Development Planning Optimalization of the Košice City in the Context of the Smart City and City Region Conceptions

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Abstract

The modern city development policy with regard on the current socio-economic challenges uses many new concepts including smart cities and city regions. Within them is the city seen as living organisms flexible reacting on the needs of its inhabitants and seeking to effective organization of relations within the city and his components, but also adjoining units with the goal to provide effective territory management and to achieve his development. These trends are the starting point for contribution, in which we will be dealing with their application on Košice city conditions. The attention is paid on assessment of key determinants of development planning optimalization in the city Košice and definition of development plan´s better utilization possibilities as a city development policy instrument in the context of new trends and attitude of key development actors systematically cooperate within this process.

Key words: development planning, city region, smart city, Triple Helix, governance

JEL Classification: R11, R12, R58

1 Introduction

Cities are playing a crucial role in the settlement system, because they are a natural centre and engine also for the dynamics of development of the surrounding areas. On the other side they are permanently confronted with own problems (mobility, safety, etc.), which complexity and interrelatedness with other fields are intensified also by the development policy system approach requirements. From the concepts, which recently significantly resonated in the theoretical reflection and also in practical application, "smart cities" and "city region" can be point out. While the smart cities approach we understand as a flexible problem solving and setting of processes in management, planning and policies of the city, the city region approach goes beyond the city range and follows solutions for the wider territory in the form of the city as a centre and surrounding municipalities as peripherals together forming a one territorial unit.

In the article we want to point out, that the implementation of new concepts (mainly city region, smart city, but also another) in the development policy of the city must be principally reasoned by ensuring higher efficiency and long-term sustainability. We want to point out the possibility of connecting different basis approaches in theory and afterwards use our defined approach on a specific territory. The focus is through case study of the Košice city concentrated on smart governance with specific attention on connecting with Triple Helix model, where production of new ideas and innovations is expected on the basis of interactions between universities, businesses and public administration.

2.1 Smart city conception – when is the city smart?

Smart cities conception is trying through clever and simple solutions with support of ICT technologies improve the living quality in the cities. The goals is, that complexity and interrelatedness of phenomena and problems, which today the cities have, could flexibly be captured, analyzed and then adopt optimal solutions. Initiatives regarding smart cities appear since the late 90s. As stated by many authors (Batty et al, 2012, Sassen, 2011), the term smart city has several forms. It is also related to the fact, that currently to understand the city as a modern complex requires working with database of many different information with different quality. In this context is the task to use information technology becoming not only a challenge, but even a real necessity. The combination of a modern city only with development and using ICT leads more to the idea of a digital city, what we understand as insufficient and overcome. The smart city conception is necessary to perceive as a territory management improvement approach not only through ICT. ICT has to be a platform, infrastructure, but ICT itself is not the only fundament of the smart city conception. As Vintar (2011) points, who developed the findings of Pollit (2010), the role of ICT technologies for current optimal management should be wider conceived. In the first place classically a tool, as enabling infrastructure, as a "trend setter" in the future. Secondly are digital technologies the reason of organizational changes reorganizations of management processes. Finally their third role, innovative use of technologies and their effective and successful deployment in the public sector became an independent policy area and strategic issue. And this complex concept of ICT is for the smart city conception with respect to the city development planning useful. We also incline to the opinion, which was presented for example by De Santis, Fasano, Mignolli and Villa (2014b), in the form of statement "Smart is more than digital". They mean that from the beginning the term smart city was clearly used for the description of the digital city. Currently it particularly represents a social inclusive city or a city offering higher quality of living through intelligent and technological innovations.

When analyzing views on what actually smart city represents, it is possible to find opinions, which characterize a conception, which uses three main characteristics. These characteristics are common for more definitions (Smart Cities Initiative, How to Foster a Quick Transition towards Local Sustainable Energy Systems, 2011):

- friendliness towards the environment
- use of information and communication technologies as tools of (smart) management
- ultimate goal of sustainable development.

