



CIVITAS

Cleaner and better transport in cities

MIMOSA

CASE STUDY



TALLINN'S NEW TICKETING SYSTEM - SECURE, USER-FRIENDLY AND CHEAP

COLLECTIVE PASSENGER TRANSPORT



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TALLINN ●

During CIVITAS Plus, Tallinn tested a new electronic online ticketing system for all types of public transport (PT) tickets, including season tickets. This broad system functioned on the basis of contactless cards, ticket validators at all PT vehicle entrances, printing devices by driver for one-ride paper tickets, control devices, central system server and modems to connect vehicles. As well as reflecting upon how Tallinn found a modern and optimal solution for their needs, this case also discusses how the procurement of the necessary equipment was tackled and eventually implemented.

Municipal context

The capital of Estonia, Tallinn has 416,470 inhabitants. It is home to the most intact medieval city centre in the world. Tallinn's UNESCO-protected medieval old town is known around the world for its authentic Hanseatic architecture. Tallinn is the most important and largest centre for services, commerce and finance in the country.

An economic downturn after independence in 1991, followed by rapid economic growth, had a huge impact on the city and the structure of its transport system. The number of private cars increased very quickly, while the expansion and improvement of the public transport network lagged behind.

Between 1990 and 2000, public transport use fell from 250 to 94 million passengers and its modal share decreased from 77 to 31 percent. The massive shift to private car usage and the large amount of through-traffic is taking its toll on the city and threatens to damage the beautiful old town.

Tallinn's most pressing challenge is to renew and extend the public transport network including buses, trolleys, tramways and suburban trains. To this end, the city developed a traffic development plan for 2005 – 2014.

By participating in CIVITAS, Tallinn has been able to draw on the support of international partners in order to develop a framework to address more sustainable mobility in the city.

MUNICIPAL PROFILE

LOCATION

Tallinn, Estonia

POPULATION

416,470

LAND AREA

159.1 km²

CIVITAS BUDGET

Total budget for the new ticketing system measure was EUR 857,324



TALLINN IN CIVITAS

Tallinn (Estonia) participated in CIVITAS MIMOSA, an innovative collaboration between the cities of Bologna (Italy), Funchal (Portugal), Gdansk (Poland), Tallinn (Estonia), and Utrecht (Netherlands). The motto of the project is "Making Innovation in MObility and Sustainable Actions." Tallinn also participated in CIVITAS from 2004-2009.

CIVITAS MIMOSA

With cities drawn from a range of geographical and economic situations, MIMOSA cities implemented a range of 69 activities, aimed at guaranteeing mobility to all citizens without burdening the environment or weakening the cities' economy. Shaping a new mentality where conscientious behaviour is perceived as rewarding rather than a sacrifice was at its heart. This effort was reinforced by a host of technical and physical measures. It ran from 2008-2012.

READ MORE AT:

www.civitas.eu/display-all-projects



Using the contactless card on a Tallinn tram

Introduction

Before the introduction of contactless ticketing, there were two different systems in Tallinn's public transport (PT), paper-based tickets and ID-tickets, which are connected to national personal identification cards.

User acceptance of the ID-based ticketing was high, as users did not have to present or register their tickets on entering the PT. The main drawback of the previous systems was a lack of feedback to transport planners and managers on the actual usage of the network. Another reason for the changes was the high operating and maintenance cost of two systems, which amounted to ca. 1.5 million EUR annually.

Passengers now have to register their trip using a personal contactless card when entering the vehicle. This gives transport planners the opportunity to obtain information on trip origins, destinations and use of routes. This information is very important for optimising the entire network and individual lines. The benefit for the users is a wider and more flexible fare system with multiple options for combining different modes and services.

Tallinn's research and implementation of this new ticketing system is very much in line with the innovative nature of the CIVITAS Initiative.

Taking a closer look

The measure objectives were to:

- Increase modal split towards sustainable modes;
- Create an innovative and secure contactless, online PT ticketing system;
- Improve passenger convenience by providing a maximum possible number of channels for ticket purchase and use;
- Introduce a number of combined-service and multi-journey tickets;
- Implement the automated collection of PT usage statistics to enable better capacity and route planning.
- Demonstrate the collection and reporting of real-time statistics of PT usage;
- Draw conclusions, give recommendations for further development of plans strategy at state and local level.

Preliminary studies and surveys were carried out during the first year of the project. A local expert working group was created in spring of 2009 by the city's transport department, in order to draw up the terms of reference for the activity. During the research phase, it became clear that the most effective solution would be a joint ticketing system, based on the contactless card with a unique and similar protocol for all partners. It was decided to include on the Tallinn Card both public transport in the City of Tallinn and also lines in Harju county, located

outside the city. Negotiations were carried out with representatives of the PT operator in Harju county and the municipal enterprise department, which operates the Tallinn Card.

A competitive dialogue procurement procedure for purchasing the new ticketing system was prepared by the local tender commission in order to collect the best technical information from potential bidders and prepare detailed terms of reference. A joint procurement was created by the transport department, tourism department and Harju County PT centre, who came together to form the tender commission.

In May 2010, the call for tender was published within Estonia in the National Register of Procurements and at the European level on Tenders Europe Daily. Initially, 12 applications were requested from three individual companies and nine consortia. In total, 27 companies were involved from Estonia, Italy, France, Latvia, Turkey, Finland, the United Kingdom, Slovakia, Germany, Czech Republic, Belgium, Sweden and Norway. Of the initial 12 applications, five were chosen to go forward to the next round.

The application eventually chosen was an online ticketing system that does not store personal data on the cards. The system consisted of ticket validators at all vehicle entrances; printing devices for single ride paper tickets; control devices; links between a central server and the



system-equipped vehicles. This system was also compatible with the existing ticketing machines. Validating machines and control devices were designed and produced in Estonia.

