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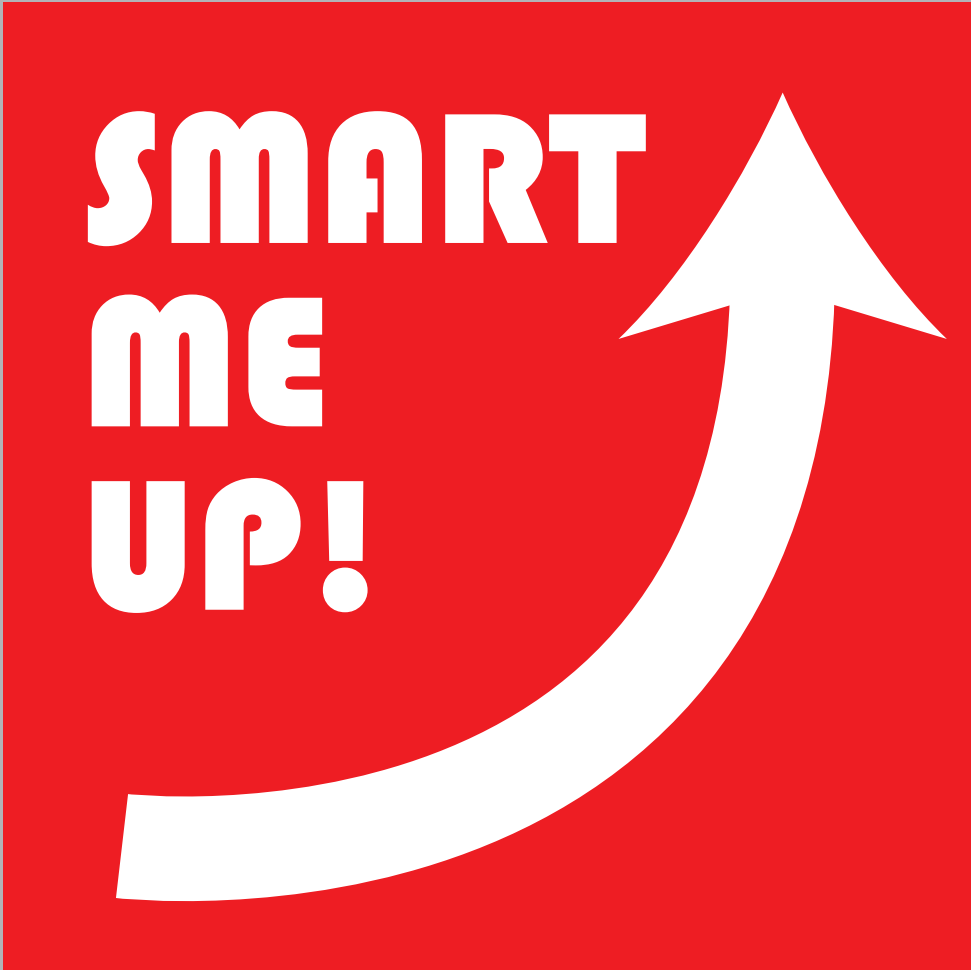
HOW TO BECOME AND HOW TO STAY A SMART CITY,
AND DOES THIS IMPROVE QUALITY OF LIFE?

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of the 21st International Conference on Urban Planning,
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**REAL CORP 2016. Smart Me Up!
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Edited by

Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE, Pietro ELISEI, Clemens BEYER

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Kompetenzzentrum für Stadtplanung und Regionalentwicklung

Klosterneuburger Straße 121/36, 1200 Wien, Österreich

office@corp.at, <http://www.corp.at>

REAL CORP 2016

TEAM

Manfred SCHRENK

Clemens BEYER

Kai-Uwe KRAUSE

Peter ZEILE

Wolfgang W. WASSERBURGER

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Editors – Herausgeber:

DI Manfred SCHRENK, President CORP – Competence Center of Urban and Regional Planning, Vienna, Austria

