



**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° 1:
**Identification and validation of
key interchange factors**

Background and content

Transport interchanges play a crucial role in urban development facilitating links between different modes, routes and destinations. Time saving, urban integration, better use of waiting time and improvement of operational business models are some of the benefits that result from the development of smart and efficient urban interchanges. However, although urban transport interchanges are crucial for improving accessibility, many still experience issues, often related to the coordination of the different modes and the use of information systems and management models.

The City-HUB project is therefore bringing together leading experts in design and urban integration, transport operation and business, local and regional authorities and end-users organizations, aiming to contribute to the design and operation of seamless, smart, clean and safe intermodal public transport systems.

The scope of the 1st City-HUB fact sheet is to present the main findings of the 1st City-HUB Stakeholder Workshop, which took place in Budapest on March 21st 2013, with approximately 40 attendees. The aim of the workshop was to validate the findings of the state-of-the-art analysis of the theory, policy and practice in urban and interurban interchanges, to identify any perceived gaps and discuss further research and policy needs with respect to the practical delivery of good practice in interchanges. Three different visioning events were held based on the structure applied in the state-of-the-art review: the manager/operators perspective, the policy perspective and the users' perspective.

Which factors are crucial to the quality of interchanges?

Its position in the transport network, the surrounding urban environment, the integration of the different modes and the legislative framework that is in force, are all key parameters that make each interchange "unique". Consequently, the successful design and operation of an urban interchange is primarily dependent on these parameters, in addition to the structure of the relevant processes developed between the different stakeholders involved (Ubbels et al., 2013).

The review undertaken, looking at three main perspectives: transport managers/operators, policy and governance and interchange users, showed that the definition of an optimal service or operation is different for each of the stakeholders involved, although there are common important themes, such as safety and security.

Focusing on the policy perspective, it was observed that different levels of government are involved when designing, managing and operating an interchange. Specifically, in most cases, local and/or regional authorities cooperate with operators and interchange managers, without these authorities necessarily leading the processes. At the same time, the legal and regulatory frameworks are also significant, and can enhance the quality of services provided to all users (Ubbels et al., 2013).

Transport operators, on the other hand, use the interchange, and in some cases, either get involved in or manage its operation. As expected, the coordination of different transport modes at an interchange requires cooperation between the different involved stakeholders.

Lastly, understanding existing requirements and needs (and predicting the future requirements and needs) of users are important elements for the provision of successful multi-modal interchanges. Although the type of users, i.e. the elderly, people with limited mobility or disabilities, defines the mobility needs, benefits, such as safety, reliability, comfort, short waiting times, etc. are significant for all travellers (Ubbels et al., 2013).

The key factors, identified in state-of-the-art analysis as crucial to the quality of interchanges, are presented, and briefly described in Table 1:

Table 1: Key interchange factors (Ubbels et al., 2013)

Factor	Description
<i>Process coordination and management</i>	The involvement of different stakeholders in the development and design of an interchange makes the process complex and demanding. Careful coordination is required for the efficient operation of the interchange and the provision of a high level of service to passengers. The development of a business model from the start of the interchange design can enhance this coordination.
<i>Accessibility to all</i>	Accessible interchange design has to foresee places that are easy to be used by all travellers, including disabled people, the elderly, children, people with heavy baggage and people with bicycles. An interchange plan can work as the necessary management tool for the improvement of the access to and from a station.
<i>Quality to traveller</i>	Key elements that improve quality include short transfer times, integrated ticketing, barrier free accessibility, actual and reliable information, and easy way-finding with good access and egress facilities.
<i>Safety</i>	This aspect encompasses both the design of the interchange in order to minimize the potential for accidents, conflicts and collisions, and the compliance with all the relevant safety and emergency standards.
<i>Interchange design</i>	The design of the interchange is important, affecting elements of policy makers, users and operators. High quality design should be met in buildings and the surrounding area enhancing the quality of the time spent and the perception of safety, while innovative design could address the sustainability of interchanges and fit within the urban environment.

Main conclusions of the transport visioning events

Transport operators and managers point of view

Operators are focused on providing real time information, and such information should be shown on displays at the interchanges, in order to be available by all users. In order to achieve a common information platform that includes information from all operators who are involved in an interchange, centralised management is needed. Other important factors for operators were accessibility and security; and managers should develop interchanges that provide a secure feeling to travellers. In addition, businesses at the interchange are a key concern for operators. There is a trade-off between the objective of keeping passengers at the interchange the least possible time and making their waiting time at the interchange more productive (Keseru et al., 2013; Ubbels et al., 2013).

Policy and governance point of view

Governance is the key driver for interchange design and operation, and different models should be considered, i.e. coordination in processes required when multiple stakeholders are involved, or one central authority. Also, the responsibilities and jurisdictions of the different stakeholders need to be clearly specified, in order to avoid conflicts of interests. Financing and funding of interchanges is not very important when it comes to policy making regarding interchange investment, since it is of higher importance that funding remains available in the long term for the proper maintenance and operation of the interchange. Sustainability, especially in terms of environmental concerns, may be a barrier to the development of an interchange, attributed to the restrictions that may apply and the impacts of the interchange design in an urban area. Lastly, although, safety is an important issue, it is not well managed in many cases, thus an action plan on safety, clearly defining roles and responsibilities, is recommended (Keseru et al., 2013; Ubbels et al., 2013).

Users point of view

Interchanges have to be accessible to all users, including, the disabled, the elderly and foreign tourists, while special care should be given by the operators to the maintenance of the equipment for people with special needs, along with the proper information provision on the equipment status. Clear and understandable information should be available both online, in order to enable trip planning, and at the interchange itself, enhancing for example way-finding. Lastly, gender-related security issues also have to be considered (Keseru et al., 2013; Ubbels et al., 2013).

Validation of key interchange factors

The state-of-the-art review of the theory, policy and practice in urban and interurban interchanges showed that a successful interchange is defined by efficient coordinated processes and management, provides accessibility to all, is convenient and safe for all types of users, and is developed under a sustainable interchange design. The findings of the three focus groups organised in the framework of the 1st City-HUB Workshop, validated the outcomes of the state-of-the-art approach, and specifically, the following were highlighted (Ubbels et al., 2013):

- The management of stakeholders, comfort, safety/security and accessibility stand as key crucial elements for the efficient operation and design of interchanges.
- Information provision is considered as an important element of interchange services.
- New technologies should be used for the improvement of way-finding at interchanges and the provision of reliable information about travel times.
- Currently sustainability is considered to be of less importance.

References

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Ubbels B., Palmer D., Laparidou K., Poppeliers R., Menist M., Jones M., Millard K., Harmer C. 2013. City-HUB project, Deliverable D2.2 Conceptual framework: key intermodality factors.