Stated approach understands the smart city concept not only as a model on the basis of ICT, but stresses also a long-term sustainability of solutions (sustainable development). This attitude we understand as necessary and we incline to the idea, that smart city is especially a model. The model should lead to better meeting the needs of inhabitants and actors and at the same time it should be a long-term solution. Lojewski and Munzinger (2013) stated, that "the term Smart Cities is nowadays a must". These authors stressed, that only an image of the city associated with long-term sustainability is complex. They also critically perceive a very technical view on the modern city, if they are saying that concepts for the cities of tomorrow don´t need a pure technical "Smartness".

For better understanding of what all is in the concept "smart" necessary to redefine, a model (Figure 1) can be used. The model is based on a definition of Giffinger, who defined "smart degree" of 70 medium-sized European cities focusing not only on digital data and information, but on 6 dimensions: smart mobility, smart environment, smart governance, smart economy, smart people, smart living (Giffinger et al, 2007).

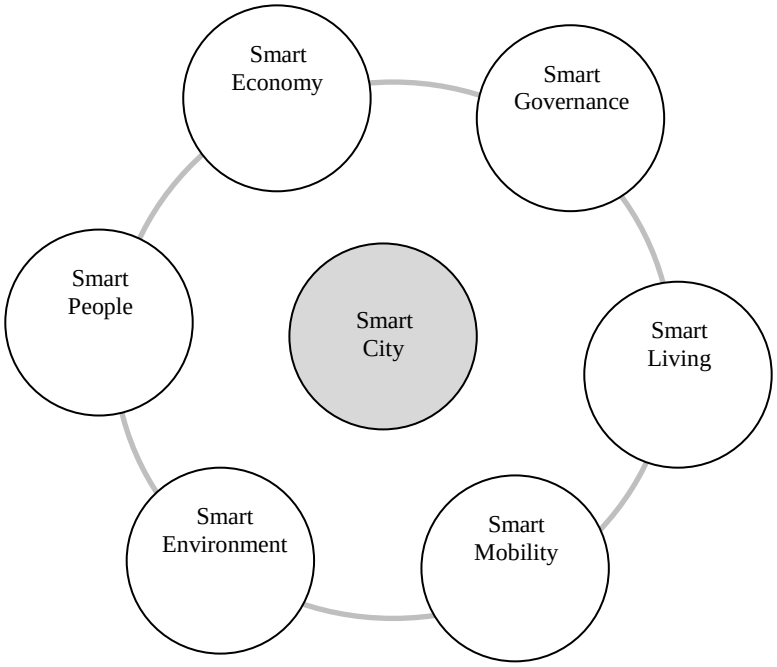

Fig. 1 Six components of smart city
Source: Andronicеanu and Ivan, 2012, p. 337

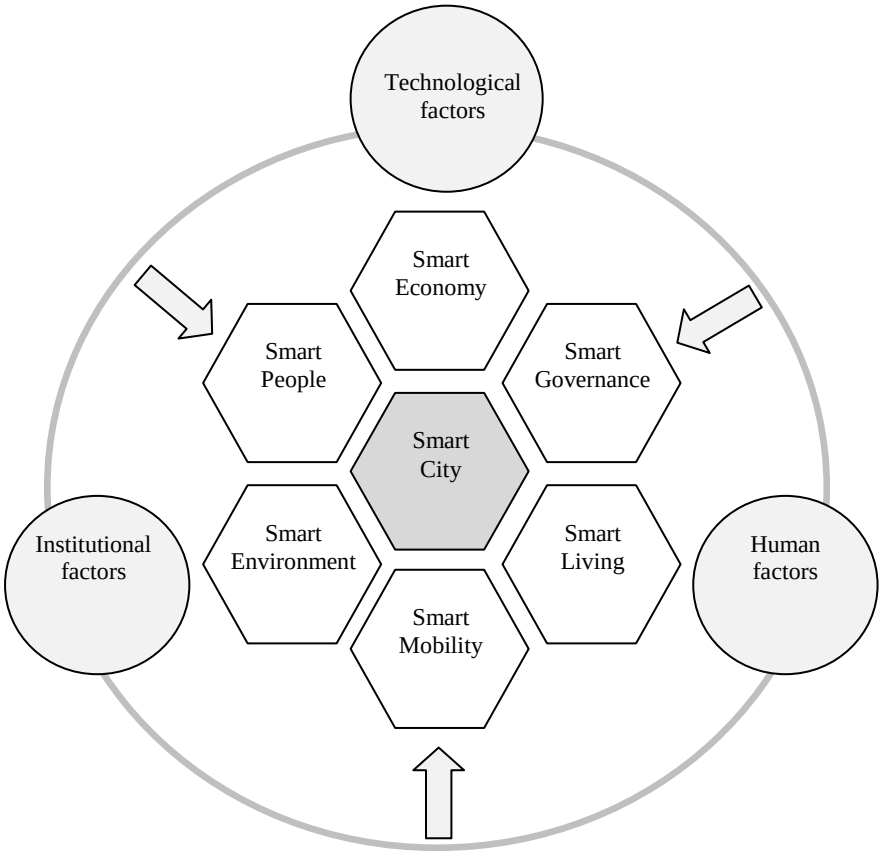

Fig. 2 The relationship between components and characteristics of smart cities
Source: Mapping smart cities in the EU, 2014, p. 30

According to De Santis, Fasano, Mignolli and Villa (2014b) especially six dimensions of smart city categorize the conception between neoclassical theory of regional and city development. Actual study of the European Parliament Mapping smart cities in the EU (2014) supplements the scheme of six smart city characteristics by three components – technological, human, institutional (Figure 2).

2.2 Learning smart city?

The real connection between each of the six characteristics depends on, how is the perception of their effect in the smart city model in the eyes of the city strategy implementers. But in each possibility, the six characteristics relates always to each actors – businesses, universities, citizens and public administration (local government). Their "smart" function in the concrete territory leads to better using of territorial predispositions in the form of endogen growth. This idea connects to another known territorial development conception, to the Triple Helix model, respectively to the concept of a learning region. If the smart city theory