Initially, the plan was to pilot the project on 100 PT vehicles. In fact, 171 buses were fitted with the new devices, including 574 validating and 40 control devices. The costs incurred for the various components and processes can be broken are as follows:

No	Equipment and services	Unit	Quantity	Cost of unit	Total cost
1	Accessories to board computer: communication mode, printer, etc.	pc	171	1028,80	175 925
2	Validating devices	pc	574	415,72	238 623
3	Control devices	pc	40	747,03	29 881
4	Installation of devices				36 450
5	Managing and training				50 954
6	Software licences				26 846
7	Communication campaign				18 719
	Total cost €				577 398

**Ühiskaart —
ühe viiega
kõikjale**

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Tallinn Transport

Results

Equipment purchase and installation has been completed. Dissemination activities were launched six months before the system was ready for use, in order to sensitise passengers to the change.

The contactless card (Mifare Plus) is cheap, but very safe and secure. Only the unique number is saved on the chip. All personal and sensitive information is saved on a central server. The information needed for validating or purchasing the tickets is also saved in the on-board computers of each vehicle. The system is easily replicable for cities who want to create online ticketing systems and keep communication costs low.

Today, a wider range of cards have been added to the system. Initially, it was planned to only use the brand-new contactless cards for validating tickets, but student card holders (ISIC, selected schools) can use the integrated ticketing system without any obligation to purchase a new card.

In the future, passengers will be able to validate the trip permission or purchase tickets by contactless credit cards after issuing these cards by banks in Estonia.

It is hoped that by 2014, PT users will also be able to validate their cards by mobile phone through RFID chipped SIM cards to be released by Estonian mobile operators.

Following the implementation of the measure, the PT system annual costs reduced considerably

- running costs for Tallinn's ticketing system were reduced by 64 percent;
- Awareness on the new ticketing system increased considerably – with awareness levels quadrupling on original levels;
- Acceptance of the new ticketing system increased only moderately, with levels increasing by 18 percent.

Lessons learned

The maxim 'More Time, Less Trouble' should definitely be applied, as the implementation of a complicated and large-scale measure in a limited (4 years) project period can be difficult to achieve.

The development of calls for tender and terms of reference were thoroughly prepared, but some "trivial" inaccuracies gave bidders the chance to appeal the results of the procurement decision, delaying the process a further 10 months

Obtaining and maintaining political support is essential. The time spent explaining to politicians the need for the measure will pay off in the future when the measure encounters challenges that require political intervention. Political support on city level can be considered as the most important driver for the measure.



Do not waste time trying to re-invent the wheel. Learn from other European cities that have implemented similar measures. CIVITAS was an ideal forum for this.

It is certainly worth looking at existing devices when searching for a solution. In this particular case the successful tenderer was two times cheaper than others bids submitted, as their tender included the usage of existing vehicle computers.

Be brave in forging ahead with new solutions! Citizens (and politicians) prefer to keep to the status quo, even if the real system cost is abnormally high. Initially, the operating cost of ID-ticketing and paper-ticketing systems in City of Tallinn was 1.5 million EUR per year. In comparison, the operating cost of the new e-ticketing system over the next four years will be 1.9 million EUR, so amounting to only 475,000 EUR per year. This translates to 68 percent less operating costs.

Since the launch of the new ticketing system about 70,000 contactless cards have been issued. On 1 January 2013, public transport became free of charge for Tallinners. To have the right to free public transport, citizens in Tallinn will need to personalise their contactless card and validate it on each trip. Therefore a considerable increase on the number of issued contactless cards was experienced at the beginning of 2013.

Upscaling and transferability

The measure was followed up by a full scale system implementation. In total, 242 buses, 115

trolleybuses and 77 trams were equipped. This took place on a phased basis; firstly for Tallinn, then Harju County and eventually, for tourists.

The contactless card contains a minimum of data and is, therefore, very safe and secure. Tallinn's Mifare Plus card only contains a unique number without any personal data.

The ticketing system is on an "open" platform, meaning no extensive licence fees need to be paid. This also makes it easy for nearby cities to participate in the scheme and introduce the system in their networks – one card for all. A dedicated ticketing website makes it easy for users to buy tickets for the various regions.

The Tallinn experience is easily replicable for cities that want to create online ticketing system and keep communication costs low.

Budget and Finances

The total cost of the system for the City of Tallinn was 1,67 million EUR. This includes devices for 570 vehicles, installation, management, training, communication campaign, licences, etc.

The total cost of the procurement contract for Tallinn's public transport with system maintenance for four years was 3,57 million EUR.

The total procurement cost taking into account the network of Harju county and the Tallinn Card was 4,6 million EUR. Putting this in perspective, the Helsinki (80 km from Tallinn) carried out a similar procurement with system maintenance for 5 years at a cost of 90 million EUR.



Brand-new contactless PT card

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References or sources

<http://civitas.eu/content/tallinn>



Tallinn Transport Department
www.tallinn.ee



United Tickets Ltd
(best tenderer, winner of the bid)
<http://www.unitedtickets.ee/en>



Non-profit organization
Harju Public Transport Centre.
Organises public transport in Harju County.
<http://www.harjuytk.ee/eng/index.php>

Acknowledgements

Close cooperation between the public transport operator, the municipality, the regional government, hotel directors in the target area allowed for a comprehensive implementation and evaluation of this measure.

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Publisher

ICLEI – Local Governments for Sustainability,
Freiburg, Germany
Executive Director: Wolfgang Teubner

Date written

26 October 2012

Series editors

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Layout

Stephan Köhler (ICLEI)

