

Smart City – Nový Lískovec



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Final Project Report

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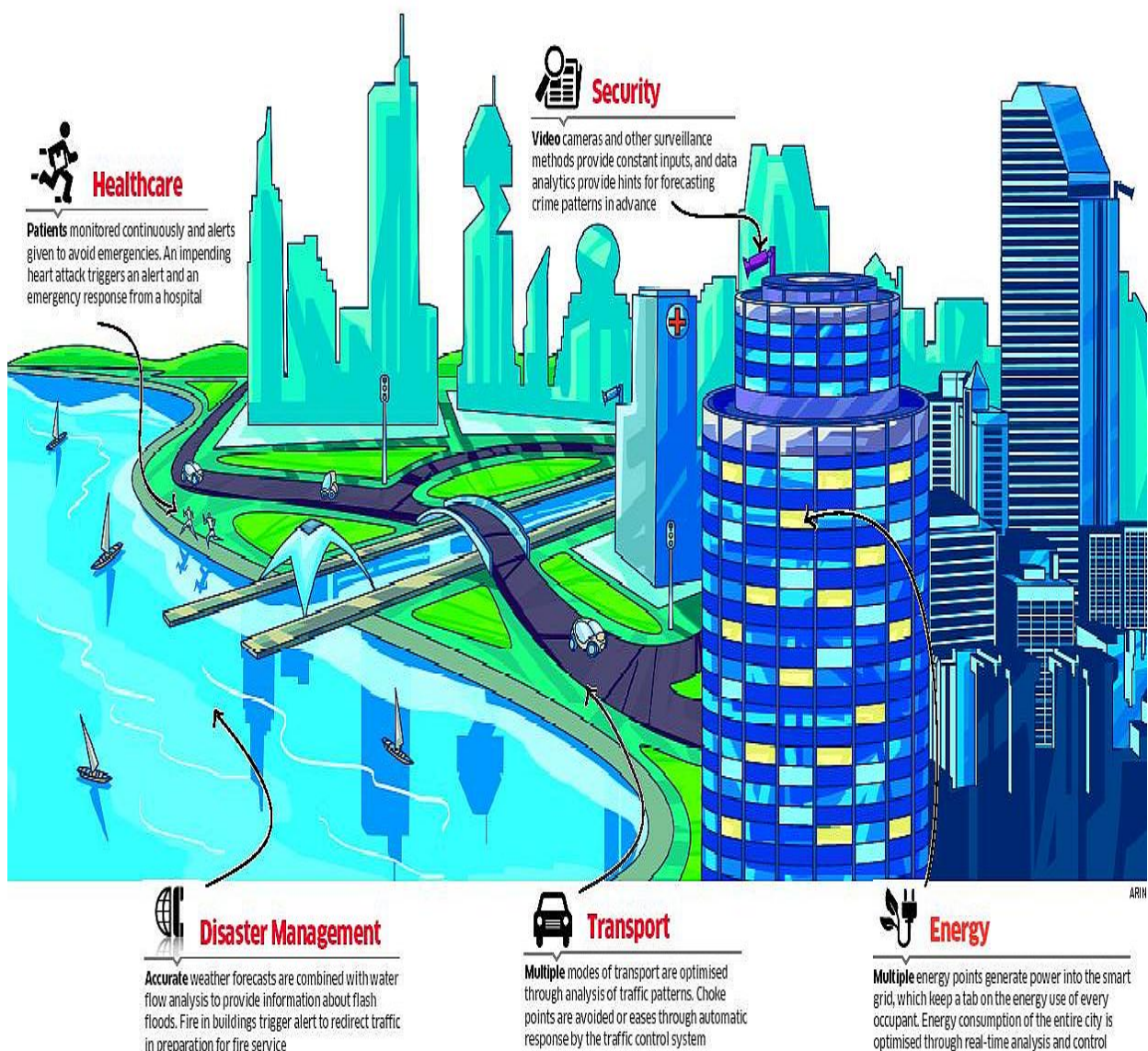
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1 Smart city – Theoretical Part

1.1 What is smart city?

The answer is there is no universally accepted definition of a smart city. It means different things to different people. The conceptualisation of Smart city varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. A smart city would have a different connotation in India than in Europe. Even in India there is no one way of defining a smart city. [1]

Picture below shows scheme of Smart city. [2]



Some definitional boundaries are required to guide cities in the mission. The picture of a Smart city contains a wish list of infrastructure and services that describes someone's level of aspiration. To provide for the aspirations and needs of the citizens, urban planners ideally aim at developing the entire urban eco-system, which is represented by the four pillars of comprehensive development – institutional, physical, social and economic infrastructure. This can be a long term goal and cities can work towards developing such comprehensive infrastructure incrementally, adding on layers of smartness. [3]

1.2 Smart solutions

In the approach to the Smart city mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of Smart solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities.

