalia announced that it would support the project with a contribution of €55 million. The Minister and the Mayor of Dortmund presented a new design for 3DO developed by Sonae Sierra; less high and with arcades at ground level. The entire concept had more appeal for the public. Deutsche Bahn was willing to finance again, as was the 'Bundestag' (€75 million). The construction of the new station started in 2005 and the station will be opened in 2009.



Source: Nova Terra, nummer 2, juni 2005

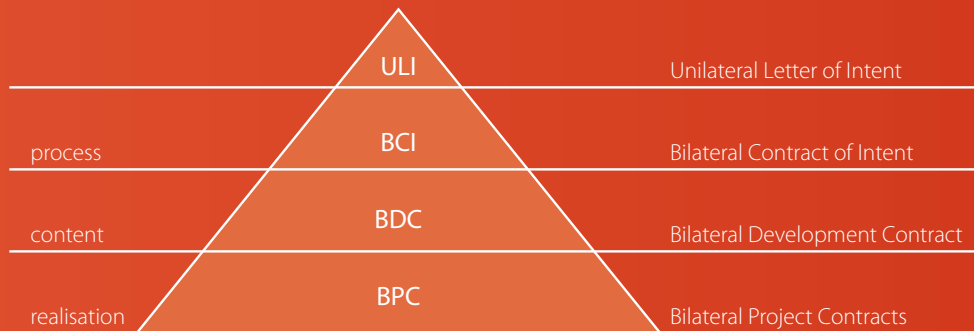
Photo: © Sonae Sierra Management Germany GmbH

## Utrecht, the Netherlands

As the current facilities of the Utrecht Station cannot handle 100 million travellers a year, different partners joined to work together towards a complete makeover of the Utrecht Central Station. The partners involved in the development are:

- the City of Utrecht;
- the Ministries of Transport and Spatial Planning;
- Private companies: Corio (owner of Hoog Catharijne shopping mall, which is integrated in the station buildings), Jaarbeurs Utrecht (Trade fair grounds, bordering the station premises) and NS Real Estate (real estate division of the Dutch rail company).

The partners in Utrecht were contracted in a 4-step approach (see figure). For each step taken in the development, different contracts were signed, starting with a unilateral letter of intent where all the partners agreed to the overall objective of creating a new station area. During the next steps of the process, bilateral contracts were signed between the City of Utrecht and each of the respective partners delivering the project. These contracts were then sub-divided into (overall) development contracts and project contracts for specific sites, each reflecting the different phase of the project. In this way the greatest possible flexibility was built into the project and this was necessary to keep the process going.



use of different scenarios and/or different development models can be helpful in this respect. In some cases it may be possible to schedule several different milestones and events on the way to raise awareness that progress is being made and to continue to engage the stakeholders.

#### Other points made at the workshop

- Political buy-in at all levels can be critical.
- Go for a long-term vision, not a quick fix.
- Use a delivery company to ensure accountability and manage expectations.
- Tackle issues as the public sees them (i.e. function versus space/design).
- Do not give up at the first set-back.
- Both PR and persuasion are needed in developing constructive partnerships.
- It should be realised that the balance of inclusion varies (e.g. between commercial and public actors).
- Develop a level of trust between partners, in particular between core delivery partners, and ensure continuity of personal commitment.



**TIMING**

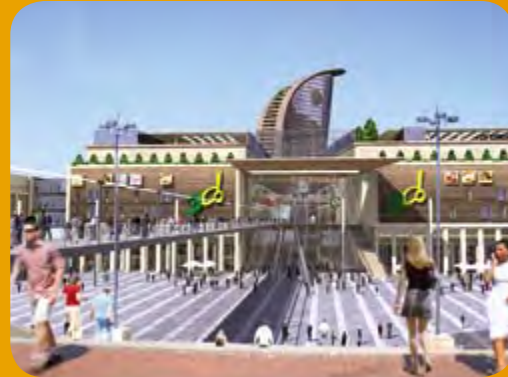
**PARTNERSHIP**

**ECONOMICS**



The development process of a station is not simple, as illustrated by the Dortmund example. In this German city, the station and station area have been developed as one complex. The initial design for Dortmund station was created through a competitive process in 1997. It had little relation with the surrounding area – with its 'alien' presence and spherical shape it was soon dubbed the UFO – and the scheme was ultimately dropped in 1999.