should lead to improving the living conditions for citizens and businessmen on the basis of smart components involvement, interactions between these components (De Santis, Fasano, Mignolli and Villa, 2014a) and also the action of each actor has to be considered. For the territory development is an important precondition an interaction of regional partners, process of learning, ability to create knowledge and to be a source of innovations (Ručinská and Knežová, 2010). That's why it is possible to express the scheme of basic characteristics on the basis of interaction between academic, business and political dimension (Figure 3).

Our idea of joining six components and the model Triple Helix finds its support for example also in already mentioned authors De Santis, Fasano, Mignolli and Villa (2014b), who present that currently the smart cities model should focus on interrelationships within components of Smart Cities and at the same time include human and social relations, which stress intellectual capital, health and governance through model Triple Helix. Also Lombardi, Giordano, Farouh and Yousef (2012) and Lombardi et al (2011) are strengthening in their papers the connection of the concept smart cities and Triple Helix with a concrete definition of the mission of each actors.

We think, that exactly what is the level and intensity of interactions between actors of the territory, affects the dimensions of smart cities and on the other hand, the level and development in each dimensions has vice versa its effects on the actors. In our opinion it is worth considering revising the position of "smart governance", which is in our view a key component. In the case that it is really functioning, it can speed up and improve the development of other components and thereby of the whole city. The purpose of the smart city approach is also, that the public space will be available for broader use (6. Smart City Wien Stakeholder Forum, 2013). If the city will behave smart, it can also lead to effective functioning of companies and also the city will become an attractive place for new companies thanks to its innovativeness.

That's why we think, that the whole smart city model needs to be seen as a dynamic concept. The city as a whole reacts with all his components on the changes and tries to meet the needs of inhabitants as quick and best as possible. Also each components, each actors and at the same time each described factors affecting them, are under the influence of different changes, which lead to further development of the whole smart city.