As far as smart solutions are concerned, an illustrative list is given below. This is not an exhaustive list and cities are free to add more applications. [3]



1.3 Smart city in practice – Songdo

The need for new, sustainable cities is rising as the world's population continues to grow. Songdo International Business District in South Korea is a prime example of a new city that brings together the world's best technologies, building design and eco-friendly practices to create the ultimate lifestyle and work experience. Built from the ground up on reclaimed land near Yellow Sea, the 35-billion-dollar Songdo project is a model for smart cities around the globe.

In many ways Songdo is a living organism. The city's infrastructure contains sensors that monitor and regulate everything from temperature to energy consumption and traffic. Essentially, the city can interact with residents on a one-to-one basis. Smart grids and meters are already fairly common in Europe and the US, but the technology in Songdo is more pervasive than anything in the West. Songdo is completely geared towards sustainability, even the water pipes are designed to stop clean water, suitable for human consumption, and being used in showers and toilets, and all of the embankment's water goes through a sophisticated recycling system.

A lot of these innovations are designed with the environment in mind – charging stations for electric cars or a water-recycling system that prevents clean drinking water being used to flush office toilets.

The waste disposal system is also impressive. Because there are no rubbish trucks trawling the streets or vast bins dotted around blocks of flats. Instead, all household waste is sucked directly from individual kitchens through a vast underground network of tunnels, to waste processing centres, where it is automatically sorted, deodorised and treated to be kinder to the environment. [4, 5, 6]

2 Smart city – practical part

2.1 Nový Lískovec – project

We were working on the project called Smart city and the place we chose was Nový Lískovec.

Nový Lískovec with an area of 165 hectares is a part of city Brno situated in the south part of Czech republic. Currently population of Nový Lískovec is around 10 000 inhabitants. [7]

At the beginning we asked some local residents to fill in our enquiry. There were questions as: How old are you? Do you like this place for living? Are there some things you would like to ameliorate? Are there some troubles or problems?

Thanks to that enquiry we found out that people had only one problem and it was parking (not enough parking places).

Secondly we met with Mrs. Jana Drápalová – formal head of Nový Lískovec and we asked her about life in Nový Lískovec etc. She told us that there is one big problem – parking and another not such a big problem but still a problem – coexistence of people.

Finally we were thinking about the way how to solve our project. There was a big problem with parking on one side and on the other hand there was residents' awareness which was in a low level. Because the way how residents were informed about possibilities they have was not in a good level we decided to work on it and to try to change it and raise it.

2.2 SmartMap

Firstly there was a question How to make a life in Nový Lískovec easier and how to be smart? We wanted to bring something new that will be useful and people will accept it. Finally there was a solution and we created SmartMap – place where all important information from many different fields connected to Nový Lískovec will be stored. Residents themselves will be responsible for the operation of the project.

We placed a big importance on simplicity and we also wanted that it will be easy for residents to handle with SmartMap. If necessary we are prepared to show residents how SmartMap works in practice. There will be also meeting in Nový Lískovec where we will give people the basics about SmartMap and its functions.

Our project – SmartMap is divided into two parts. Firstly we created web page where people can find smart map with all of its functions. Secondly during the year 2017 residents in Nový Lískovec will receive a new interactive board and SmartMap itself will be part of this board.

SmartMap contains five main parts.

1. Firstly it is a map itself where people can search for different services as open hours of some institutions or shops, restaurants, traffic issues, etc.

2. Secondly – news – connected with changes in open hours, traffic, etc.

3. Part called – enhancing and improvement of my neighbourhood.

4. Supply and demand.

5. Houses – it is a section where people from same neighbourhoods can create their own secret section within the area of Nový Lískovec.

Finally there is a part called registration where each resident of Nový Lískovec can create its own account which is for example needed for access to section 4 – supply and demand.

For the creation of web page there were used programming languages Python, Javascript and Flash Framework. Server which is preferred is Apache with WSGI module. PostreSQL database was used for saving of web pages. Python and Flash will be used for the maintenance of web pages. To keep a web in operation only regular data backup will be needed.

2.3 Investment

In this chapter budget proposal will be showed in a summary table. Our project as mentioned is divided into two parts. First summary table shows costs for the first part – web page. Second summary table shows costs for the second part – interactive board.