A few years later the design was changed drastically. The new design '3DO' for travel, shopping, hospitality and urban entertainment was presented. The designers are no longer the most important actors. A major developer has been brought in for the commercial components of the development. The new design fits in better in the environment. The station is to be built in stages. In 2004, consensus was reached between all actors involved (see case study Dortmund on page 47). The new station should be ready in 2009.



Source: Nova Terra, nummer 2, juni 2005

Photos: © Sonae Sierra Management Germany GmbH



## workshop findings - theme four

# timing

In HST-related investments, timing is a crucial issue: in terms of getting all stakeholders on the same 'track', in terms of realisation time, and in terms of inevitable changes and their impact on the project. Timing is also crucial when it comes to cost containment, as high-level investments are involved: delays cost money. Time management is therefore of critical importance. As stations are integral parts of a highly complex operational network of infrastructure and services, meeting deadlines is crucial as the failure to do so can cause substantial network and service disruption. This in turn not only costs money but rapidly erodes the public's support for a scheme.

The timing of the development process depends on several factors, including the complexity of the project, the miscellany of actors involved and the number of times a project has to be revised due to unforeseen complications. Interdependencies between different partners should be reduced, but are inevitable to some extent. Contract management can reduce uncertainty, but this usually comes at a price. A balance has to be found between programme flexibility on the one hand and financial certainty on the other.

### Long-term planning and short-term problems

One of the major problems in developing or restructuring a station area is the combination of different expectations and different scales of the problems.

#### → QUESTION

*How to bring long-term planning and short-term problems together when there are diverging expectations and scales?*



Working group Timing



Frankfurt Central Station



Much can be gained from clear definitions of what the expectations and tasks are (both preferably per partner). Roles should be outlined so that everybody knows what to do and what their responsibilities are. To this end, all information gathered in the group of actors involved should be used to determine the requirements, benefits and limitations of each type of development. Appointing a project manager and determining clear deadlines, roles, responsibilities and actions can also help to avoid conflicts between the long-term and the short-term. Furthermore, good communication of a realistic and clear strategy is essential, as is an adequate communication structure.

Another complicating factor is the interrelation between different parts of the project. It would be wise to avoid or limit cross-dependencies as much as possible; time and interdependence can be expected to cause problems. It could be wise to create the possibility to realise one part of the project at an early stage, even if other parts will take as much as five years before they are realised. This will limit potential risk-implicating interdependencies. It should, however, be ensured that this early implementation of certain parts of the development does not preclude possible expansion of the project at a later date.

### Different partners = one track

The municipality (local authority), private developers, railway operators and the inhabitants of the area all have their own ideas and wishes about a new station and station area. One of the major difficulties is to get all the different parties (including local government/politicians and the national railway company) on the same track. Timing is strongly related to that and can cause many problems.



→ QUESTION

*How can we get all parties to agree about a certain timetable and get them to stick to it?*

First of all, efforts should be made to avoid the involvement of too many parties. The number of different bodies and parties involved, and the number of transport operators, has an impact on planning; the more parties involved the greater the chances of delay.

Another aid to good partnership is consensus. All partners should agree on the final result. At the beginning of the process, the goal of the development should be clear. As different partners have different interests, their goals are different as well; the city would like an attractive station area which is a safe place, but for as little money as possible; the developer wants a place which makes the most profit and will be interesting as a retail, office and urban entertainment area; the operator would like to get as many people on the trains as possible, etc. What they would all like is an attractive, useful, safe station area. Although individual goals may be different, in the end all partners want the same attractive station area.

For time management purposes it is crucial to collate the different ideas and join them to create one 'Big Picture' which will be the joint goal of all the partners. Having a 'Big Picture' can also solve seemingly small problems. Communication with other parties which are not directly involved, such as the inhabitants of the surrounding areas, is also important and in fact crucial for a good timing of the project. The more the goals are shared by the partners, the easier the process.

