Smart City – Good Practice

Transport and mobility

On-demand bus service Kutsuplus

Helsinki, Finland

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The on-demand bus service Kutsuplus has been designed in response to Helsinki's aspiration to make car ownership pointless and to transform the city's existing public transport network into a new form of a "user-centred mobility on demand" system. The service has been implemented by the City of Helsinki together with the Helsinki Regional Transport Authority and the company AJELO as an innovative mobility system that would be able to integrate all public transport routes on a single public transport service in real-time [1].

The Kutsuplus service has been operational between 2013 and 2015. It allowed users to manage their demand on the public transport system directly from their smartphones. The Kutsuplus minibus could be called *online* or with a smartphone *app* that gathered a whole range of associated bus, tram, metro and taxi routes. Customers were picked up within a user-selected timeframe (5, 10 or 45min) and could travel on and paying the rate chosen (the specific rate was depending on the speed of transportation chosen) [2].

Despite its positive feedback, Kutsuplus service was stopped in December 2015 as to unacceptable costs compared to the number of passengers. However, in being an exceptional on-demand mobility service following dynamic routes and schedules, Kutsuplus set an important mark as regards the future development of innovative public transport systems. Currently, Kutsuplus is searching for new market opportunities and business models which would enable the service to restart operations in 2017-2018 [3].

Country/ City Profile

Source: © OpenStreetMap contributors

Country		City	
Population (2013)	5,471,753 [3]	Population (2014)	620,715 (city)[4] 1,420,284 (metropolitan)[4]
Land area (km²)	338,424 [6]	Land area (km²)	184.5 (city-state)[7] n/a (metropolitan)
GDP per capita (2014, current international $, at purchasing power parity)	40,675 [8]	GDP per capita (2014, US $, at purchasing power parity)	n/a (city) 47,547 (metropolitan)[9]
Region	Northern Europe	Region	Coastal

City's physical geography

Location [9,10]

- ✓ It's the northernmost capital city of a EU member state
- ✓ The city is located on the southern peninsula of the Gulf of Finland, covering numerous islands, peninsulas and bays
- ✓ The Helsinki Capital Region is composed of four municipalities (Helsinki, Espoo, Vantaa, Kauniainen) and is Finland's largest urban area

Climate [9,10]

- ✓ Humid continental climate with severe winters, no dry season, warm summers and strong seasonality;
- ✓ An average temperature of 4.8ºC, registering a mean temperature of 17.5ºC in July (the warmest month) and a mean temperature of -6.5ºC in February (the coldest month);
- ✓ An annual precipitation of 688 mm (27.1 inches) and an average of 1,802 hours of sunshine per year.

Initiating context

The initial idea of Kutsuplus came to life during a research project at the Department of Computer Sciences at Aalto University Helsinki, between 2007 and 2010. The aim of the research project was to explore a new demand-responsive transport system for Helsinki capital area [2].

Assuming the conceptual idea of a modern transport service on demand, the researchers started to investigate the actual needs of Helsinki urban travellers for using a car or specific other transport options. In this context several focus groups corresponding to different segments of the population – working people with or without children, older population, disabled citizens, students, etc. – were organized. The resulting detailed analysis of mobility needs for each population segment developed into the user-centred on-demand shared minibus service, Kutsuplus [2].

Project description

Kutsuplus was a technology-based, customer-oriented service with the aim to decrease the number of private car trips in the Helsinki metropolitan area [1, 2, 12]. Additionally to the traditional public transport modes, Kutsuplus was an automated demand responsive public transport service based on real-time booking. The service has been introduced by HSL - Helsinki Regional Transport Authority with the technical support of the company AJELO [1, 2].

AJELO was a technological independent company which was involved in Kutsuplus project since its initial research phase. The trip-planning software as well as the user interface of Kutsuplus were entirely developed by AJELO. In 2014 AJELO was acquired by Split, a company now providing technology for shared-ride solutions worldwide built on AJELO's pioneering algorithm. Thus from October 2014 to December 2015, Kutsuplus service ran on Split's technology [1, 2].

More specific, Kutsuplus was an intelligent and comfortable mini-bus service, whose routes were determined by customers. Customers were taken from the bus stop nearest to their location to the bus stop nearest to their favoured destination point, without transfer. The mini-bus had nine passenger seats, offered free Wi-Fi and the carriage of baby buggies or other bulky equipment for free. The service could be booked online or via a smartphone app a maximum of 45 minutes in advance and trips were shared with other passengers that were travelling in the same or similar direction at the same time [2].

Being a customer-oriented service, Kutsuplus was more flexible than traditional public transport modes. It was also more affordable compared to a taxi service. Kutsuplus main goal was to encourage Helsinki car owners to switch to Kutsuplus services and consequently reduce traffic congestion and the low availability of parking spaces within the city [1].

Implementation process

Based on the initial idea of Kutsuplus and the main research phase that occurred between 2007 and 2010, the service started a testing period in the spring of 2012. In this phase, Aalto University in cooperation with AJELO and HSL organized an earlier prototype for the service. Demand for the service was open only to a small group of invited end-users which tested the identification of bus stops, ordering and commenting the booking service online and taking bus trips. All of them were available for an individual interview at the end of the trip, thus providing service developers with useful information of the service's operability, usefulness and users impressions. [2, 12]

Before launching the service to the wider public, in the autumn of 2012 HSL and AJELO also developed a six-month technical pilot testing. This phase was exclusively opened for Aalto University students and staff and it was important for eliminating technical failures and testing pricing taxes [2].

