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INFOMOBILITY AS OPPORTUNITY TO INCREASE THE ATTRACTIVENESS OF PUBLIC TRANSPORT

Abstract

Infomobility refers to the procedures, systems and devices based on the intelligent transport systems (ITS) and services that enhance the mobility of people through the collection, processing and distribution of information. Infomobility services may have an impact on different groups of users, such as passengers, municipalities, transport operators and fleet managers. It can be said that they generate benefits for each of these groups. However, in many regions these services are not always used in the optimum way. The answer to this problem is the POLITE project, the goal of which is to share good practice between regions with more experience and regions which are willing to accept the support and want to use infomobility services. In this paper the authors present the best practices with infomobility potential, which give an excellent example of how you can cope with the problem of mobility in urban areas. The best practice is demand responsive transport system, which is successfully implemented in Krakow low urbanized areas.

INTRODUCTION

In recent years public transport companies have been developing their offer not only through the improvement of the quality of their services, but also through the enhancement of availability and attractiveness of their offer. Convincing the inhabitants of a conurbation to collective transport is becoming a key question to road traffic. The attempts at moving passenger streams from cars to public transport, aimed at reducing congestion, require activity of public transport companies and support of public benefit organizations. The POLITE project, which is one of the EU projects implemented by the Institute of Logistics and Warehousing, is concerned with offering support to such measures.

1. THE POLITE PROJECT

POLITE is an acronym of the full name of the project, i.e. Policy Learning in Information Technologies for Public Transport Enhancement. Although the term POLITE can be associated with the Greek word meaning the city/town, the project is concerned with all areas of operation of public transport, including cities and towns, the suburbs or typically rural areas. Moreover, the objective of the project is popularisation of solutions related to the integration of many means of transport, with special emphasis on solutions in the area of infomobility.

One of the basic objectives of the project is the improvement of use and attractiveness of public transport. This task should be achieved through the facilitation of transfer of solutions in the area of infomobility, i.e. through the improvement and popularisation of direct access to interactive sources of information for passengers, both present and potential ones. The

examples of promoted solutions include improvement of information, comfort of travelling, the possibility of ongoing planning of optimum connections, or purchase of tickets through electronic channels.

Yet another objective of the POLITE project is the promotion of co-modality of public transport. The passenger is also the focus of interest under this objective. Synchronization of travel frequency, based on the studies of passengers' needs, leads not only to the improvement of users' satisfaction, but also to optimum use of transport infrastructure.

The collection of information on good practices will enable the provision of ready solutions to public administration employees, which can be quickly transferred to their own local or regional area. After developing analyses of requirements of a given region, these solutions will be adapted to any identified requirement, as long as appropriate solutions can be provided by the partners of solution "donors".

Even if identified good practices are not directly compatible with the requirements, possibilities or character of regional needs of "the recipients" of practices, the knowledge of such practices will enable improvement of awareness of possibilities available to public administration and public transport, thus becoming the basis for the strategy and long-term development perspectives.

The main result of the POLITE project will be a horizontal or vertical transfer of selected good practices between the regions of project participants (see Figure 1). The last task under the project consists in the development of implementation plans of selected good practices in the regions with lower culture of public transport.



Fig. 1. Partners of POLITE project
Source: www.polite-project.eu

Project partners were divided into "the best practices sites" in which infomobility systems in public transport are well developed and "the transfer sites" to which best practices are to be transferred. "The best practices sites" are represented by:

1. Province of Ferrara, Italy.
2. Reading Borough Council (RBC), Great Britain.
However, “the transfer sites” is represented by following institutions:
3. Calabria Regional Administration (CRA), Italy.
4. Institute of Logistics and Warehousing (ILiM), Poland.
5. Transport Research Center (CDV), Czech Republic.
6. Latvian Transport Development and Education Association (LaTDEA), Latvia.

2. INFOMOBILITY SERVICES

The project places special emphasis on infomobile services, i.e. services related to the collection, processing and dissemination of transport-related information using intelligent transport systems (ITS). Appropriately prepared and disseminated data shall provide information on available means of transport to commuters, both before and during the journey.