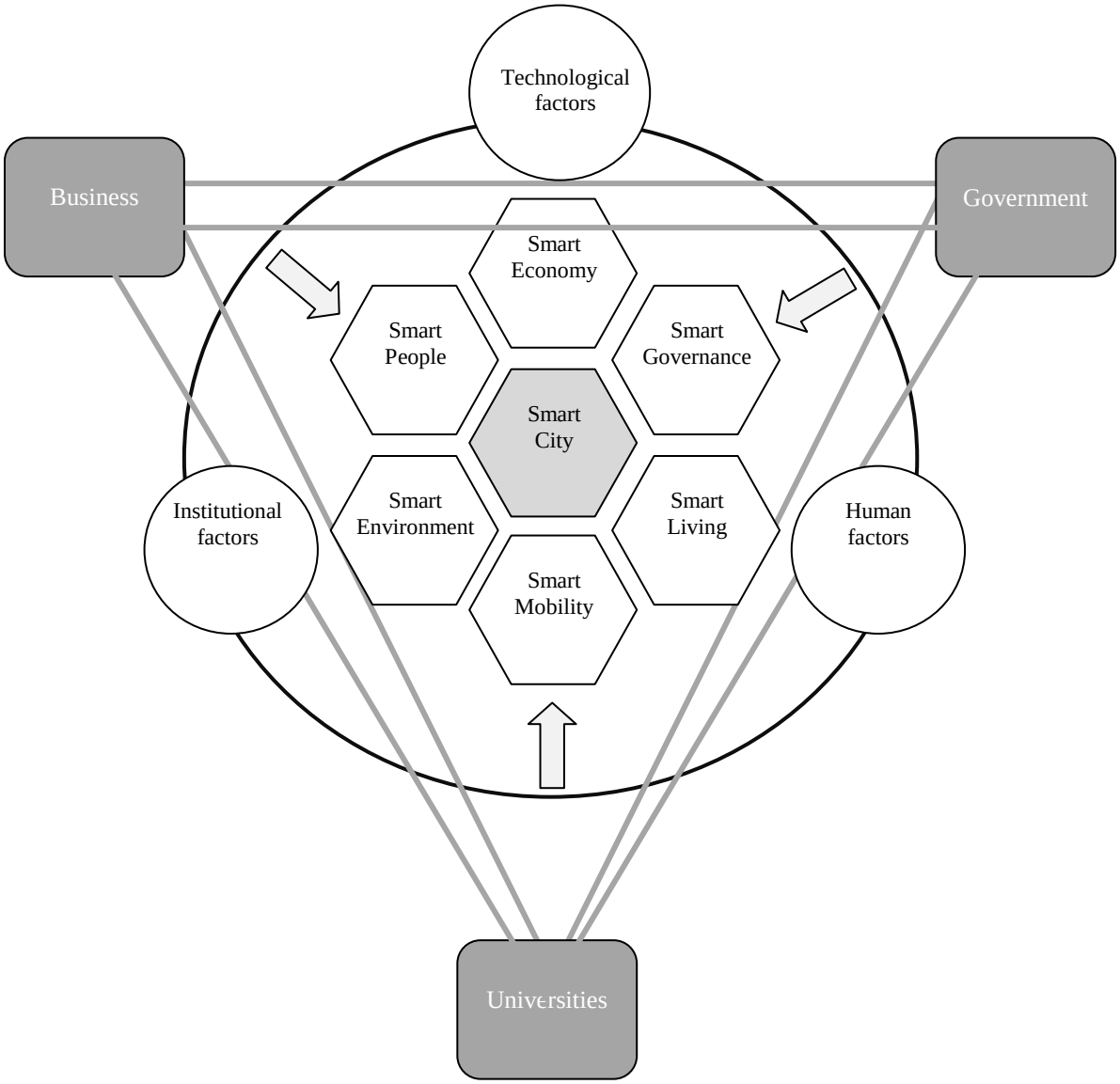

Fig. 3 Connection of components of smart cities and Triple Helix model (Learning smart city?)
Source: own work

2.3 Smart governance and city region

In connection with further city development planning, is especially "smart governance" consistent with compliance of the „good governance"[1] principles as effectiveness, responsibility, efficiency, participation, transparency, faced with new tasks. The way of development planning should take the changing environment into consideration, which under the influence of digitalization is changing the profile of clients, brings new possibilities of data processing, their evaluation and taking decisions. In the smart city, when speaking about the smart governance is not only the quality and speed of providing services in the form of E-

[1] Principles of good governance in application on development planning processes are concretely elaborated in: ŠTEINER, A. et al. 2010. *Dobré spravovanie rozvoja regiónov – výzva pre Slovensko*. Košice: Karpatský rozvojový inštitút, ISBN 978-80-970368-0-5

Government emphasized. Also the participation on decision making is at the same time a precondition and evidence of transparency. Smart governance consists of these indicators (Giffinger et al 2007):

- Participation in decision-making,
- Public and social services,
- Transparent governance,
- Political strategies and perspectives.