Strongly related to this is the appointment of a leading figure or contact point. A 'Project Champion' or 'Figure Head' is needed, not only for the visibility of the project but also to bring together

In Salamanca, a developer hoped to transform a train station into a viable urban centre and shopping destination. In addition to 'place-making,' the design needed to cater to both the rail authority, which was looking for a formal, institutional expression, and the developer, who desired a playful, leisurely shopping centre. The international architecture, engineering and planning firm RKTL was brought onto the project after the station was already under construction and over budget, creating challenges for designers who would have to absorb what was already there into a unique architectural expression.

From the start, careful attention was paid to creating a place that would complement and balance the scale of the city. The interior plan was generated toward transit-oriented retail to capture the interest of shoppers and travellers. Merchandising areas were defined as 'needs' or 'desires,' to attract both casual shoppers and destination-bound travellers. To meet seemingly conflicting demands by the tradition-minded rail authority and the developer, the design team developed a plan for a simple form clad in traditional Salamanca stone to be illuminated with bright lights at night. Also central to the plans was the inclusion of an exterior plaza, which could serve as a large public space for gatherings and other local uses. Functioning as a hinge between the formal building and the night scene, the plaza was designed to be covered by a 'blanket' ceiling coloured by lights. An illuminated cone-shaped tower - by day a formal beacon - provides a beacon for the community. The project ultimately improved merchandising and transit pedestrian circulation, and provided a public meeting place where local residents use the forecourt plaza like a promenade.



Source: [www.rtkl.com](http://www.rtkl.com)

Photos: © RKTL

different views and opinions and to smoothen the process (and thereby the timeframe) of the project. It can, however, be difficult to find such a person. Preferably, the figurehead should have power due to his/her position or due to funding/finance facilities. The involvement of such a person should be for at least one phase, but preferably for the duration of the entire project and planning process.

#### Unexpected problems and rising costs

As developing a station or a station area is a long-term process, it should not come as a surprise that problems or complications can emerge during the course. Large scale projects take time because of the many partners involved. However, the same can apply to smaller projects.

#### → QUESTION

*How can these unexpected problems in a development process (which, in fact, could have been foreseen) be dealt with and, often related to that, how can costs be prevented from rising too much?*

As it is such a complex situation, splitting up the development of a station area in time and into different projects makes it more flexible. The chances for realisation of the project are much higher once a project is separated into different components. The overall development process should be considered as the sum of a number of smaller projects. Sometimes it might even be better to only implement just a certain stage of a project instead of the entire project. By phasing the project, a series of options can be created as well as a position to fall back on.

Nonetheless, there are of course situations which cannot be foreseen such as unexpected cost increases due to rising prices of raw materials on the world market, extreme bad weather conditions, strikes, etc. As most investments and projects related to station development are dependent on political decision

## Changing role over time – example of Utrecht Station Area Development

During the process of developing a new station area in Utrecht the role of the Project Organisation changed. Different roles were fulfilled as the project changed:

2000 - 2002 Organising a referendum  
 2002 - 2004 Developing a Masterplan  
 2004 - 2006 Contracting, legal procedures  
 2007 - 2020 Leadership in implementation

At the moment the first designs for new buildings have been finished. In 2006 the first construction activities will commence. Until then, projects will be realised that will uplift the current situation, such as the face lift for the Utrecht bus station. During the process, the role of the Project Organisation has evolved and will evolve from a broad, orientation and community involvement initiative into the actual coordinator of the total redevelopment process.

making, the political process also has to be taken into account. This implies that issues such as elections and changes in the political system will sometimes have to be dealt with during the development process. Clearly formulated contracts can be a way to minimise the consequences of such developments.

### Contracts rather than conflicts

As many different partners are involved and timeframes can be extended, it seems only prudent to work with formal agreements. Contracts are important. However, as timetables are subject to the impact of changes, flexibility should be kept to a maximum. The ability to adapt should be kept open as much as possible during the process. Bilateral contracts are usually more appropriate than overall contracts: they are more flexible.

At the beginning of the process, clear descriptions of tasks and responsibilities are helpful. A well-designed, well-formulated development brief may help to avoid a lack of clarity and therefore potential problems and/or conflicts. The development brief should help to bring people to agree on a project idea. The brief needs to include all interest groups. A Letter of Intent (LOI) or Position Statement can also be helpful in the pre-process phase. This can serve as the “ring” around the partnership, but it should be a flexible contract or an initial agreement without fixed terms.