Prof. Dr. Vasily V. POPOVICH, SPIIRAS, St. Petersburg, Russia

Dr.-Ing. Peter ZEILE, TU Kaiserslautern, Kaiserslautern, Germany

Dr.-Ing. Pietro ELISEI, URBASOFIA, Bucharest, Romania

Dipl.-Ing. Clemens BEYER, CEIT Research Network, Vienna, Austria

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Kompetenzzentrum für Stadtplanung und Regionalentwicklung

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Creative Capital for Smart Solutions: Toward a Liveable City

Sanja Simeunčević Radulović, Aleksandra Stupar

(Teaching assistant Sanja Simeunčević Radulović, PhD candidate, University of Belgrade, Faculty of Architecture, Bulevar kralja Aleksandra 73/II, Belgrade, Serbia, simsanja@arh.bg.ac.rs)

(Associate Professor Dr Aleksandra Stupar, University of Belgrade, Faculty of Architecture, Bulevar kralja Aleksandra 73/II, Belgrade, Serbia, stupar@afrodita.rcub.bg.ac.rs)

1 ABSTRACT

Creative capital of a city is a stock of knowledge, talent and experiences possessed by individuals and the population at large. It presents not only concentration of creative people in a city, but also their organised social interaction that generates innovations and economic value. The importance of creative capital for city wealth, development and competitiveness is well known and proven. However, the relationship between creative capital and 'smart features' of a city has not been thoroughly analysed or sufficiently used in practice.

The smart city concept has a broad definition and understanding. It could refer to a city with high concentration of highly educated people, or to one which uses ICT for improving the efficiency of urban systems. In this paper the smart city concept will be considered in the context of sustainability and environmental protection, focusing on the development and implementation of ICT networks in key urban issues - environment, society and technology.

Creative capital has a special role in 'smart' development, especially considering available human resources, innovative potential, transfer of knowledge, and spill-over effects. Therefore, the aim of this paper is to identify and analyse the role which creative capital has in the development of a smart city. Focusing on the case of Belgrade and its emerging creative district Savamala, the paper will also propose some guidelines for possible development and implementation of smart solutions which could stimulate creative capital and/or use it for further 'smart' upgrading of the city.

Keywords: *creative capital, innovation, cognitive-creative industry, knowledge, smart city*

2 INTRODUCTION

The “Smart city” concept has become a popular urban paradigm between researchers and urban governments. The new challenges, confronting growing cities in contemporary society, ask for new solutions and responses. Although widely present, the term smart city does not have a precise definition and understanding. It refers to a city with high concentration of highly educated people, which uses ICT for improving the efficiency of urban systems and/or to ensure community empowerment and participation. In this paper, the smart city concept will be considered in the context of sustainability and environmental protection. Its elements will be addressed as an investment in social capital and new/innovative technology, providing and facilitating a sustainable economic growth and higher quality of life.

The creation of a smart city is not an easy task for urban government and it requires human and financial resources. Creative capital has a special role in 'smart' development, especially considering the available human resources, innovative potential, the transfer of knowledge, spill-over effects and the rising awareness of its influence on sustainable growth and overall wellbeing. Richard Florida (2002) introduced the “creative capital” theory, claiming that creative class represents the core of successful urban development in post-Fordist society. Creative capital is not simply the concentration of creative people. It is a stock of knowledge, talent and experiences possessed by individuals and populations which through social interaction generate innovations and economic value.

The improvement of the creative capital of a city and its engagement in the development of smart solutions is crucial for the creation of a smart city. For a better understanding of this process, the paper uses the case study of the Savamala quarter in Belgrade. Belgrade is the capital of Serbia and the leading centre of creative industry in the country and the region. It has strong creative capital, but the smart development of the city is questionable. Savamala is a district of Belgrade, recognised as the centre of alternative culture, creativity and innovation at the global level. It has contributed to Belgrade's attractiveness to the creative class. In general, the creative capital of Belgrade and its creative district Savamala could be used as generators of smart solutions for the improvement of sustainability, environmental quality and urban efficiency. Additionally,

they could be used to raise awareness of the smart city concept, its importance and modes. The paper proposes some guidelines for possible development and implementation of smart solutions which could stimulate creative capital and/or use it for further 'smart' upgrading of the city.