POLITE focuses on good and best practices related to IT technologies, which are used for the needs of public transport under the operator-passenger relation. Any other practices not related to IT can also be identified and disseminated, especially if they co-exist together with other best or good practices. An example of good practice not related with IT is the designation of public transport vehicles with colours, with the aim of facilitating and improving the process of identification of appropriate public transport lines.

During the last years, ITS have become more and more widespread, particularly in Europe. The European Commission has adopted a White Paper on Transport and a Green Paper on Urban Mobility where it sees ITS as improved traffic management and information systems which will lead to a more efficient use of transport and infrastructure and will support eco-driving.

Nevertheless, the infomobility market in today’s Europe is very complex. In order to implement multimodal information platforms based on infomobility services, it is important to take into account a large number of issues such as users’ needs, existing mobility content providers, efficient content collection, user friendly interfaces, technological aspects, stakeholders to be involved, etc. In addition, there are at least three categories of difficulties in collecting information stemming from different content providers: technological, legal and organisational. The POLITE project therefore gathers partners with different levels of ITS use and stimulates exchange and sharing of good practices between regions and entities with more experience and those eager to adopt and use infomobility services.

3. GOOD PRACTICES

How are good practices understood under the POLITE project? In compliance with the definition from the dictionary of INTERREG IVC scheme, a good practice is defined as an initiative (e.g. methodologies, projects, processes, and techniques) undertaken in one of the programme’s thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective¹. This definition applies to good practices, i.e. the measures which are quite popular and usually present in more than one region. The hierarchic arrangement of good practices is possible, under which the best practice will be the top one. For the requirements of the POLITE project, the definition of the best practice of ERDF fund has been used: “Best practice – a way, technique, methodology, innovative practice that, through experience and

¹ www.interreg4c.eu/afficheGlossaire.html#G

research, has proven to reliably lead to a desired result and is considered to be superior to all other known. It contributes to the improved performance of an organisation, usually recognised as “best” by other peer organisations.”

Demand response public transport

DRT, which in the article is called demand-responsive (public) transport, is a form of public transport which the daily operation is determined by the needs of the commuters. Under one of the versions of the Niches² project, demand-responsive transport was defined as “the advanced, user-oriented form of public transport, characterised by flexible routes and variable timetable of small or medium-sized buses, operating between bus stops in compliance with current passenger needs”.

Described above procedure required the human factor employment. The infomobility supplies in this case quite simple solution, based on the information exchange, algorithms and wide accessible equipment / tools. Most of the system operation can be completed without operator involvement. The communication with main system via mobile phone is possible. Online planning the routes of the buses, with information about their localization and next stops is possible too, but requires quite sophisticated software and hardware. Return information via mobile application to interested commuter is easy achievable. Finally reaction to the incidental or unforeseen events will be the role of the operator.

Demand-responsive transport solutions can be transferred quite easily. The transfer of knowledge should be understood as the transmission of ordered and interpreted bundles of information, which does not have to be strictly technical: it can be e.g. economical knowledge or the knowledge in the area of logistics or marketing [6 p. 34]. Dissemination of knowledge is a very big problem for many organizations. In order to the knowledge could be effectively used, there must be capable of transfer and making available it to organizations and individuals who at the time it needs [7, p. 81]. Knowledge transfer involves two types of activities:

- Transmission of knowledge.
- Absorption of knowledge.

The transmission consists of presentation of knowledge to a potential recipient, while the absorption of its acquisition for later use. If knowledge is not "absorbed" by the recipient, there won't be able to hold a transfer, although there has been transmission [5, p. 106]. Thus, for knowledge transfer of these processes are necessary.

In Figure 2 is presented stages of knowledge transfer.