The correlation between contracts and timing is obvious: dates have to be in the contract. Good planning can safeguard timing, and adequate contracts can ensure that the development aim will be achieved. However, guarantees for a zero-delays result cannot be provided, even with the involvement of the private sector.

### Timing and funding

Timing is strongly related to funding. Budgetary problems can cause considerable, if not insuperable, delays in the planning

One example of the modernisation of the Belgian railway network is the current transformation of Liège Guillemins into a high quality HST station.

The selection of candidates for the design of this station took place in two stages. The final selection decision fell to Euro Liège TGV's board of directors, who nominated three prize winners with a view to negotiating terms. At the end of the negotiations in October 1996, Mr Santiago Calatrava was appointed as the architect responsible for the scale and architectural design for the new Liège-Guillemins station. In June 1997, Euro Liège TGV and Calatrava presented a pilot study model to the Liège political and economic authorities and to the press.

The planning application was submitted to the deputy planning officer for the Walloon region in 1998. In the same year an impact study was carried out and an information meeting took place in connection with the preliminary public enquiry. The impact study was presented in April 1999 and a second public enquiry was held. Planning permission was issued by the deputy planning officer for the Walloon region in 2000.

The building work of the new station has been divided into 4 main phases, combining both civil engineering and railway infrastructure work. The project is complex as working on a site which is under development clearly poses some problems. As rail traffic continued during construction the whole process had to be carefully planned. For example the construction of the station involved huge arches to be built and put in place. An ingenious solution was found. The arches were assembled on the hillside end of the station, out of the way of the station operation, so trains could keep on running. Once the arches were ready they were moved into position at night so the problem of operational continuity and the need to reduce the risk of disruption were reduced to a minimum.

The construction of the new station started in November 2000. The completion of the new station (with the ending of Phase 4) is planned for 2006.

Source: [www.euro-Liège-tgv.be](http://www.euro-Liège-tgv.be)



Photos: © Euro Liège - A. Janssens

and realisation process. Funding (or the lack of it) is the main cause of problems in timing. This is often related to the lack of information on funding and budgets.

## → QUESTION

*When in the process does a partner know when funding is secured?  
How to find finances for the whole project in time?*

The status of funding and overall availability of funds is often communicated to the project management team too late. Project management needs more detailed funding information at an earlier stage in order to be able to anticipate potential time lapses relating to funding gaps. Although this is generally recognised, changes are often difficult to implement. It is therefore advisable to try to insist on the supply of data even, or rather especially, if people are unwilling and reluctant to provide these.

If it becomes clear that funds prove to be insufficient for implementation, it may be necessary to call off the whole or parts of the project. The earlier this is recognised the more unnecessary costs can be saved on abortive management or studies. It is better to delay a project until adequate funding is made available. It may also be necessary to set up a time-limited core group that focuses exclusively on tapping into other or new funding streams. However, these inevitable delays need to be seen in conjunction with planning permissions or other regulatory approvals which have already been granted for a scheme and which usually have a finite time span before they expire.

## Additional points made at the workshop

- It is a huge challenge to deliver complex projects with many stakeholders.
- Engage a project champion with influence to help drive things through more quickly.



- Sign stakeholders up to a 'letter of intent' or a position statement early on in the process.
- Plan the project as a number of smaller projects!
- Good planning is halfway towards implementation.
- Manage risks.
- Have a 'Plan B' or fallback option to act as a step in a phased development or 'grander vision'.
- Define roles and responsibilities with associated actions (who, when, who to report to, where next).
- Be honest and realistic about timing, but do not lose the funding opportunity; take it and deliver part of the project.
- Be optimistic!





# conclusions

Although there are many similarities with other planning and implementation projects, a station area development is usually more complex than other developments as many different stakeholders are involved, costs are high, timeframes tend to be long and, largely because of these reasons, there are several risks and uncertainties to be dealt with.