Finally, Kutsuplus begun its public operation in spring 2013 with 15 vehicles operational from 6am to 12pm on Mondays to Fridays [12].

Projects implementation details

Process/ Leadership	The initial phase of the project was conducted by the Department of Computer Sciences of Aalto University [2]. Subsequently, a technological spin-off born in the initial research project phase at Aalto University – AJELO company – established a consortium together with the Helsinki Regional Transport Authority (HSL) for service implementation. The implementation of the service was realized by the consortium within an initial two-year trial period, which was expanded to the end of 2015 [1, 2]. AJELO and Split (after 2014) took over the development and exploitation of the Kutsuplus trip-planning software and user interface platform service. HSL was responsible for transport development, marketing and spreading information to passengers [1,2, 11, 12, 13].

Projects implementation details

Financing	Since the public implementation process started, the Kutsuplus service has been entirely supported by the Helsinki Regional Transport Authority (HSL) member municipalities, as contracting authority [14]. According to HSL's budget for 2014 the operating costs of the Kutsuplus services were estimated in 3.2 million euros [12]. Since the Kutsuplus service has been stopped at the end of 2015, HSL is trying to find new funding opportunities, new business models or another service provider for the services future exploitation [14].
Involved stakeholders	✓ Department of Computer Sciences of Aalto University ✓ Helsinki Regional Transport Authority (HSL) ✓ AJELO Oy originating from Aalto University ✓ Split

Achieved Results

- 15 Kutsuplus buses in operation [2];
- 21,604 registered users in 2014 [2];
- 70,470 trips undertaken in 2014 [2].

Lessons learned

The customer-oriented service provided by Kutsuplus has been very successful, mainly due to the following factors:

- In the initial trial period of Kutsuplus, AJELO developers tested a Kutsuplus pilot bus almost on a daily basis in order to be able to collect impressions of regular service users [2];
- Several studies were carried out by AJELO developers and Aalto University to receive and analyse the pilot test customers feedback [2];
- Kutsuplus online platform was constantly being developed further based on customers feedback [2];
- Kutsuplus passengers had the possibility to rate the trip inside the bus on-line [1].

Despite its huge success, at the end of 2015, Kutsuplus service has been stopped as to unacceptable costs compared to the number of passengers as well as the phasing out of the projects trial period supported and implemented by the consortium HSL/AJELO [14, 15, 16].

Currently, Kutsuplus is searching for new market opportunities and economic models which would enable the service to restart operations in 2017-2018 [3].

References

[1] User-centred public transport – On-demand bus service Kutsuplus: http://www.muotoilutarinat.fi/en/project/kutsuplus/

[2] Kutsuplus – demand-responsive transport service from Helsinki: http://www.euinnovate.com/sites/default/files/KutsuPlus_snapshot.pdf

[3] Statistics Finland's PX-Web databases: http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__vrm__vaerak/010_vaerak_tau_123.px/table/tableViewLayout1/?rxid=9c267c74-13e6-4f3d-976e-afded518340e

[4] Facts about Helsinki 2015: http://www.hel.fi/hel2/tietokeskus/julkaisut/pdf/15_05_28_Facts_about_Helsinki_2015_Askelo.pdf

[5] List of sovereign states and dependencies by area: https://en.wikipedia.org/wiki/List_of_sovereign_states_and_dependencies_by_area

[6] Helsingin seutu 2050: http://www.hel.fi/hel2/helsinginseutu/2050/en/helsinki-region.html

[7] World Bank: GDP per capita, PPP: http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

[8] 2014 Global Metro Monitor Map, Helsinki: http://www.brookings.edu/research/reports2/2015/01/22-global-metro-monitor

[9] Helsinki, Finland – City Info - Geography: http://www.helsinki.com/v/geography/

[10] Helsinki Climate & Temperature: http://www.helsinki.climatemps.com/

[11] Cleantech in Finland: https://www.tem.fi/files/44792/TEM_oppaat_17_2015_uusintapainos_Cleantech_Finland_companies_low.pdf

[12] MoPAct – Mobilising the Potential of Active Ageing in Europe: http://mopact.group.shef.ac.uk/wp-content/uploads/2013/10/D7.3-Built-tech-env-3-Case-study-Hand-outs.pdf

References

[13] Design Stories for Helsinki – KutSuplus: http://www.muotoilutarinat.fi/en/project/kutsuplus/

[14] HSL0's Operational and Financial Plan 2014-2016: https://www.hsl.fi/en/news/2013/hsls-operational-and-financial-plan-2014-2016-hsl-prepares-opening-commuter-train-services

[15] CASI – Public participation in developing a common framework for assessment and management of sustainable innovation: http://www.casi2020.eu/casipedia/cases/kutsuplus-customised-public-transport/

[16] Article "HSL orders Kutsuplus shutdown": http://yle.fi/uutiset/hsl_orders_kutsuplus_shutdown/8462055

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