² Call-a-bus Services www.niches-transport.org

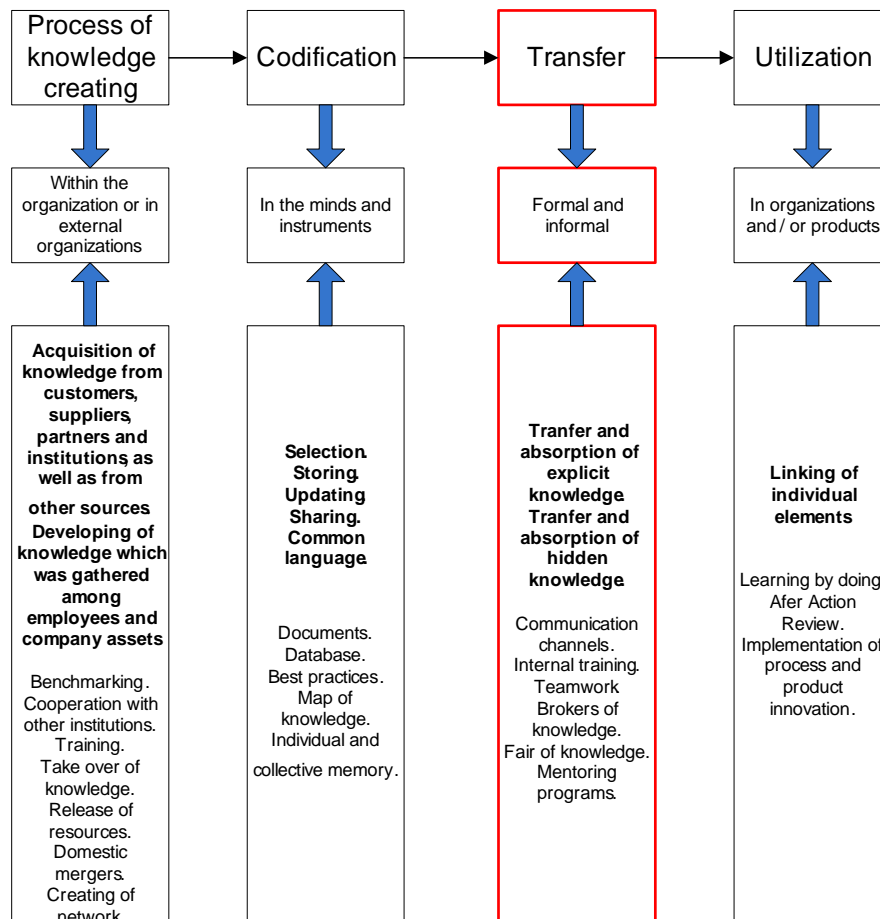


Fig. 2. Stages of knowledge transfer

Source: Kowalczyk A., Nogalski B., *Proces zarządzania wiedzą. Koncepcja i narzędzia realizacji*. Wydawnictwo Diffin, Warszawa, 2007, p. 104, Wyrwicka M., *Endogenne przesłanki organizacyjne rozwoju przedsiębiorstwa*, Wydawnictwo Politechnika Poznańska, Poznań, 2003, p. 81.

The existing demand-responsive transport solutions can be exemplary solutions, i.e. the best practice ready to be implemented in another location with similar characteristics in the area of transport demand. Thus Telebus in Cracow started to operate, since it was created as an element of the EU project entitled Civitas Caravel, on the basis of experience of Italian partners under the project, who had implemented the model solution a few years before in Genoa. This is the only DRT system operating in Poland at present³. It should be stressed that the fare system in the telebus is the same one as in the whole public transport in Cracow, and it also includes the system of fare discounts.

The principles of operation of Tele-bus in Cracow stress one of the main defects of demand-responsive transport - passengers who have not booked their journey by phone can receive the service only if there are available seats on the bus and on the approved route which the bus follows. This defect can be reduced by the use of mobile applications, informing on the potential passengers on the ongoing basis of possible travel options.

This currently developing state-of-the-art mobile technology can significantly facilitate access to demand-responsive transport. Many urban buses have already been equipped with location systems and many control centres dispose of current information of the location of their vehicles. Making this information available on internet platforms and transferring it further to mobile phone screens, tablets or city monitors is only the question of time. The transport can also be ordered on-line in the future, which will take the part of the load from

³ projektyue.mpk.krakow.pl/pl/projekty-zrealizowane/civitas-caravel/

the operators of control centres. Mobile technology seems to exactly match the needs of demand-responsive transport and it can become the source of its further development in the nearest future.

SkyCash as Best practices

SkyCash is independent of the telecommunication operator universal system of mobile payments, providing the simplicity and speed of transfer to the highest safety standards. SkyCash works on any GSM network and on any phone with Internet access.