3 THE CREATIVE CAPITAL FOR A SMART CITY

3.1 Creative capital

In 2002, Richard Florida developed the “creative capital” theory claiming that creative people i.e. the 'creative class' represents the main driving force of cities' development in the contemporary (post-Fordist) economy. The concentration of creativity in cities is the precondition for their growth and their source of competitiveness. Jobs and companies follow the creative class and if a city wants to be successful it needs to attract it. Although this theory has become widely popular in literature and urban policies, it gives a simplified presentation of a city's creative capital. The pure presence of creative people in a city is not creative capital. Creativity is not an individual quality of one person, but rather a social product. To generate creative capital people need to be connected, producing knowledge and value. Stefan Krätke defines creative capital as “the ability of urban economic actors to produce scientific, technological and artistic innovations on the basis of relational assets that are socially produced within a city or a region” (2011:3).

Creative capital is connected with the human capital theory. Human capital is defined as “any form of acquired skills or knowledge that could be used to improve the individual's ability to perform productive work” (Abrokwa 1999: 653). Human capital, as a social stock of knowledge, a generator of jobs and an attractor for foreign companies. Human and creative capital complement each other but there is an important difference. Human capital applies to all the knowledge of citizens that generate production, while creative capital emphasises the sector of creative industries that highly contributes to the wealth of a city in contemporary society. Creative capital presents a stock of creative people (artists, highly educated people, researchers...) able to generate innovation and economic value.

3.2 The Smart city concept

During the last two decades, the concept of „smart city“ has become increasingly popular in theoretical literature and urban policies. The rising urban population, the role of cities in national and global economies and their consequential environmental impact have emphasised the search for smarter ways of urban management and development. However, the understanding and definition of the 'smart city' concept are blurred. From the technological perspective, the smart city has been understood as a city with available high-quality ICT infrastructure enabling information sharing and collaboration of all inhabitants no matter the location in the city (Nam and Pardo, 2011). From the angle of economy and business development, the smart city is perceived as a city where technological and ICT solutions create a business-friendly atmosphere and make entrepreneurialism easier (Kitchin, 2014). When interpreted from the human perspective, smart cities could be defined as “metropolitan areas with a large share of the adult population with a college degree” (Winters, 2011: 254). Another approach puts emphasis on community, describing the smart city as a community which uses ICT and E-governance in order to ensure its social cohesion, empowerment and participation in city functioning (Caragliu et al., 2011).

In this paper, the emphasis will be on the understanding of the 'smart city concept' from the perspective of sustainability and environmental protection. The smart city is seen as a city that uses technology to lower its energy consumption, its pollution and the expenditure of resources. An adequate definition could be the one given by Caragliu et al. (2011:70) claiming that a city is smart “when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance”. If a city aims to improve its sustainability by using ICT networks and modern technologies, it is not possible to separate environmental, social and economic sustainability.

3.3 The role of creative capital in smart city development

The term smart city is sometimes used as the synonym for the creative city. For example, Thite defines smart city as a city that “aimed at nurturing a creative economy through investment in quality of life which in turn attracts knowledge workers to live and work in smart cities” (2011: 623). Although there are some common elements between these two concepts, in this paper the term 'smart city' will not be equated with 'creative

city'. Instead, the paper will try to find the causal relationship between the creative capital of a city and the use of technology and modern telecommunication for sustainable growth, environmental protection and increased quality of life.

Nam and Pardo (2011) define technology (infrastructure of hardware and software), people (creativity, diversity and education) and institutions (governance and policy) as the key components of the smart city. Technology is not enough by itself to create the smart city. People, as human capital, are the most important element for the smart city (Holland, 2008). In the concept of the creative city, Richard Florida (2002) underlines the importance of 3Ts for economic development – technology, talent and tolerance. He recognises that technology, although a required component, does not generate city development, while people represent engines of city growth. The concentration of creative and highly educated people is the precondition for innovation and creativity in the city, while creative capital is the precondition for the development of the smart city. If there are no people to use technology and modern communication for value production, the city cannot be recognized as a 'smart' one - no matter how intelligent systems in the city are.

