Smart Cities in Danube Region

POLICY PAPER

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"THE PRIMARY GOAL OF SMART CITY IS TO FIND A CONCEPT THAT WILL ENABLE CITIES TO DELIVER A SUSTAINABLE DEVELOPMENT MODEL, OUTSTANDING QUALITY OF LIFE, SAFETY AND MAXIMUM ENERGY EFFICIENCY. ALL OF THIS WITH THE HELP OF STATE-OF-THE-ART TECHNOLOGIES."

- FTS, CTU IN PRAGUE - DEFINITION OF A SMART CITY

List of abbreviations

CTU – Czech Technical University in Prague

FTS – Faculty of Transportation Sciences

ICT – Information and Communication Technologies

MaaS – Mobility as a Service

LoS – Level of Service

1. Introduction

This paper deals with an important topic – Smart Cities in an entire region – the Danube basin. It summarizes the conclusions of a detailed project and literature review as well as expert opinions of the authors' team, as it was formed when studying projects in the Danube region. The detailed study consists of two thematically divided papers. Part I is dealing with the theory of Smart Cities and introduction to the state-of-the-art and best practices. Part II delivers in-depth analysis of Smart City projects in the Danube basin. Here, only the main findings and more importantly suggestions are discussed.

This paper and statements within this paper reflect the expert views of the authors and does not necessarily represent a position of the Office of the Government of the Czech Republic or the European Union.

2. Enhance the role of accessibility in Smart Cities

In most Smart City projects, mobility is named to be one of the key areas in Smart City projects. A Smart City however needs to address mobility (or transportation in general) as a part of a whole. It is strongly linked to the way how cities are built (e.g. land use), how municipality is connected with citizens (e.g. e-Government), how much support is given for the new energy efficient technology by existing policies (e.g. electro mobility or autonomous driving) and other aspects. This gives us the opportunity to **move beyond the concept of mobility**[1] and to address so-called **accessibility**[2]. A city should not focus primarily on improving mobility, but on reducing the amount of travel – i.e. **vehicle-miles travelled**. When using synergy among the different Smart City aspects, a significant part of the trips (and especially trips in a single occupied vehicles) shall be avoided. A municipality should focus its policies to support this major objective.

A. *International transport connectivity*

As the world becomes more and more globalised, particular countries cannot focus their investments on the development of the infrastructure on a national level only. This is true not only for smaller countries, but in general. It is necessary to invest into **over the border projects** and thus connect often underdeveloped border regions. The example of closely connected cities Bratislava and Vienna can be named here. These two cities generate thousands of mutual travels each day.

International transport programmes that would support **cooperation of transport operators**, imply fluent passenger **information exchange**, introduce **shared ticket services** and many more shall be supported.

B. *Sharing economy*

A new significant development in the quality of citizens' mobility cannot be achieved just by investing in technology (e.g. intelligent transport systems). The real progress will happen after

[1] Mobility - ability to move people or goods from one place to another.

[2] Accessibility - measure of the ease of reaching (and interacting with) destinations or activities distributed in a city.

such technologies will be combined with new business models, such as, for example, **sharing economy**.

C. Mobility as a service

The focus on vehicle ownership (buying newer and bigger cars) will gradually change towards entirely new approach to smart mobility, which is gradually becoming a service (MaaS - **Mobility as a Service**[3]). This requires a new and joint approach by different stakeholders and, what is even more difficult, a changed way of thinking of the end-users. The municipalities shall work on policies and incentives to support this concept. This may be an effective solution to emerging problems in cities, such as limited parking space, degradation of traffic conditions in cities, and escalating air pollution and noise.

D. Increasing vehicle occupancy

The previous sections addressed different technologies and mobility concepts in Smart Cities. Only when the different technological approaches and business models are combined, a real impact on the quality of transportation and traffic flow can be achieved. What is however the most important quality indicator of such solutions?

In order to improve the quality of transport as well as ecology, it is necessary to **decrease the number of vehicle-miles travelled**. This can be done (apart from already mentioned decrease of the number of trips through increased accessibility) by **increasing vehicle occupancy** through promoting vehicles with multiple passengers and various means of public transportation (incl. on demand public transport).

3. Improve availability of municipalities

A. e-Government

It has been demonstrated in many projects that e-Government is a Smart City feature that can relatively easily and without major investments significantly improve the quality of life of citizens. Additionally, e-Government and other ICT applications can significantly influence citizen's satisfaction, and at the same time decrease the overall vehicle-miles travelled. With functioning e-Government, people do not have to travel since they can do administrative tasks from home or their office.

B. Citizens participation

Citizens' involvement is the best way to make a project a success. In order to influence the future development and investments in a city and to be sure that they are meaningful is an important **motivational factor** and has an **effect on the individual quality of life**.

This however requires also a significant effort by the municipalities and governments. We all need to learn how to **work with public opinions** in a democratic environment. Nevertheless there are processes and methodologies that can help public representatives to achieve this goal. Three principle rules have to be assured before, during as well as after implementation of

[3] MaaS - integration of various forms of transport services into a single mobility service accessible on demand.

new Smart City projects – **inform, listen and involve**. In other words, make citizens feel that their voice matters.

4. Share experiences

A. Common information platform

One of the major findings from the review of the existing projects in the Danube basin is that there is no unified platform for informing about the projects. This is true not only on a national level, but often also on a level of particular cities or even projects. Many projects contain information only in a national language which limits its usefulness even further.

It is highly recommended to prepare a **platform for sharing of information** about ongoing, finished as well as planned projects. It can be either a new platform, or one of several existing such as e.g. *LinkedIn*, *beesmart.city*, *smartcities.info*, and others that can take over this role.

B. Search for similar projects deployed in region

A successful a project can be hardly achieved without **learning from past experiences** as well as from other projects. Otherwise, the same mistakes are repeated over and over again. The first premise is to be able to get to some relevant information. Information platform as discussed in the previous section is one of the means. International programs, such as the Interreg Danube Transnational Programme, can help to achieve exactly this goal.

C. Share failures as well as successes

Sharing best practices has been commonly used for a long time in Smart City community. But this by itself is not sufficient. It is even more efficient to learn about challenges and failures of other projects. This fact was recognized for example in pharmaceutical environment by company Roche[4], which started a programme "failed – the somewhat different best-practice sharing".

To motive a project team to share their complete experiences and to acknowledge its mistakes is difficult. For this reason, **incentives** to motivate companies instead of punishing them for such openness shall be defined. It is immensely important that within cooperation programmes like Interreg Danube Transnational Programme, it is not a competition between cities and regions but rather common learning from each other mistakes and successes.

5. Conclusions

This policy paper provides an overview of selected findings learned by studying Smart City projects in the Danube basin. The projects are rather heterogeneous, but they have one success factor in common - it is all about **synergies**:

- It is necessary to combine different technologies, tools as well as new business models to achieve Smart City goals.
- It is necessary to combine different backgrounds and experiences.

[4] www.roche.com/careers/country/germany/de_service/blogs/failed-best-practice-sharing-war-gestern.htm

- It is necessary to share experiences and to learn from one another not only on the national level, but even for cities or particular projects.

The decision makers (municipalities or governments) shall aim on **changes in policies** as well as on **building awareness** of new trends.

It is necessary to **change the way of thinking** not only of **particular citizens** but also of **municipality representatives**.

We all need to open our minds, keep listening and learning, and try to understand the new concepts in order to create the most important asset of a Smart City – **Smart Citizens**.