To gain the convenience and independence that comes from the use of SkyCash it is necessary to register on the system, install the free app on mobile phone and credit the cash on the SkyCash account. Accepted payment methods allows to use the service without having an account in the bank.

Registration and implementation of mobile payments using SkyCash system is free. The development of cooperation with companies offering various services extends to the ability to pay with SkyCash. Through this application, passengers can already buy tickets for public transport in several cities and for a trains of two regional operator without being forced to wait in the queue.

SkyCash is a universal system of mobile payments (not only for the tickets) money transfer providing intuitive and immediate transfer to a phone number with safety at the level of online banking and credit cards. Works on any GSM network and on any phone with Internet access. Payments can be made from an application installed on the phone and via the internet transaction system. Users can even invite each other up to SkyCash holder and transfer the money between.

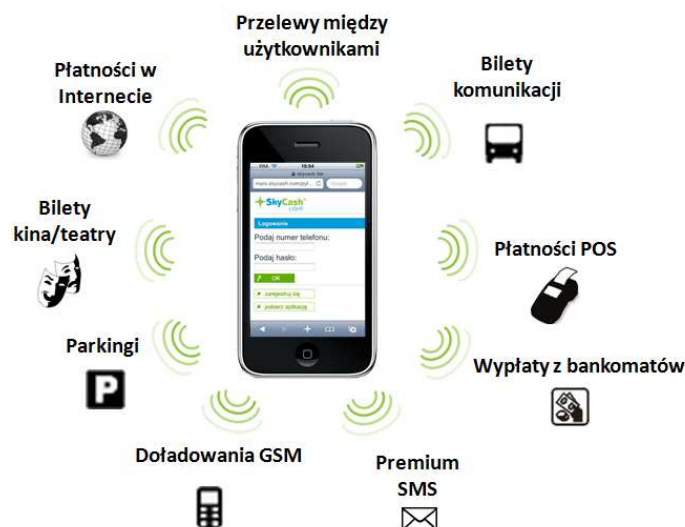


Fig. 3. SkyCash functionality
Source: SkyCash Poland SA.

Ticket phone is a complementary ticket sales channel with basic functionality including users registration, charging of cash in their entirety from a mobile phone, purchase tickets and control ticket based on unique 2D code generated for each ticket.

Public transport tickets

Ticket in the mobile phones is a very convenient solution for users of public transport. SkyCash eliminates the need to carry their petty cash, look for a places where you can change some money, there is no need to buy tickets from the driver. Tickets can be purchased

anywhere, 24 hours a day, using a mobile phone with Internet access. Using the system is free, and price of the ticket for do not differ from the cost of ticket purchased at a shop or vending machine. During the inspection of tickets the phone screen to open the tab "Ticket control", which contains all the information on the ticket purchased, should just be presented.

Similar situation, like in case of public transport ticket, is on the railways. Two regional operators and one local are cooperating are part of the SkyCash system.

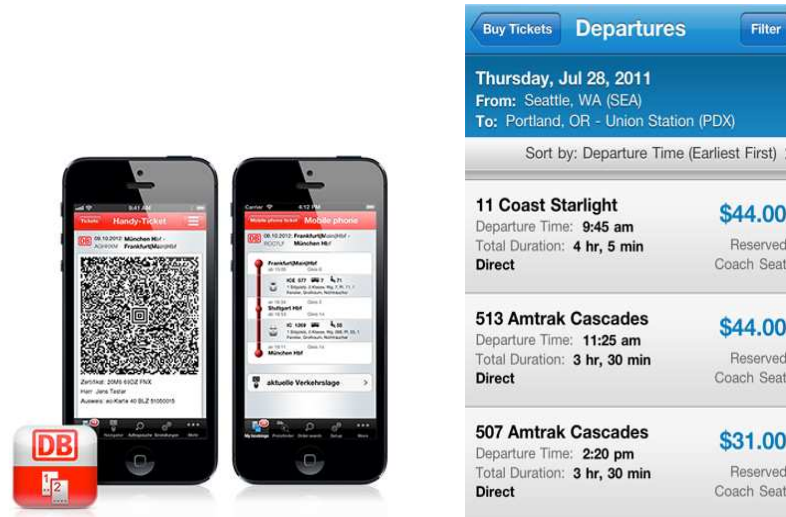


Fig. 4. SkyCash mobile information
Source: SkyCash Poland SA.