During the workshop, many issues and examples of good and less favourable design were discussed. According to most participants, the ideal station should be an attractive, accessible, recognisable, sustainable and safe public space of high quality; a comfortable area with clear and visible directions. The station and its surroundings should be like a town centre, but at the same time not a shopping mall. It should act as a connection between the different parts of the city which it, at the same time, divides. It can be concluded that 'ideal' stations have multiple functions and different layers of images:

- **Stations are a destination:** travellers have to go to a station and leave from there, so a station must be able to cope with flows of passengers. The passengers and other visitors should experience the station area as a comfortable and safe place to be;
- **Stations are part of the travel chain:** journeys do not usually start or end at a station. Pre-transport and after-transport are essential parts of the transport chain. Station areas have to offer connections to other modes of transport and offer facilities for changing modes;
- **Stations are an urban symbol:** the station is one of the central buildings of a town and should preferably have a landmark function.



Frankfurt Central Station



HST partners traveling



Frankfurt Airport Station

This implies station design should consider all elements, e.g. linking and integrating transport modes, quality aspects, security and safety, etc. The most important aspects are:

- **safety:** safety in and around the station, with special attention for safety at the rear side of the station;
- **reliability:** people should feel in control when they travel by public transport, just as they do when they travel by car;
- **connectivity:** this is important in many different ways, for example connectivity between different platforms, but also between different policies and functions. It is necessary to consider all modes of transport (mobility chain). Looking at residential planning, the connection to highways and public transport is also necessary. The question is whether a chain really is a chain or just a combination of separate functions? Is a station the beginning or the end of a journey, is it a link in the mobility chain, or does it have a function in the city that goes well beyond the pure transport service function?
- **information and communication:** people need to know and understand delays or transit times. If they know in advance, it is usually no problem. A clear internet site that provides integrated information on the different parts of the transport chain is essential. A second point of crucial information is the information supply at the station about where to go (directions). It should be easy to change from one platform to another;
- **quality:** a station should be a landmark, an orientation point. It should not only be commuter-oriented. It is important that it is attractive and a showpiece; and
- **comfort:** the benefits of rail travel and using stations over car and road usage must be clearly visible and leave a lasting impression in order to encourage behavioural change in road users and to increase rail's competitiveness.

Design of the area around HST and HST feeder stations forms a core element of many partner investments in both HSTconnect and HST4i. But other actors and parties involved in the plan-

ning and realisation of projects and investments in stations and in station areas are also interested in methods, solutions and best practices for 'good' station design. As we have seen, station design encompasses many different elements.

The 'design' itself, the architecture, is only a small part of the overall project. Speaking of **design** we have to realise that while public perception is important, so is the longevity of design. High status and expensive station designs are not usually the focus of public authorities, which aim to solely provide the basics. Furthermore, experiences from delegates during consultation indicate that the public is more interested in the function of a station (i.e. accessibility, interchange) than the building and urban design aspects. In this respect there is a role for designers and other actors to encourage investment in top quality, long-life design solutions but leadership and investments are also needed. A long-term perspective, including a high-quality design, is desirable but not always available.

A number of important aspects were discussed at the Utrecht workshop. With respect to **connectivity** (both between the links of the transport chain and between the city and the station), some suggestions were made for a better connection between city centre and station. Although most of these are cosmetic solutions, the results can be very positive. As far as the connection between modes is concerned, communication, comfort and co-ordination of information are the most important aspects. The physical connection between various modes should be adequate. The communication and information aspect is also essential for the connection of the different links of the travel chain. Modern IT systems, websites and the use of mobile phones can facilitate true integration.

With respect to **economics**, a number of issues remain unresolved. Upfront funding can be – partly – solved by building confidence between actors. Demonstrating commitment and

celebrating milestones help in this respect. Identifying 'early-wins' can provide cash at an early stage. Cost escalation can be avoided by proper risk management and the clear definition of tasks, plans and procedures. The phasing of a project, building-in an 'optimism bias', and insurance against certain risks are also ways of limiting the danger of cost escalation in a station development process. Another aspect is the inclusion of 'low-profit' areas such as the rear sides of stations and less-developed neighbourhoods. The establishment of a Project Delivery Agency can be of help in these cases.