The strength of creative capital is proportional to the generation of innovation in the city. The more creative and high-educated people are in the city, the higher the chance for the city to generate new technological, IT and E-solution for sustainable growth. If creative capital is directed and coordinated in an adequate manner, sustainable development and success can be achieved (Scott, 2006). The presence of creative capital in the city means it can make its own smart city solutions, which can improve governance, transportation and environmental quality. The city can draw resources from itself, having the possibility to hire local companies and institutions. On the other hand, creative industries, knowledge dependent industries and R&D are the prime sectors of the economy of cities in the global post-Fordist society (Florida, 2002, Scott 2007, Kratke 2011). Consequently, creative capital has an important impact on cities' wealth. The economic strength of the city determines the money available for investment in 'smart city upgrading' and environmental protection.

The creative capital plays the role of spill-over effects in smart city development. The spill-over effect is most evident in the sphere of innovation and knowledge. The concentration of creative and knowledge workers in the city, and even more in specialized clusters, induces the diffusion of knowledge, know-how and the creation of new ideas and new companies (Feldman, 2001). Diffusion happens through interaction between people and companies. Interaction can be face-to-face in spatial clusters or through internet networkers in "cyber" clusters. The higher the production of innovation in the city the more favourable conditions for the smart improvement of the city it creates. Furthermore, the concentration of highly educated people in the city raises the general awareness of technological potentials and ways of their implementation for overall wellbeing. They require effective e-solutions from city government, especially related to administrative activities and everyday situations. Their requests urge cities to implement smart technology, while their use of technology, applications and E-Systems encourages other citizens to accept innovative ways of urban life and its improvement. A healthy and green urban environment, with available public spaces and recreation areas, is one of the main attractors for the creative class (Florida 2012). Therefore, cities invest in sustainable urban design and environmental improvements, simultaneously strengthening their smart city status. These changes influence the whole city, introducing new environmental trends and advanced technological solutions for sustainable transport, business, recycling and - living.

4 THE IMPROVEMENT OF CREATIVE CAPITAL IN BELGRADE

In order to understand better the role of creative capital in smart city development the paper uses the case study of Belgrade and its creative district Savamala.

4.1 Belgrade creative capital

Belgrade is the capital city of Serbia, located in the southeast of Europe. Situated on the riverbanks of the Danube and the Sava, it is the largest city in Serbia and the third largest city on the river Danube, after Vienna and Budapest. It is the fourth largest city in Southeast Europe, after Istanbul, Athens and Bucharest (Hirt, 2009). Belgrade is a vibrant metropolis of 1,23 million people in the city area and 1,7 million within the administrative region. It is the main university centre of Serbia with 3 public and 6 private universities. The number of graduate students has increased - from 10,789 in 2007 to 25,334 in 2013. The University of Belgrade is ranked among 400 top universities according to the 2014 Academic Ranking of World Universities (Shanghai List).

Belgrade is the leading centre of creative industry and advanced service sector (especially ICT), not only in Serbia, but in the region as well. Creative industry experienced rapid growth in the Belgrade region. At the beginning of 2005 the added value of the creative sector was 97 billion and in 2013 it was 196 billion Euros. In less than 10 years it doubled, indicating the importance of the creative sector for Belgrade's development. In 2009 there were 7733 companies from the creative industry sector and in 2013 - 9266 (Statistical Office of the Republic of Serbia, 2011, 2015). The increase in number of enterprises, as well as their share in total numbers, suggests steady increase. It can be expected that the number of enterprises will grow continuously. The most important sector of the creative economy is ICT. In Serbia there are 1786 active companies performing ICT, employing 11003 people with a turnover of around 62 million Euros. Two thirds are located in Belgrade, i.e. 1088 companies which employ 7280 people, proving the importance of Belgrade in the ICT sector. The ICT sector is the fastest growing in Belgrade, generating approximately 200 new companies yearly (SIEPA,2015) and 1/3 of added value of creative industry.