MobiParking Service

Available in the SkyCash mobiParking service is a fast and convenient way to pay for parking in over 20 cities throughout the Polish.

All activities related to the settlement of claims can be made in a matter of seconds, without leaving the car. The system also eliminates other afflictions drivers need to count how small, look for parks trump or returning to the vehicle to put the parking ticket window. No need to go to a parking meter and a car, when you want to extend parking. At any time, you can do it from the mobile phone.

Before using of mobiParking service has yet to be determined only vehicle identifier (ID). ID in the form of self-adhesive stickers can be obtained free of charge in every city where the service is provided.

The SkyCash offer additional services, like cash withdrawal, money transfer, payments some in points of sales etc. Combination of the services in one city, including parking, tickets for trains and public transport creates interesting offer for incidental commuters.

SkyCash runs on all mobile phones systems, operating on the European market:

- Android - mobile platform based on Linux, created by Google and the companies affiliated to the Open Handset Alliance include: Qualcomm, HTC, Intel, Samsung, Motorola, Sprint, Texas Instruments.
- iPhone OS - based on Apple's operating system, Mac OS, designed for mobile devices iPhone, iPod touch, iPad
- Java - very popular in the world to produce software by Sun Microsystems.
- Symbian - the operating system produced by a consortium of Nokia, Samsung, Motorola, Siemens, Sony Ericsson.
- Windows Mobile - Microsoft operating system for smartphones and mobile devices.



Fig. 5. User interface based on all popular mobile platforms' applications
Source: SkyCash Poland SA.

The SkyCash is available on the open markets. The administration is expected to exchange opinions and reviews of system users, to widespread the application and allow passenger use one system all over the Poland.

As example citizens of Warsaw was persuaded to mobile solutions and are buying more and more e-tickets. At the very beginning, in December 2008, there were only 4.6 thousand transactions per month. "Threshold" 10 thousand units was exceeded in September 2009, and the level of 15 thousand in October 2009. In early 2010, was sold on average 17 thousand tickets a month. In the same year for the first time the level of 20 thousand pieces was exceeded. Since 2011, after entering the market by two additional operators (including SkyCash), the number of tickets sold through mobile phones achieved more than 40 thousand monthly.

CONCLUSIONS

The POLITE project offers the possibility of transfer of publicly available knowledge from one place to another, from the Cities of Good Practices to Transfer Cities. It should be added that the POLITE project will also involve the initiation of co-operation with other regions outside the partnership with the view to enhancement of awareness of the existing infomobile solutions in Europe. This is an excellent opportunity for the cities in which infomobile services are not well developed to catch up in this area. Appropriately developed infomobile systems make public transport more attractive to passengers. The cities (the Managing Bodies of Public Transport) are the main beneficiaries of the implementation of this solution. The benefits mainly consist in more effective and efficient management of public transport.

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INFOMOBILNOŚĆ SZANSĄ NA ZWIĘKSZENIE ATRAKCYJNOŚCI TRANSPORTU PUBLICZNEGO

Streszczenie

Infomobilność odnosi się do procedur, systemów i urzędzeń opartych na inteligentnych systemach transportowych (ITS⁴) oraz usługach, które zwiększają mobilność osób i towarów poprzez gromadzenie, przetwarzanie i dystrybucję informacji.

Usługi infomobilne mogą mieć wpływ na różne grupy użytkowników, na pasażerów, gminy, operatorów transportowych i managerów floty. Można powiedzieć, że generują one korzyści dla każdej z tych grup. Jednak w wielu miastach usługi te nie są zawsze w optymalny sposób wykorzystywane. Odpowiedzią na ten problem jest projekt POLITE, którego celem jest wymiana dobrych praktyk pomiędzy regionami z większym doświadczeniem oraz tych, które chętnie przyjmą wsparcie i chcą skorzystać z usług infomobilnych.

W niniejszym artykule autorzy przedstawiają najlepsze praktyki z zakresu infomobilności, które dają doskonały przykład jak można poradzić sobie z problemem mobilności w obszarach miejskich.

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⁴ Intelligent Transportation Systems