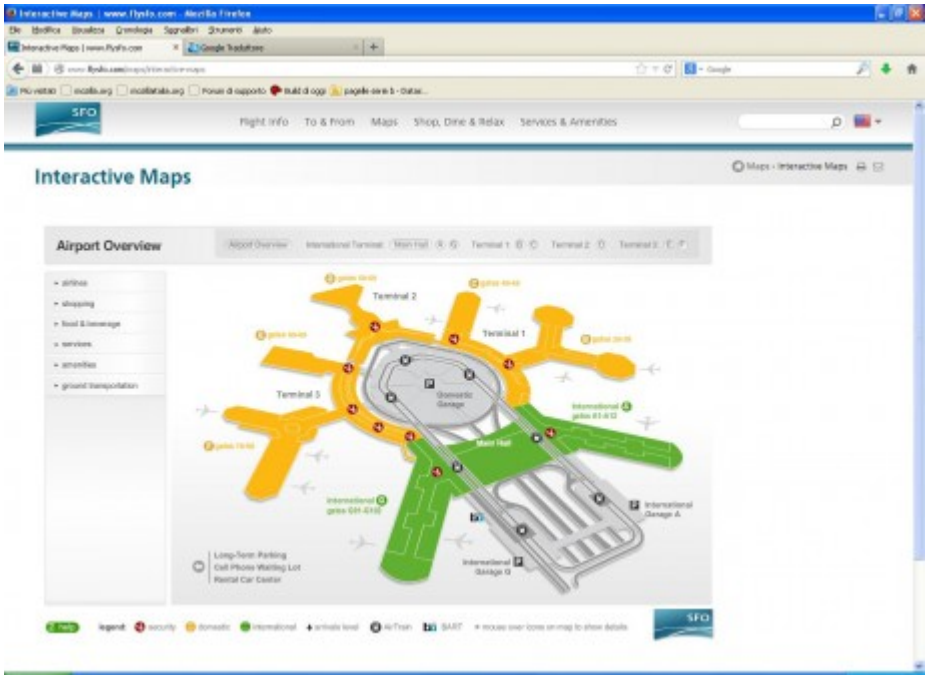
Static/dynamic multimodal map of an interchange



The goal of this tool is to develop a static/dynamic interchange multimodal interactive map (2D/3D), enabling users to obtain transport network information (stop points, routes, next departures, disruptions, etc.) and to visualise the outdoor environment of the interchange.

A public transport map is a map used to illustrate the lines and stations within a public transportation system and its primary task is to help passengers to navigate through the transportation network.

Dynamic maps development with integrated information on the transport network and/or on events affecting traffic flow around the interchange are part of a multimodal mobile information system. This system has to be independent, open, integrated, interoperable and able to provide information to the user before and during the trip (pre-trip and during trip), regarding the overall offering of transport and traffic conditions in real-time, geo-referenced and customised to the real needs of the user. It is an innovative system capable of ensuring efficient interoperability between different transport modes at the interchange, with benefits both for the travelling individual and the community.

The way to harmonise and integrate the information systems related to multimodal transport in a single platform consists of collecting, merging and processing different TPL operator databases (e.g. PT static and dynamic information, traffic information, event type, etc.).

This system must be capable of supporting the end-user (citizen, tourist, traveller, etc.) in choosing the best route based on the user's profile, needs and exogenous conditions (e.g. congestion, accidents, work in progress, etc.). End-users feel a strong need for a single point of reference from which to draw, in a unified way, all of the information they need for their travels.

The benefits for passengers are relative to: reducing the transit time between one transport mode and the other; shorter itineraries for passengers; better integration of facilities with their surroundings; ability to choose the transport mode in relation to habits and needs and to plan the journey from source to destination in real-time; increased safety; better access; increased passenger satisfaction; comfortable way of travelling.

The benefits for Public Authorities are relative to: increased public transport modal share; better image for public transport operators; modal shift from private to public means of transportation; reduced air pollution in the area.

Good practice

Only recently has the Internet led to the widespread use of detailed geographic databases and computer-generated maps, which nowadays are almost a standard in every website related to public transportation. The systems provide information about operator routes, services and fares and offer passengers the ability to plan and embark on public transport trips much more easily, which further promotes the use of public transport.

Helsinki Regional Transport Authority (HSL) – A map application based on Google Maps and called HSL Live is available for users. It includes a section featuring the buses and trams in the city of Helsinki, Finland, moving along the streets in real-time. By clicking on a tram, the user can follow its route and by clicking on a stop he can see the next departures.

Rome (ATAC) – To date, there is no integrated system for managing the information coming from the territory that distributes it to the end-user as static/dynamic maps to be used for planning trips (both in the pre-travel and travel phase). However, there are independent dynamical or pseudo-dynamical systems. Today the information systems offered are: “Trovalinea” (Find the Line), “Previsioni di arrivo alla fermata” (Estimated time of arrival), “Calcola percorso” (Route calculator). The added value consists of integrating this data with other real-time service data, such as local traffic, accidents, roadworks, etc. into a single information channel.

Gothenburg, Sweden – A different kind of real-time information is used. In Gothenburg, a simplified line form route map shows a tram’s current position and its approximate journey times, but not the exact time of arrival. It is therefore the passenger’s responsibility to draw conclusions as to when it will be at the stop.

Toulouse (Tisseo) – By using its interactive map (http://www.tisseo.fr/plan-interactif), users can plan their trip and become familiar with the transport network and the main points of interest in Toulouse area.

Lyon – Maps describing the services offered in the interchange can be found on the PTA/PTO website of Lyon (http://carto-interactive.tcl.fr/v2.0/carteTCL/carte.html).