**Partnership and inclusion** are two other important aspects related to station design. The larger the number of stakeholders involved, the more difficult it is to get all partners aligned. The involvement of private parties can even complicate things. New forms of partnerships and PPP constructions should be used to deal with this, although it remains an aspect to be looked at more closely in a later stage. Stakeholders should be connected and committed by creating a common project identity, partnership boards and by sharing successes and credit (turn your critics into allies). The process will run more smoothly and within time limits if a strong partnership is in place. Phasing the process and using flexible strategies could also add to the success of a project.

Regarding the **timing** aspect, we noted that both the complexity and the multitude of actors involved can be complicating factors. Clear definitions of what the expectations are and what tasks and responsibilities the various stakeholders have can help to avoid conflicts between short-term problems and long-term planning. Cross-dependencies must be limited at all costs. And, once more, the commitment and consensus of all partners involved are crucial. Not only having a 'big picture' but also the appointment of a 'project champion' will facilitate the process and will help to overcome resistance and bottlenecks. Unforeseen situations cannot be avoided but phasing the



project and using clearly formulated contracts will surely help to limit the negative impact of these developments.

Funding and timing are closely related, and there are no guarantees for secure and adequate financing. However, trying to get as much information as early as possible in the process is crucial. In this respect, project management, definition of tasks and responsibilities and good relations between the actors are also of the utmost importance.

Communication is of course also an important aspect. Not only between the actors involved in station design but also between the users of the station and station area. Mutual understanding of each other's needs will help to solve problems and bottlenecks and can prevent future mishaps occurring. A crucial aspect in all this is an understanding of the motives and behaviour of the traveller in order to:

- inform travellers more proactively about the 'alternative' of public transport;
- reform the image of public transport;
- challenge the view that train travel is expensive; and
- to get to know the train traveller.

The suggestions for solutions mentioned during the workshop session and above are no more than initial steps towards an improvement and smoothing of the process of station design. However, due to its complicated nature, the process of station design will never be perfect or complete. Standard solutions will not work and the influence of time and local specifics will always be at the forefront. Nevertheless, the exchange of views and visions, experiences (both positive and negative) and expertise during the workshop proved to be very useful to all participants. To conclude, it is not advisable to force the development of a single textbook approach which can be used in all situations and for all station areas. If there is one thing we learned during the



Frankfurt Airport Station



Cologne Central Station



Terry Mills, the Chair of the HST Utrecht Workshop wrapped the event up with an apposite final comment: "Developing an HST Station within the context of its urban environment is a very complex and challenging project with inherent frustrations, but it sure is interesting and most gratifying to see and experience the end result."

workshop, it is that all projects are different and that each specific situation calls for a tailor-made solution. Nevertheless, some general guidelines can be drawn from a multitude of different examples, the variety of experience presented at the workshop and the inherently different planning and regulatory systems in operation in each of the project member states. These guidelines are summarised below.

### The main steps for developing an 'ideal' station area

- 1 Create a project identity and a long-term perspective;
- 2 Involve landowners and other stakeholders. Make room for private initiatives;
- 3 Make strategic choices about synergy, quality, progress, money and maintenance;
- 4 Keep partners informed, manage expectations and engage stakeholders in milestone events;
- 5 Set deadlines, but be flexible. Avoid rising project costs by means of an 'optimism bias' and flexible bilateral contracts;
- 6 Merge practicality with quality. Make use of the city's main points of attraction and image in the new design;
- 7 Engage a project champion with influence to help drive things through more quickly;
- 8 Look through the eyes of different user groups and give careful consideration to safety, liability, information and communication;

- 9 Change the image of the surrounding area (also at the rear side) by realising a new and attractive mix of functions (living, work, leisure, retail and cultural);
- 10 Manage the timing and funding of the project by understanding and confirming funding sources and anticipating possible delays; and
- 11 Remain pragmatic, optimistic and do not give up.

### Participant reactions

“At the Utrecht workshop I met people that have very polychromic approaches to station design. The participants were open-minded, the location in Utrecht was outstanding and the workshop well organised”

*Jens Bothe – CEO BRT Architects*

“I found the seminar in Utrecht extremely useful in terms of understanding rail developments in neighboring EU states and I would like to thank SEEDA and HST partners for their hospitality.”

