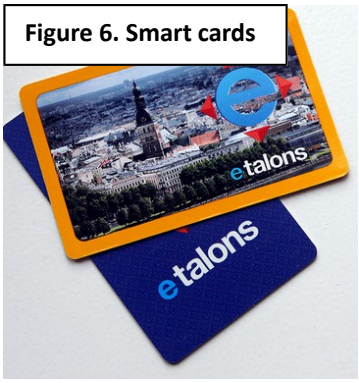
Smart cards as a transport, social and education policy instrument - Riga

The smart cards project focuses on developing an innovative and easy payment solution in the form of a common electronic card system. It is a multifunctional system that can be used as payment for public transport, to register for different social services (e.g. catering services), for city car parking, park and ride or access to different kinds of discounts for certain social groups.

Figure 6. Smart cards



The project focuses on three issues:

- To create a more rational organisation of public transport;
- To reduce energy consumption in the city; and
- To achieve greater convenience for residents.

The project started in 2007, with the aim of creating an electronic payment system for public transport in Riga and to ensure its functionality. By using new technologies the system aims to provide an effective, efficient and inclusive service to all inhabitants.

The sections below set out how the initiative fulfils the key European Commission and STEP UP lighthouse criteria.

Integration of energy, ICT and transport

Energy

Passenger flow data: reducing energy consumption is one of the main aims of the project and is done in several ways. Data on passenger flow is analysed daily so that the optimum car or coach size can be used. The data is also used for long term planning of the public transport system in order to be able to introduce necessary changes when it comes to energy consumption. By achieving increased access to public services, the system aims to reduce private motoring in the city.

E-card system: implementation of the e-card system also aims to reduce the fuel consumption of public transport by cutting unnecessary costs. Furthermore, energy consumption should also be affected through an increased use of non-paper technologies.

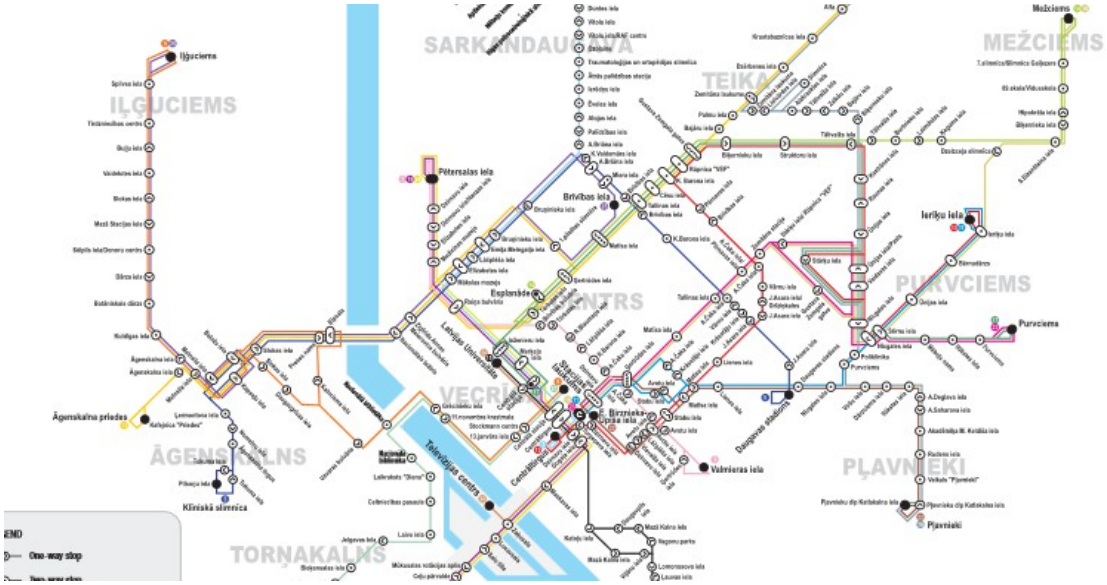
ICT

Centralised information network: the basis of the project is to use ICT as a way of making services for citizens more effective and thereby achieve a more holistic solution to several challenges at the same time; such as reduced energy consumption and better access to public services. A centralised information network that manages all data within the system has been developed. This has been built to manage the complex nature of the system and its many different functions; whether it is used in order to access social services, public transport or parking. The multi-functionality of the network also means that it can be accessed from different geographical locations and through different types of technologies, depending on where and for what you are using it. This also means that the network consists of many different 'nodes', such as: ticket validators where passengers validate their cards; consoles that the drivers use for validating and selling tickets, the portable terminals that are used by the staff in order to check the passenger´s tickets as well as the data concentrator which connects the system with the main data centre.

