



Innovative design and operation of new or upgraded
efficient urban transport interchanges [Theme: SST.2012.3.1-2.]

City-HUB Project



City-HUB Fact Sheet N° 4:
Interchange design and modal integration
Good and bad practices revealed by the City-HUB pilot case studies



Introduction

Within the City-HUB project, five pilot case studies have been used to assess good and bad practices and improvement potential: Moncloa interchange in Spain, Ilford railway station in the United Kingdom, New railway station of Thessaloniki in Greece, Kamppi terminal in Finland and Kőbánya-Kispest interchange in Hungary. An overview of the pilot case studies is presented in the 2nd City-HUB Fact Sheet, entitled: “The City-HUB pilot case studies: An overview”.

For the data collection, a reporting template was designed and developed, enabling comparable answers across cases, but also ensuring that additional topics could be addressed. In order to complete the template, information was gathered using different approaches, such as semi-structured interviews with relevant stakeholders (i.e. terminal owners, transport operators, etc.) and site visits/audits for the calculation of transfer and waiting time between modes and the illustration of good and bad practices (Christiansen et al., 2013).

The scope of this fact sheet is to present good and bad practices, under the topic “*Interchange design and modal integration*”, as they were revealed by the investigation of the five pilot case studies.

Good practices revealed by the City-HUB pilot case studies

Table 1 presents selected examples of good practices regarding **interchange design and modal integration**, as they were identified when studying and evaluating each pilot case study. This topic was investigated under the pillars: “travel time and space”, “facilities, service and retail”, “journey planning and real time information”, “fares and ticketing”, safety and security” and “sustainable interchange design”. Representative examples for each pillar are given in Table 1.

Table 1: Selected examples of good practices (Christiansen et al., 2013)

Practice	Case study/studies that the practice was revealed by	Why is it a good practice?
<i>Capacity, open space and logical passenger movement</i>	Moncloa interchange has over 260,000 travellers each day. However, despite this large number it is easy to move around and make connects as the interchange is never really overcrowded. This is of course related to its design. The interchange has four different levels without many physical interruptions. A clear colour strategy, with consistent signage and symbols also contributes to logical passenger movements and enables people to easily be orientated.	Interchanges need to be designed so that they provide logical and easy passenger movement. Overcrowded areas and long queues for example to get through ticket barriers reduce traveller comfort and efficiency. A poor quality travel experience is one of the key reasons given for not choosing to travel by public transport.
<i>Clear strategy for retailer quality</i>	In Moncloa, the concessionaire authorizes which services and activities are allowed to take place within the interchange. It is up to the concessionaire to set the standards for the services provided and thus they have control for deciding what kind of services are allowed (securing proper distribution of types of businesses) and the standards provided e.g. opening times, comfort, and distribution of merchandise.	The image of an interchange is affected by the quality of service provided within it and also in the surrounding area. High standards connected to the design of the interchange and its facilities are likely to have a positive impact on traveller satisfaction and their value of time. It is particularly important to reduce the perceived time spent on a journey.

Practice	Case study/studies that the practice was revealed by	Why is it a good practice?
<i>Tools for pre-trip planning</i>	Moncloa has currently a system which recommends journeys according to day of the week, starting time, location and preferences about transport mode. Transport for London also provides good online and multimodal journey planning system, which can be used for journeys to and from Ilford. The journey planner by the Helsinki Regional Transport Authority is very advanced and user-friendly, providing multimodal guidance saving preferences, picking locations from a map and so on.	Prior planning is often crucial for users of public transport and is a key factor used in promoting increased use of public transport. It is easier to plan and optimize intermodal trips if journey planners provide information about journeys across modes. Prior knowledge about journeys for all modes can make passengers less stressed and make better use of their spare time.
<i>Electronic ticketing</i>	Transport for London has a system an electronic ticketing system called the 'Oyster Card'; this is used for public transport in the Greater London area. It is valid on the metro, buses, trams, some boat services and most National Rail services within London fare zones. In Madrid a new smart Public Transport Travel card was introduced in May 2012, based on RFID technology and offers numerous benefits compared to contact based tickets, i.e. validation is carried out without direct contact to a reader.	Electronic ticketing across modes is essential and makes it possible to have one ticket that can be used on various modes within a region. Electronic ticketing can thus reduce barriers connected to the problems of buying tickets, as well as saving time, for example when boarding public transport and as a result making public transport more attractive.
<i>Safe and secure design</i>	The investigation of Kőbánya-Kispest showed that design faults during the planning phase of the interchange re-development could have been minimized if methods/interventions, such as the analysis of air-extraction and ventilation, the simulation of passenger movements and the separation of vehicles and passengers, had been considered.	Keeping flows of vehicles and passengers separate ensures that passengers are not present in areas which are used by buses. Avoiding parallel platforms with circulation lanes is one measure which might improve safety. Thus, the design reduces the risk for collisions and accidents between passengers and buses.
<i>Hybrid or electric public transport</i>	As part of the Crossrail project – for which Ilford is a station - the UK is planning to use lighter trains and regenerative energy braking ¹ . Introducing hybrid buses can be an important measure in mitigating local air pollution issues (NO ₂ and PM ₁₀). Transport for London is in the process of introducing about 1,700 hybrid buses by 2016. It is expected to reduce emissions of local pollutants and carbon dioxide by at least 30%.	Fewer pollutants would benefit travellers at interchanges, by reducing health risks and improving the quality of the environment. Interchanges can potentially attract a large number of buses and the cumulative levels of pollution can be harmful for travellers.