Year	Enterprises		Persons employed		Turnover		Value added at factor costs	
	Number	Percent	Number	Percent	Mil RSD	Percent	Mil RSD	Percent
2009	7733	22	74022	16,2	393401	14,2	168498	23,2
2010	8158	22,4	71425	16,1	418842	13,6	179111	23,6
2013	9266	23,6	74671	17	438264	11,8	196453	25,8

Table 1: Rise of companies and employees in creative industry in Belgrade region-years 2009-2013 (Statistical Office of the Republic of Serbia, 2011, 2012, 2015).

To gain some understanding of Belgrade's creative capital, we need first to explore human capital in general. Among 1,6 million people in Belgrade in 2002 there were 276,611 with higher education, which is only 21% of the adult population. In 2011, among 1,7 million people in the Belgrade region 396,779 (or 27,8%) had higher education (Statistical Office of the Republic of Serbia, 2002, 2012). Among the people with higher degrees approximately 1/4 are people with education in the creative sector. Creative capital constitutes an important element of Belgrade's development. The data shows a solid increase for the period of one decade, but the percentage is still significantly lower than the European cities average (for ex. the average for 2013 was 37% - Eurostat, 2014). This shows that creative and human capital of Belgrade have to be improved in order to generate smart and sustainable growth and wealth.

4.2 Creative capital in Savamala district

The period of intense generation of creative companies overlaps with the establishment and development of a creative district in the Savamala quarter in Belgrade. The Savamala district is regionally and globally recognized as a new attractive cultural and creative node. In 2015, The Guardian labelled Belgrade as one of top 10 alternative culture cities in Europe, especially due to the Savamala district which was recognized as the hub where creativity blossoms. Savamala is one of the oldest districts in Belgrade, built at the beginning of the 18th century. It is positioned in an ideal location on the riverbank, next to the railway and bus station and near the city centre. In spite of its superb location, Savamala was one of the most neglected and unattractive areas of Belgrade with decaying houses and heavy truck traffic, disconnected from the centre and the rest of the city (Vanista Lazarevic et al., 2016). In the last decade, it has been under transformation. It has become an attractive quarter with cultural amenities and a specific group of inhabitants - the creative class of Belgrade.

The transformation of the Savamala district started in 2007, with the opening of the new cultural centre "Magacin" in an old abandoned warehouse. It became the place for alternative artist gatherings, exchange of ideas and creativity. Afterwards, in 2009, "Cultural centre Grad" also founded a place in Savamala. It transformed an old house from 1884 into a gallery, bar, designers' selling area and art library. The concentration of creative people in Savamala has intensified from 2012, when the first Mixer festival was held there. Originally, the Mixer festival was established in 2009 as a regional event dedicated to creative industries aiming at the exchange of experiences, knowledge and ideas. It was also a good opportunity for presenting creative work to a wider audience. Moving to Savamala, the Mixer festival has triggered a number of changes in this area, generating a new creative hub which has become a synonym for creativity and culture. The organisation of the Mixer festival, Mixer house, established its centre in an old warehouse, which is, at the moment, the cultural and creative focus of Savamala, spreading out new ideas to a wider

audience and the citizens of Belgrade. The move of Mixer house instigated the opening of other creative 'units', and some of them - especially Gallery 12HUB and Nova Iskra, represent important multidisciplinary nodes. Gallery 12HUB connects art and technology. It makes technology available to artists and scientist. Nova Iskra is a co-working space that connects young creative workers, from software developers to architects.

Savamala has become the centre of creative entrepreneurs in Belgrade. As such, it plays an important role in empowering creative workers of the city and rising awareness of the presence and importance of creative people for city development and success.