Transport

Improved public transport: the system deals with different aspects of transportation. The introduction of the smart card system has affected how public transport services are planned, including traffic routes and transport frequency. The benefits of the system, such as better routes, improved timing and comfort, together with additional measures, helps citizens prioritise public transport over private cars and reduces the need for private cars.

Figure 7. Smart card system coverage in Riga



Replication and scalability

In general e-cards systems tackle issues that are important in many parts of Europe, such as the need to create a more rational organisation of public transport, to reduce energy consumption in the city and to achieve greater convenience for residents. This means that there should be an interest across many European cities in using similar systems. Furthermore, the method of switching paper-based systems to electronic tickets for public transport and social services should in principle be possible to implement many European cities, and already has been in some.

The Riga e-card initiative is based on similar e-card systems that already exist in a number of other cities – such as Paris, Lyon, Toulouse, Warsaw, Zurich, Houston, Montreal and Melbourne – which shows that there is a replication potential. However, the system in Riga has been adapted in order to meet Riga's needs, including a wide variety of different services and a high degree of integration between different sectors. The feature that separates the system in Riga from other similar systems is that it connects social services with transport. This might increase the difficulties of replicating the system as a whole, since elements like resources, policy decisions and infrastructure need to be implemented not only within the transport sector but also within social services. However, provided that the necessary political decisions are taken and that funding is available, the system should be replicable, as the overall methodology and technological solutions are already there.

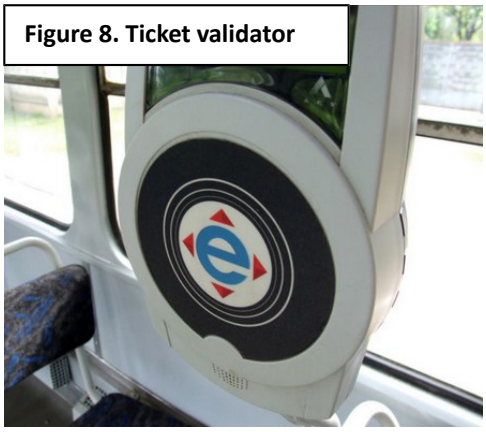
When it comes to the system's potential for being scaled up, there can be positive effects of implementing a system like this on a relatively large scale from the beginning. If measures

such as introducing new tickets, devices, terminals and data concentrators are to be cost-effective this needs to be done on quite a large scale. These measures can have effects on the system as a whole; in Riga, the introduction of the smart card has affected the whole public transport system, including routes and transport frequency. Today there are 400 000 smart card users in Riga.

Integrated building blocks

The approach to e-cards that is used in Riga – which combines traffic and social services – must, by necessity, integrate different building blocks. However, initially the system only included public transport, and therefore consisted of fewer building blocks than it does today. Over time, it was developed as a wider system for different purposes. To begin with, several different transport-related building blocks were added. However, over time a whole new sector was added, so that today the system is used by individuals in order to apply for a variety of different social services in addition to transport related services, as follows:

Figure 8. Ticket validator



1. The transportation of school pupils;
2. Entrance to schools (in order to take care of security);
3. School catering services;
4. Social services – the provision of free meals by the Welfare department of Riga City Council and others.

The e-card system will also soon be implemented for the integration of railway transport, and there is an ambition for additional smart card pilot projects with new purposes over time.

By connecting the different building blocks described above a number of different synergy effects have been achieved. On the traffic side it has been possible to get a better overview of how individuals transport themselves, and how to motivate them to decrease their use of

private cars. When it comes to social services, the system generates opportunities for a more effective and holistic system for delivering social services.