*James Waight – Asst. Inter-Regional Policy Manager - UK Department for Transport [Rail Group]*

“The presentations were very informative and it provided a good opportunity to gain greater understanding of the design issues that HST station architects consider.”

*Rowena Morris – Cross River Partnership*

“The workshop gave a good overview and comparison with strategic stations in Europe. It was useful networking and well organised.”

*Anne Sophie Legendre – Conseil Régional de Nord-Pas de Calais*

“The workshop was a very good opportunity to gain new insights regarding a vast range of station design and station area design related issues. The event offered excellent networking opportunities.”

*Kathy Helsen – Leiedal Intercommunale*

## Workshop participants

The participants of the HST design workshop had diverse backgrounds. Not only transport and city planners but also architects, town and infrastructure planners as well as representatives of governmental bodies took part in the discussions. They also represented five North West European countries (Belgium, France, Germany, the Netherlands and the United Kingdom).



Workshop participants and project partners

## annex - list of participants

Organisation	Name	Job Title	Town	Country
ARUP	Chris Rooney	Senior Consultant	London	UK
	Elliot Wishlade	Senior Consultant	London	UK
	Leszek Dobrovolsky	Senior Consultant	London	UK
Ashford Borough Council	Andrew Phillips	Sustainable Transport Manager	Ashford	UK
Bentham Crouwel Architect	Jan Bentham	CEO	Amsterdam	NL
Bothe Richter Teherani	Jens Bothe	CEO	Hamburg	GER
Bureau BUITEN	Gwen Boon	Project Assistant	Utrecht	NL
	Herma Harmelink	Senior Consultant	Utrecht	NL
City of Utrecht	Henk Bouwman	Planner/Urban Planner for Utrecht municipality	Utrecht	NL
Cross River Partnership	Rowena Morris	Senior Project Manager	London	UK
CZWG Architects	Luigi Beltrandi	Architect, Partner CZWG Architects	London	UK
Department for Transport (UK)	James Waight	Asst. Inter-Regional Policy Manager	London	UK
Deutsche Bahn AG	Iris Ludwig	Deutsche Bahn - Director Product and Station development	Berlin	GER
	Oliver Noffke	Deutsche Bahn; Product and Station development	Berlin	GER
Department for Transport (UK)	Richard Walker	Regional Relations Manager, London & South East	London	UK
Government Office for London	Helen Keen	Senior Project Manager	London	UK
Halcrow Group Ltd	Allan Runacres	Senior Consultant	London	UK
	Steve Scott	Senior Consultant	London	UK
City of Heerlen	Paul Jansen	Senior Transport Planner	Heerlen	NL
Ingenhoven, Overdiek & Prts	Hinrich Schumacher	Architect, Partner Ingenhoven, Overdiek & Prts	Stuttgart	GER
Lambeth Council	Lee Parker	Senior Project Manager	London	UK
Leiedal Intercommunale	Griet Lannoo	Urban Planner Leiedal Intercommunale	Kortrijk	BE
	Kathy Helsen	Urban Planner Leiedal Intercommunale	Kortrijk	BE
Limburg Province	Henri Looymans	Project Manager for Parkstadt Limburg	Heerlen	NL
London Borough of Newham	Paul Bowker	Senior Project Manager	London	UK
Conseil Régional de Nord-Pas de Calais	Anne Sophie Legendre	Senior Project Manager	Lille	FR
	Loic Lemancel	Project Officer	Lille	FR
Peter Brett Associates	Scott Witchalls	Senior Consultant, Partner Peter Brett Associates	Reading	UK
Projectorganisatie Stationsgebied Utrecht	Albert Hutschemaekers	Director Project Stationsgebied Utrecht	Utrecht	NL
	Erik Suik	PR officer / Coordinator	Utrecht	NL
Reading Borough Council (UK)	Radboud van der Linden	Senior Communications advisor Project Stationsgebied Utrecht	Utrecht	NL
	Michael Doyle	Director of Doyle Town Planning & Urban Design	Reading	UK
	Ruth Leuillette	Urban Planner Reading	Reading	UK
Sea Space Partnership	Paul Adams	Urban Planner SEEDA	Hastings	UK
South East England Development Agency (SEEDA)	Arno Schmickler	Project Facilitator	Guildford	UK
	Celine Chambron	Project Officer HST	Guildford	UK
	Detlef Gollatz	Head of Planning and Infrastructure, Project Director HST	Guildford	UK
	Georg Werdermann	Project Coordinator	Guildford	UK
	Goesta Weber	Project Coordinator	Guildford	UK
	John Williams	Planner/Urban Planner SEEDA	Guildford	UK
	Lucy Prabhu	Joint Project Manager HST 4i and HSTconnect	Guildford	UK
Schaber Architects	Terry Mills	SEEDA Board Member	Guildford	UK
	Carsten Schaber	Architect	Berlin	GER