Legend:

CZK – Czech crowns

1. Summary table - Budget for project in first phase (in CZK)					
		First phase of project (year 2016)			
Cost type		Unit	Number of units	Price per unit (in CZK)	Total costs (in CZK)
1	Personal costs				129 500,00
1.1	Personal costs project manager	hour	60,00	350,00	21 000,00
1.2	Personal costs for team	hour	350,00	310,00	108 500,00
2	Transport				4 795,00
2.1	Quarterly ticket	units	7,00	685,00	4 795,00
3	Equipment				23 400,00
3.1	Microsoft office Small business 365	units	1,00	3 490,00	3 490,00
3.2	Memory 16GB	units	7,00	199,00	1 393,00
4	Office, project costs				2 500,00
4.1	Material	units	100,00	20,00	2 000,00
4.2	Phone	CZK	500,00	1,00	500,00
5	Services				19 900,00
5.1	Graphical design of leaflets	hour	10,00	350,00	3 500,00
5.2	Technical and graphical processing of web pages	hour	40,00	300,00	12 000,00
5.3	Translation costs	hour	8,00	300,00	2 400,00
5.4	Other services costs	hour	10,00	200,00	2 000,00
6	Eligible total costs				180 095,00
7	Incompetent total costs				2 557,38
7.1	VAT	CZK	2 557,38	1,00	2 557,38
7.2	Another incompetent costs		0,00		0,00
8	Receipts))))))))))))))))))	0,00
9	Total costs for project without receipts				182 652,38
Total costs					182 652,00

2. Summary table - Budget for project in second phase (in CZK)					
Cost type		Second phase of project (year 2017)			
		Unit	Number of units	Price per unit (in CZK)	Total costs (in CZK)
1	Building part and technology purchase				119 970,00
1.1	Construction engineer's part)	hour	8,00	300,00	2 400,00
1.2	Construction documentation	unit	1,00	5 000,00	5 000,00
1.3	Construction itself	unit	1,00	20 000,00	20 000,00
1.4	Touch screen	unit	1,00	92 570,00	92 570,00
1	Personal costs				129 500,00
1.1	Personal costs project manager	hour	60,00	350,00	21 000,00
1.2	Personal costs for team	hour	350,00	310,00	108 500,00
2	Transport				3 500,00
2.1	Transport	unit	140,00	25,00	3 500,00
3	Equipment				4 990,00
3.1	Printer	unit	1,00	5 720,00	5 720,00
3.2	Camera	unit	1,00	4 990,00	4 990,00
4	Office, project costs				9 000,00
4.1	Consumer goods and operating supplies	unit	200,00	20,00	4 000,00
4.2	Phone	CZK	5 000,00	1,00	5 000,00
5	Services				34 000,00
5.2	Web pages upkeep	hour	40,00	300,00	12 000,00
5.3	Propagation costs	CZK	20 000,00	1,00	20 000,00
5.4	Other services costs	hour	10,00	200,00	2 000,00
6	Eligible total costs				300 960,00
7	Incompetent total costs				24 313,80
7.1	VAT	CZK	24 313,80	1,00	24 313,80
7.2	Another incompetent costs		0,00		0,00
8	Receipts				0,00
9	Total costs for project without receipts				325 273,80
Total costs					325 274,00

2.4 SWOT analysis

SWOT analysis is an acronym for strengths, weaknesses, opportunities and threats and is a structured planning method that evaluates those four elements of a project or business venture. A SWOT analysis can be carried out for a company, product, place and it involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieve that objective.

Our project can be divided as

Strengths: residents's awareness will be in a higher level; availability;

Weaknesses: interest of residents; applicability

Opportunities: city part Nový Lískovec can become smarter

Threats: cost

3 Conclusion

In the first part of this work called Smart city – theoretical part we sought to elucidate topic of smart cities and also to give some examples of these cities.

The second part of project – practical part was connected with Nový Lískovec which is a part of city Brno. Nový Lískovec is a place we chose in our project and also a place we wanted to change from common to smart.

During last few months the idea to facilitate the lives of residents became a reality and we created SmartMap. SmartMap is a place where all important information from many different fields connected to Nový Lískovec will be stored. In parts 2.2 SmartMap and 2.3 Investment there are basic information about our project (main parts of SmartMap, anticipated costs, etc).

We know there is still a lot of work but the idea of SmartMap has a potential to be useful and widely available in the future.

4 References

- [1] <http://smartcities.gov.in/writereaddata/What%20is%20Smart%20City.pdf>
- [2] <http://epaper.timesofindia.com/Default/Scripting/ArticleWin.asp?>
- [3] <http://smartcities.gov.in/writereaddata/SmartCityGuidelines.pdf>
- [4] <http://www.worldfinance.com/>
- [5] <http://www.bbc.com/news/technology-23757738>
- [6] <http://newsroom.cisco.com/songdo>
- [7] FABER, J. *NOVÝ LÍSKOVEC – 115 let obce*. Brno-Nový Lískovec: ÚMČ Brno-Nový Lískovec, 2009.