5 GUIDELINES FOR THE IMPROVEMENT OF CREATIVE CAPITAL FOR SMART SOLUTIONS IN BELGRADE

The creative capital of Belgrade is in constant rise, and its presence and importance is becoming more and more evident. However, the effect of creative capital on Belgrade's development as a smart city is questionable. If a city wants to become 'smart' it needs to have four possible dimensions: application of a wide range of electronic and digital technologies - digital, wired and informational networks; use of information technology to transform life and work; embedding ICT in the city infrastructure; bringing ICT and people together to enhance innovation, learning and knowledge (Komninos, 2011). Belgrade is covered with digital networks and even widely covered with free Wi-Fi in open public areas and public transport. There is progress in the use of ICT for the improvement of quality of life and work. E-government makes some elements of administration for entrepreneurial activities easier and quicker. Smart solutions are used for public transport and for infrastructure management, especially in the field of electronic power supply. The use of ICT to enhance innovation, learning and knowledge is still in the initial phase. The use of ICT for knowledge and innovation is present at the level of university research, but there is still a lot that can be improved in this area if Belgrade wants to prosper.

The most important element of Belgrade's smart development is its creative capital. ICT and smart solutions can be used in many different ways and levels to improve the creative capital of Belgrade, from the simple creation of virtual networks of creative workers to governmental e-platforms for the support of innovations. Specialised virtual networks that would connect creative and high-technology workers in Belgrade is the first thing that needs to be established. This virtual collaborative space (Komninos, 2011) should enable efficient exchange of ideas and knowledge, as well as co-working of possibly all workers in the creative and ICT industries. It is an easy, simple and relatively inexpensive solution that provides an opportunity to interconnect creative workers from all over the city, no matter their location, size of company and status. It would be a single virtual space where they can find necessary information and needed partners for the next job. The other, better solution would be the creation of specialised networks for specific creative industries and sectors (for example architecture, furniture design, web-design, banking software development, computer games development ...). More specific networks will better connect targeted groups of creative workers and instigate their collaboration.

The next step of ICT support for the improvement of the creative capital in Belgrade needs to be the creation of virtual creative clusters. Besides connecting creative workers through virtual networks a virtual cluster needs to offer promotion of companies and their products. The virtual cluster should help companies and individuals of the creative industry to become more visible and recognised inside the city, country, but also at the global level. In the informational and digitalised global society, striking presence on the internet is equal to having the store in the top location of the city. The socio-technical network among entrepreneurs is likely to stimulate knowledge spill-over and innovation (Sauer, 2012), and generate new companies and new jobs. New companies and new jobs expand clusters, but unlike the clusters which have a spatial envelope, virtual clusters have no limits for the number of companies they include.

Most of the companies in the creative industries are small companies and start-ups. Start-ups are generators of innovation and need special attention from the city government. The use of ICT can be the first and less expensive step for supporting start-up companies via the E-platform established in Belgrade. In Serbia, where starting a company is administratively very complicated and financially risky, an electronic platform that makes the process easier and quicker is extremely needed. The platform needs to give legal support for the establishment of companies and to advise on finding financial support. If the Belgrade government wants to give further support for innovativeness in the city, the electronic system for patent and design protection

would be very beneficial. The process of patent protection, like many other administrative processes in Serbia, is very complicated and time consuming. The system that allows easy online information and patent registration would encourage more entrepreneurs to legally protect their innovation and have higher financial returns from their products.

After the improvement of the creative capital in Belgrade, it is important to engage it in the creation of smart solutions for improvement of city sustainability and quality of life. The ways to do that can be multiple, from the use of existing IT sectors for smart software design to the establishment of specialised “smart” clusters. At first city should offer “incentives for solving problems in specific areas that could help attract a critical mass of interest around them” (Kraus et al., 2015: 611). For example, the intensively developed IT industry of Belgrade could be used for the creation of smart solutions for the city. Instead of importing foreign smart technology, local companies could be stimulated to produce new solutions, adjusted to the needs and local conditions of Belgrade. Stimulation could range from financial subsidies for work on smart technology, tax revenues for companies who create smart technology or free support for marketing and patenting. The city government should encourage companies from different sectors by facilitating and stimulating their cooperation in the areas of sustainability and environmental awareness. Finally, Belgrade could create smart technology specialisation using the existing preconditions for smart technology development. As a result, the city could become globally recognisable as an exporter of smart solutions and technology.