# hst studies

Challenges mentioned in this report as well as others will be further elaborated in three studies which are currently being carried out on behalf of the HSTconnect and HST4i Networks:

## HST Policy Study

The HST Policy Study examines the existing legislative frameworks in the fields of spatial planning and infrastructure planning in the United Kingdom, Germany, France, the Netherlands and Belgium. The study specifically focuses on HST investment proposals (both rail links and station area developments) and comprises the entire chain: from identification (of needs/possibilities), to development (of plans) and implementation. The study will improve awareness and increase understanding of the barriers and opportunities that exist to develop the High Speed Train network on a transnational basis. This study focuses on four key aspects, i.e.:

1. the Policy Context that exists at the European, national, regional and local level within which specific proposals for infrastructure investments are developed;
2. the Planning Framework within which specific proposals are brought forward in response to the policy context;
3. the Implementation Mechanisms available to secure delivery of specific proposals;
4. the Community Involvement Mechanisms used in parallel with the fiscal and legislative mechanisms used to obtain community endorsement for specific proposals.

The HST Policy study is being carried out by an international consortium consisting of Bureau BUITEN (NL), SKM (UK), Planco (D) and Stratec (B). Finalisation is foreseen for October 2006.

## HST Impact Study

The purpose of the HST Impact Study is to demonstrate the 'Added Value' of the investments within the HST4i and HSTconnect projects. In the study, Added Value is defined as the positive socio-economic and environmental impact of HST upon investment locations. The HST Impact Study will develop and implement a project investment appraisal methodology that addresses key measurement indicators. The study will provide decision makers with evidence, information and confidence that they took the right decision by investing in HST. It will also enable them to defend their decision vis-à-vis stakeholders and make it easier for them to invest in HST related projects again in the future.

The HST Impact study is being carried out by an international consortium led by TTR (UK) and including Bureau BUITEN (NL), the University of Southampton (UK), Spiekermann & Wegener (D) and the University of Leuven (B). The project started in March 2006 and will run for two years.

## HST Connectivity Study

Under the umbrella of the HST Connectivity Study three different studies are currently being carried out. The Advice Guide and Toolkit focus on short term improvements; the study of New Technologies will analyse medium and long-term opportunities for additional improvements and solutions to both the direct HST and feeder services, i.e. the local and regional services. The three sub-studies can briefly be characterised as follows:

1. Advice Guide: the aim of the Advice Guide is to identify current obstacles to and problems in the European transport chain and to highlight opportunities to improve its quality.
2. Toolkit: the aim of this study is to develop a toolkit with hands-on solutions for station integration and better connectivity between the primary and secondary networks. This action involves the development of solutions which facilitate improvements to station integration from the transport, spatial, social and economic perspectives. The toolkit will comprise an overview of both general principles and specific solutions that can be directly applied to different locations and stations.
3. New Technologies: this study will identify medium-term solutions resulting from the use of new technologies, enhanced and efficient cooperation, and administration as at present the actual use of public transport by national and international travellers falls short of capacity. The study particularly aims at generating more direct and faster connections and better connectivity (from surrounding regions) to the main HST network.

The HST Connectivity Study is being carried out by an international consortium consisting of NewRail (UK), the University of Southampton (UK), Bureau BUITEN (NL), IVV\_Aachen (D) and the EC de Lille (F). The study will run from April 2006 to February 2007.

For further information please contact SEEDA on +44(0)483 470 157 or see the representative projects' websites for HST INTEGRATION at [www.hst4i.org](http://www.hst4i.org) and HST CONNECT at [www.hstconnect.org](http://www.hstconnect.org)