We perceive smart governance not only through listed 4 indicators, but of course wider. The "smart governance" approach could improve the development policy also with regard on the role of the city through the optics of "city region". City development conceptions in the context of city region theory acquire the severity also in relation to the European Union policy setting for years 2014-2020, in which the city development policy orientation is changing towards the sustainable integrated development, which takes into consideration surrounding residential units (beyond the own cadastral area). Many authors are dealing with the definition of city regions, for example Brown and Holmes (1971), Noronha and Goodchild (1992), Karlsson and Olsson (2006), Mitchell and Watts (2010), Konjar et al. (2010), Klapka et al. (2013). In The Slovak Republic were for the needs of funding from The Integrated operation program for years 2014-2020 by the Ministry of transport, construction and regional development 8 functional city regions in the area of 8 regional cities in Slovak Republic defined. The theme of functional city regions reflecting the current distribution of residential structure in the Slovak Republic conditions is elaborated mainly in the papers of Bezák (1990, 2000, 2001) and also mostly in geographical, eventually other partial studies. Slovak authors address the problematic of functional city region partially orienting on concrete region or concrete thematic sphere (migration, commuting to work), for example studies about definition of functional city regions, analysis of indicators for territory development comparison (Korec, 2009) migration movements of the population (Hudec, 2011), region typology (Gajdoš, 2005), migration flows (Novotný, 2010, 2011), regional disparities (Matlovič, 2010, Rajčáková and Švecová, 2009a, 2009b).

For the sphere of city development planning with regard on his connections to wider area is important again realize the role of the city in existing residential structure and multilevel governance. The city shouldn´t in view of the mentioned principle of long-term sustainability, but also with regard on growing mobility think only on own territorial components, but realize development policy in the context of surrounding peripherals development. This should be shown and take into account in the smart governance in the indicator "Political strategies and perspectives".

This challenge currently relates also to the Košice city which is with almost 240 000 inhabitants the second largest city in Slovakia. It is the political, economic cultural and social centre of eastern Slovakia and the surrounding region. Košice city includes four districts and consisting of 22 city boroughs as independent units and at the same time is also as city, which represents a center (core) for more surrounding municipalities. These municipalities count on the city Košice as on a development engine, on which they can regarding their own development rely on. The city is on the one hand exposed to high expectations in the development on his own territory with a focus on smart solutions with 22 mayors of the city parts. On the other hand exposed to pressure from the actors of surrounding municipalities, which the city Košice as a center of city region development should consider in its integrated development policy.

Our attitudes to theoretical background we had expressed in that we highlighted smart governance as the smart city characteristic, on which the level of development of all other components can be depended. We are applying this attitude also on the Košice city, but we will not focus on all four indictors, but only on the evaluation of the level of the indicator "Political strategies and perspectives". In the following text we will try to concretely describe the characteristics, which determine Košice city in its development planning. Also we will try to apply possible steps from the smart cities conception with the connection to the Triple Helix model and the conception city region.

2.4 Smart governance and development planning in the Košice city – key determinants of its optimization

Importance of development planning is currently seems as a fundamental assumption for city development, evidenced also by the regulation of planning need by law. The Act no. 539/2008 about the regional development support stated as a basic development document for municipalities and cities in the Slovak Republic The Program of Economic and Social Development (PESD). PESD is necessary to perceive as a tool determining the direction of different development politics on generally at five (or more) year period. After five years there is currently a novelization of mentioned Act.[2] In the explanatory report it is stated that the proposed changes in structure and definition of PESD should contribute to that "the PESD will become real systematic and conceptual tools that serves the improvement of local government – not only through formal documents." One of the most significant contributions of the proposed changes is also the possibility of the municipalities, which do not have needed capacities, to elaborate a joint PESD with neighbour municipalities. The goal is an effective territorial, but also financial solution of own development needs associated with effective evaluation of regional and local competitive advantage (Explanatory report to the government proposal, which changes and complements the Act no. 539/2008 about the regional development support).