Bad practices revealed by the City-HUB pilot case studies

Table 2 presents selected examples of bad practices regarding “travel time and space”, “facilities, service and retail”, “journey planning and real time information” and “safety and security” as parts of **interchange design and modal integration**.

¹ Regenerative Braking involves using motors in reverse as an electric brake and returning the energy to the electrical supply system and will be a design requirement on Crossrail rolling stock.

Table 2: Selected examples of bad practices (Christiansen et al., 2013)

Practice	Case study/studies that the practice was revealed by	Why is it a bad practice?
<i>Barriers for accessibility</i>	The case study from Ilford has identified five barriers at the interchange before passengers can access platforms from the main entrance: - Gate lines could easily become overcrowded during the rush hour; - Conflicts between those queuing for tickets and those queuing at the barriers; - A fairly small area exists for the ticket office and ticket machines; - There is also a long distance from trains to some buses; and - Narrow connections exist from trains to some buses.	Any barriers which increase travel time should be avoided. Establishing sufficient capacity for ticket offices or ticket machines are likely to be cheaper measures, compared to changes in design to the overall interchange. Barriers connected to validating or buying tickets could be reduced by having integrated and/or electronic ticketing. Travellers will have less need for buying tickets at interchanges and this could lead to less queues.
<i>Facilities not located in logical progression</i>	Conflicts of interest are indicated in the Kőbánya-Kispest interchange, between the owner of the shopping mall and the passengers. The mall wants to locate services in such an order that passengers have to walk through as many shops as possible. Services at Kőbánya-Kispest are consequently scattered around the mall. This is in contrast to passenger interests who want all important services located close to each other and in particular close to the main transfer route.	When facilities are not located in logical progression, users need more time to walk through them, and this affects negatively their comfort when using the interchange.
<i>Lack of integrated multimodal information</i>	Operators at Kőbánya-Kispest use different information systems and there is no coordination or integrated multimodal information. The electronic information systems are not connected since they use different types of equipment and displays. The interchange also lacks an integrated information board which provides travellers with timetables, routes, fares or ticketing options.	Information is a necessity for public transport users and an important strategy to consider when promoting increased use of an interchange. Lack of information increases barriers for interchange users. This is especially problematic for less frequent public transport users.
<i>Unsafe design</i>	At Kőbánya-Kispest, there are several pedestrian crossings across roads used by buses. Also, there are series of columns along the stops at the interchange, affecting negatively the safety level.	There are potentially several thousands of travellers crossing roads where buses are operating and not keeping the travellers separated increases risks of accidents and therefore injuries.

Conclusion

Five European pilot case studies have been used to assess good and bad practices regarding crucial issues at urban transport interchanges, i.e. interchange design and modal integration. The need for accurate real-time information provision both online and at the interchange, the improvement of the capacity of ticket machines, and the establishment of strategic plans for attracting businesses in the area of the interchange or the surroundings, were indicated as potential means for the improvement of the specific interchanges.

References

Christiansen, P., Andersen, J., Hernández, S., Di Ciommo, F., Monzon, A., Sánchez, N., Su, T., Sanchez, X., Harmer, H., Millard, K., Jones, J., Nathanail, E., Adamos, G., Tsami, M., Kostianen, J., Järvi, T., Vilkmán, A., Keserű, I., Pusztai, A., Vörös, A., 2013. City-HUB project, Deliverable D2.3 Lessons from descriptive case studies – recommendations for City-HUB model.