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Smart city, Safety and Security

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Abstract

Nowadays, cities across the world are one after another trying to become so called Smart Cities. In this paper we propose several ideas on how to define the concept of Smart City, including our own. However, our main focus will be on the question of the safety and security in such cities in the future. Our study of the Smart City program shows the lack of importance which is being given to this topic. Because of that, we are inspired to introduce our definition of a Safe City. Along with the topics of safety and security, we also provide the reader with an insight into the importance and use of the modelling and simulations in a Safe City.

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Keywords:Smart City; Safe City;Safety Features;Simulations.

1. Introduction

The development of cities or regions can have different forms. Great advance in technology of the last millennium pushed the world forward by enormous leaps. But by the time, also negative effects of this progress had shown up, and they are getting into the awareness of society by already changing the Earth. And according to authorities, for example from NATO, in the future such effects may become serious problems for population, as well as for the whole ecosystem. Those might be air pollution, global warming, population growth, and so on [1].

All of these changes lead to calls for innovative solutions of improvement, that would bring sustainability of mankind and nature along. There is an effort to find possibilities, that will keep society moving forward, but at the same time they will try to minimalize or eliminate risks and damage towards society and ecosystem. From this

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philosophy comes up the term of sustainable development. According to National strategy of long-term sustainable development of Slovak Republic it means such development, that ensures the possibility to satisfy basic living needs of generations of today and those to come, while the diversity of nature is not harmed, and natural functions of ecosystems are preserved [2]. However, from our point of view, concerning only the basic living needs is not the way we should see the future. We see it as a chance to grow, to improve our lives, even to afford luxury, but all in the safe, harmless way, described above by the strategy. Technologies, that enable sustainable development in cities and their application are matters of the Smart City concept.

In introduction to Smart City concept we need to answer some basic questions. First of all: what is the goal of this concept? We can say that the goal is to transform cities of today into smart cities, enabling sustainable development in the future. That leads us to another question: what makes the city „smart“?

Many authorities are trying to answer this question. Examples, which affected our work and views, are mainly Caragliu, Mohanty, Kumar, Finka and Fedorov. But the one, explicit definition is not agreed yet. Studied definitions of Smart Cities are general descriptions, mentioning various priorities, from the use of technology to smart use of natural sources [3, 4, 5, 6, 7].

2. Smart City Concept

According to Caragliu, the city becomes smart, „when investments in human and social capital and traditional and modern Information and Communication Technology (ICT) fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance.“ [3].

Mohanty considers Smart City as „a place where traditional networks and services are made more flexible, efficient, and sustainable with the use of information, digital and telecommunication technologies, to improve its operations for the benefit of its inhabitants. Smart cities are greener, safer, faster and friendlier.“ [4].

Based on those and more various sources, we formed our own characteristics of Smart City, to set a base ground for our further research. For us, the Smart City by the integration of technology and natural environment increases the effectiveness of processes in every field of its functioning, in order to achieve sustainable development, safety and health of inhabitants with the aim for increasing the quality of life of citizens, near community and environment.

Construction of Smart cities is a process, transforming cities to Smart Cities through implementation of Smart City concept systems.

3. Systems of Smart City Concept

Views and opinions on how the Smart City should look like, what concrete improvements it should bring and what problems to solve, differ in various parts of the world. For example, there would be different priorities in the city behind the polar circle with minimal criminality, than in the city near the equator, suffering from vandalism. But in general, solved problems can be summed up into main fields. In our study of this topic, we encountered lack of focus, given to the field of safety. Hence, we compiled our own list of Smart City systems, including safety aspect: Safe City, as it is pictured on Figure 1. Our thoughts on Smart City, influenced mainly by the work of Mohanty and Center of Regional Science in Vienna include these systems [4, 8]:

- Smart Transport,
- Smart Energy,
- Smart Technology,
- Smart Living,
- Smart Environment,
- Smart Citizens and Education,
- Smart Economy,
- Smart Government,
- Safe City.

Specific case is the position of Internet of Things and Cloud. Those are not independent systems, but rather basic tools to achieve described needs. Safe Cities as an important part of Smart Cities will be described more closely in