The other approach for enhancing smart development in the city could be the establishment of smart creative clusters, virtual or real. “Such a cluster could be more useful than having generic clusters or a university nearby, accelerating knowledge spill-overs and collaborations” (Kraus et al., 2015: 611). Rounding up of creative companies and individuals interested in the production of smart solutions for sustainable development should result in higher knowledge and higher innovation outputs. The concentration of professionals interested in the smart city enhances chances for the creation of co-working teams, start-ups and new projects in the sphere of smart technology and design.

One of very important elements is the spread of knowledge about the smart city, it's the importance of sustainable development and available smart solutions that can be implemented in the city. Many implemented smart solutions in Belgrade remain under-used because people are not informed adequately or do not understand the possibilities and outcomes of their use. Therefore, creative people in Belgrade have the crucial role in changing this situation. They need to be engaged in informing citizens of Belgrade about the smart city concept, what it is, what it brings, how it improves their ordinary life and their work, and what the long-term benefits are for the city and the environment. Creative people should raise awareness and spur the use of smart solutions around the city. To engage them as the forefronts of knowledge dissemination, the city needs to give special financial support to creative professionals and companies, especially those related to marketing and education. In practice, it would mean to give support to events that promote smart solutions (especially the ones improving quality of life) and to support e-platforms for dissemination of information and knowledge. The possibilities of transferring knowledge are numerous. The other ways of engaging creative people in public education could be related to providing free working space for professionals who will be in charge of raising awareness of smart solutions.

Finally, what is the role of the creative district Savamala in the development of Belgrade as a smart city? Its main role should be the promotion of smart solutions for the sustainable development of Belgrade and its improvement of life. Savamala, as the established (alternative) creative centre of Belgrade, has the best potential for dissemination of knowledge and information on the smart city. Its role and position could be, therefore, easily used and exploited. The special place for promotion should include Mixer house, the most prominent cultural node in Savamala, while the city could consider offering specific collaboration - providing financial or organisational support, or offering space for promotion and inclusion of smart solutions. The Mixer festival, as well as the programmes of the Cultural centre Grad and other district nodes, could be devoted to the exchange of ideas and knowledge on smart technology, solutions and sustainable growth.

Besides using it for promotion of the smart city concept, Savamala can be used as the polygon for implementation of smart technology and solutions. Consequently, this area would get its true shape as a creative cluster - via open public areas furnished with smart technology and design. Attracting creative workers from the area to gather, it would allow them to work outside and share their ideas in informal

surroundings. On the other hand, these open spaces will be interesting for other citizens, offering places where they could see actual applications of smart solutions. The creative quarter Savamala needs to get its E-platform connecting all the creative workers and their potential clients/users. Consequently, the virtual cluster Savamala would bring benefits to creative and cultural companies and individuals, presenting their work to local and global audiences and customers. This will bring more attention to the district and spur its further growth.

The Savamala district could be used, partially, for the establishment of a specialised smart creative district. Nova Iskra could have a special role in that process. As the co-working space of local and regional ICT professionals, designers and architects, it could be a perfect partner in the process of launching a smart creative district. However, the city needs to motivate their participation. For example, if Nova Iskra becomes the first multidisciplinary centre for research, development and production of smart solutions in Belgrade and its region, it would attract other companies and freelancers to join. A spill-over effect could be expected, and new start-ups would sprout in the area. However, Savamala should not become just a smart creative cluster. It needs to stay the creative district which could be used as a unique platform for developing new smart creative clusters.

6 CONCLUSION

Belgrade does not use its creative capital optimally, but there are many ways to engage the creative capital for desired aims of the city. In this paper we propose possible directions applicable in Savamala district, focusing on the relationship between the creative capital of the city and its 'smart' performances. Although the specificities of the local context have influenced these guidelines, some of them could be used in other cities, with similar social and economical background. It is obvious that there are no universal solutions, but each of them leads to a specific model of a smart city. However, it is important to underline the link between local governments and the creative capital of a city, which has to be truly functional and efficient. Only then, will the creative sector be able to express its full potential as a reliable partner for sustainable economic, social and environmental development.

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