Monitoring and reporting

Prior to the introduction of the system in Riga, a research project was performed in order to analyse the current situation as well as different capabilities. Technological, economic and legal aspects were assessed. The research phase ended in 2007, when the e-ticket implementation model was developed and approved. The most appropriate system was found to be the one provided by the US company ACS (Affiliated Computer Services Inc.). The electronic ticketing system implemented by this company also exists in Paris, Lyon, Toulouse, Warsaw, Zurich, Houston, Montreal and Melbourne.

A basis for the initiative is the continuous monitoring of flows within the system. Five parameters are regularly used: number of vehicles, number of drivers, number of trips, km travelled and hours. Data can be acquired for different types of transport (bus, trolleybus and tram) and can also be divided between working days and weekends.

The data that is acquired from the continuous monitoring of traffic flows is used for public transport planning in Riga. The data shows that the number of passengers using public transport in Riga is increasing from year to year. Between 2012 and 2013 there was a 6% increase in the use of public transport. By understanding how traffic flows are structured it is possible to organise the use of vehicles in a more effective way and thereby reduce their energy consumption, as well as save money. On average, since 2010 traffic has fallen by 2-8% on working days and between 9-13 % on weekends.

Key winning elements of success

Political leadership with a long term approach

From the start Riga City Council has had a key role in this initiative, by both introducing it and providing finance. In addition:

- Riga City Council sets the policy, adopts the discounts and accepts new smart cards pilot projects;
- The traffic department is responsible for public transportation in Riga and planning public transportation zones;
- The welfare department assists individuals from risk groups;

- The department of education, youth and sports optimises and coordinates assistance in schools

Collaboration and dialogue with all stakeholders

A system that connects different services and sectors with the aim of solving a variety of problems can only function if a number of different actors are engaged and connected.

The role of the City Council has been central to the project, as set out above. The limited liability company “Rigas karte”, created specifically for this initiative, owns and promotes the e-card in public transport and develops the system for other social purposes.“Rigas satiksme”, the transport company owned by the municipality, deals with public transportation and owns the public transport fleet. It uses data from the smart cards system to improve daily operations and long term planning.

Citizens use public transport, different offers connected to the system such as free dining opportunities and car parking services. Additionally, pupils use the e-card to check in at schools.

Contribution to multiple policy objectives

One key winning element which has enabled the initiative to be successful is that the system provides a general ICT infrastructure – the e-card system – that integrates different kinds of transport services with the delivery of social services; students use the same ticket to register their arrival at school as others who use it for public transport or to park their car. The use of a general ICT infrastructure has meant that the system has been able to deliver new services within different sectors and to different actors at the same time, and therefore contributes to a number of policy objectives in the city.

Traffic data is used as a tool for the development and planning of the system. The fact that the system generates data which can then be used in order to develop the system further is a winning element. This opens up opportunities for a system that has a high potential for organisational learning.

The system has grown over time and new building blocks have already been integrated. This potential to add new elements to the system has so far created scope for ongoing expansion of the system and thereby for continuous growth. For example, in the future there may also be an opportunity to integrate the system with suburb trains and taxis.

Business models to attract investment

For the development, financing and management of the project, Riga's municipal public transport company (100% owned by the City of Riga) created a joint venture with Affiliated Computer Services Solutions France S.A.S by creating a limited liability company called "Rīgas karte". Rīgas karte proposed technological solutions by integrating them with Riga's public transport system, including buses, trams and trolleybuses.

The system also attracts sub-contractors that are specialised in a variety of issues. It works together with state and local organisations, as well as with ticket issuing and trading venues.

The business model combines public sector grants and loans, alongside commercial activities. To begin with, the establishment of the project was mainly financed by Riga City Council using municipal grant and loans. The initial investments amounted to 11.6 million lats or €16.5 million, including VAT. The cost of maintaining the system is approximately €12.8 million, which is largely financed by Riga City Council. Additional financing is achieved through the selling of e-tickets that can be purchased in supermarkets and ticket machines in Riga.

Promotion of the initiative

The promotion of the e-card system started with a wide range of information being presented in the media. Focus was put on the benefits of the system and on its convenience for customers. The system was demonstrated at conferences and through several press briefings. Text and visual information was presented at public transports vehicles, at stations and at the customer offices of the transport company. The promotion and education has focused not only customers, but also on sellers, drivers of public transport vehicles and controllers of tickets.