Adelaide – Static maps describing the connections between buses and trains on the PT website of Adelaide (http://www.adelaidemetro.com.au/Timetables-Maps/Maps/Interchanges).

Dynamic maps exist in many airports, as is the case for example at San Francisco International Airport (http://www.flysfo.com/maps/static-maps) or Charleroi (http://www.charleroi-airport.com/en/the-airport/terminal-map/index.html).

Nokia and other major map providers now offer maps for indoor venues, such as shopping centres, designed to help users find the right gate to park at and the shortest walking route directly to a store. This has become one of the fastest-growing markets for map providers. Indoor maps are also provided in a 3D format, since indoor venues often have complex layouts over a number of floors. 3D maps allow more advanced and accurate guidance and routing.

Application in NODES sites:

This tool has been evaluated by the NODES Budapest site .

In Budapest, due to the fact that the interchange is a one-storey facility (except for the metro and the railway platform which are on an upper level), a two-dimensional, paper-based map is perfect for give passengers

information. It provides all of the required information for bus lines, the location of P+R parking, the nearby pier for BKK ferries, bike routes and a B+R. This tool is considered useful, even if the static (paper) version needs to be upgraded from time to time. The implementation and operation of a digital version, while sophisticated, is considered expensive.

Potential interchange performance improvement

Once passengers learned to use public transport maps correctly, their confidence in planning a journey using public transport increased, and there has been a general rise in the overall opinion of public transport as well.

The benefits for Public Authorities are:

- increased public transport modal share;
- better image for public transport operators;
- modal shift from private to public means of transportation
- reduced air pollution in the area

The benefits for passengers are:

- reduction of transit time between one transport mode and the other;
- shorter itineraries/walking distances for passengers;
- better integration of facilities with their surroundings;
- possibility to choose the transport mode in relation to habits and needs and to plan the journey from source to destination in real time
- increased safety,
- better access;
- increased passenger satisfaction;
- comfortable way of travelling.

Resources

Static maps costs are significantly reduced and depend on the size, the type of material and pillar and the colours used. The main cost f dynamic maps are: data collection and updating, software development or acquisition, integration of different information sources, hosting and maintenance of the system, marketing.

Other costs to be taken into account are: operators and owners of railway stations, terminals, stops and other transport hub owners and operators to support data collection; active user group representatives and test users; involvement in user needs assessment and as multipliers to spread the message about new services.

In general, the costs depend on the type of maps and information systems chosen for the area and on the complexity and requirements of the data to provide, with particular reference to the type of user receiving the information: tourist, citizen, user with reduced mobility, visually impaired, etc. In detail, static information on maps via web, at stops or at stations is less expensive than dynamic information provided via web or on the territory through intelligent bus stops, panels, totems. Even more so if the information systems used are also accessible to users with reduced mobility, people with physical and mental disabilities, the visually impaired, people with cognitive problems, etc., for whom information systems are more complex and expensive to build.

Increase energy efficiency

References

TISSEO – http://www.tisseo.fr/plan-interactif/.

ADEALIDE – http://www.adelaidemetro.com.au/Timetables-Maps/Maps/Interchanges.

SAN FRANCISCO INTERNATIONAL AIRPORT – http://www.flysfo.com/maps/static-maps.

CHARLEROI AIRPORT – http://www.charleroi-airport.com/en/the-airport/terminal-map/index.html.

MAPNIFICENT – Available for major cities in the US and world wide – http://www.mapnificent.net/.

DESIGN FOR MOVEMENT (Steer Davies Gleave) – http://www.steerdaviesgleave.com/sites/default/files/services/Digital%20Design.pdf.

BLACKTOWN CITY – http://www.blacktown.nsw.gov.au/Visiting_Our_City/Transport_Access_Around_the_City/Town_Centre_Access_Maps.

HOW TO DESIGN THE PERFECT TRAIN NETWORK MAP – http://www.gizmodo.com.au/2014/03/ how-to-design-the-perfect-subway-map/.

GOOGLE Brings New Public Transit Features To Maps, Now Covers a Million Stops – Gold, J. (2012) – Network World. Retrieved October 3, 2013 – http://www.networkworld.com/news/2012/081512-google-maps-261679.html.

INTEGRATED PUBLIC TRANSPORT INFORMATION SYSTEM FOR BAA SOUTHAMPTON AIRPORT – ITS for travellers and users – connected traveller service – J. L. Mead and D. Leeds (2009) – UKRoad, 2009.

ROADMAP TO A SINGLE EUROPEAN TRANSPORT AREA TOWARDS A COMPETITIVE AND RESOURCE EFFICIENT TRANSPORT SYSTEM – European Commission White Paper (2011).

LEGIBLE LONDON REPORT, “Legible London Full Guidance”, “Pedestrian Wayfinding experiences in London”. AIG London (2006) – http://segd.org/legible-london.

THIS ARCHITECT HAS PAINSTAKINGLY STANDARDIZED THE WORLD’S SUBWAY MAPS – http://www.theatlanticcities.com/design/2014/04/architect-has-painstakingly-standardized-worlds-subway-maps/8843/

DESIGNER LANCE WYMAN – http://www.lancewyman.com/

DESIGNER PAUL MIJKSENAAR – www.mijksenaar.com

PARTICIPATORY MAPS FOR INCLUSIVE CITIES – Partizaning’s Map of the Moscow Metro – www.partizaning.org

NODES strategic objective	Contribution
Enhance accessibility and integration	++
Enhance intermodality	++
Enhance liveability	++
Increase safety and security conditions	++
Increase economic viability and costs efficiency	0
Stimulate local economy	0