The Košice city has elaborated PESD for the years 2009-2015 and currently its actualization is in process. The uniqueness of the Košice city is based on the breakdown to 22 city boroughs. The city parts have the position of a legal person. They had this status also in the field of European Union funding. Not only (but also) from this reason is currently the development policy addressed in the PESD of the city and also in the PESD of the city boroughs. Nevertheless the PESD is a strategic document for development of the whole city territory including the roles of another key actors, logically is primary set on competences of the self government unit. Košice city divides its competences with the city boroughs, in which a breakdown on so called "big city boroughs" (8) and "small city boroughs" (14) is respected, but many exceptions occur (Komunálne výskumné a poradenské centrum, 2009). Redistribution of competences (which in the present would need regarding on next development an exact audit), consequently forms a precondition not only for the system of financing, but affects also the process of development planning.

On the basis of stated, weaknesses of the current development planning state in the Košice city can be defined. They reduce the efficiency as one of the "smart governance" goals:

- Inappropriate territorial-administration breakdown of the city and city districts in terms of a big territory fragmentation for integrated governance,
- Complicated system of redistribution and financing of competences,

[2] 9.7.2014 was the governmental draft submitted on National council of Slovak Republic

- Low level of cooperation between the city and city districts in the development plan preparation and implementation processes,
- Development plans of city districts often duplicate address some of the sectoral policies and doesn´t take the city development plan priorities into consideration.

At the same time opportunities can be evaluated for development planning optimization in the context of the smart city and city region, in terms of strengthening efficiency and long-term sustainability:

- In the case of adoption of the proposed legislative elaborating of a so called common development program will be possible. It would significantly streamline the efficiency of using the PESD as a development plan. City PESD would be the basic strategic plan and city districts would on his basis draw up own action plans in their elaborated areas. The principle of integrated complex development planning would be strengthening. In second place it would lead also to higher participation and transparency. If we perceive the "smart city" conception as a conception about intelligent solutions in city administration, there is a assumption that this step would in some parts lead to them.
- In relation with the communal elections in November 2014 it would be desirable to start a communication process between key territory "administrators" and to increase the willingness and awareness about cooperation advantages.
- In accordance with the sustainable city development policy it will be important to consider also the trends of functional territory development, mainly in the field of quality planning and services quality in sectoral policies.
- A big opportunity is the use of the electronic information services project. The city has at present started with it, with regard to use the "smart city" conception principles.
- In a long-term horizon it seems as appropriate the change territorial-administrative organization of Košice with the goal to reduce the city boroughs as separate administrative legal units, respectively to consider their role and position in the city territory administration system.

Within the concrete application „smart governance" is one of the basic preconditions of effective use of digital services the readiness of the clients. It is based not only on technological equipment, but also the willingness and awareness of the need of digitalization and technocratic growth. In the profile of the city (Situation analyses of the city Košice, 2008) from the year 2007 is stated, that on the basis of the data from the census from the year 2001 only 16,1 % of households possessed a personal computer. According the data from the year 2011 this number increased on 52,9%. In the field of internet connection, which in the year 2007 according to available statistics wasn´t centrally monitored, was in the year 2011 recorded at level of 52%. Digital literacy in the Košice region was in the year 2012 the second highest between regions in Slovak Republic in the category – above average (Velšic, 2012). In the ICT profile of the Košice self government region are highlighted study results from the company Cisco and Oxford University from the year 2009, where in the field of quality broadband internet connection of the cities, Košice placed the 13. position in the group of TOP 20 cities prepared for the services of tomorrow, from 239 evaluated cities (Broadband Quality Score, 2009, Sasáková, 2012).

The number of areas covered with the wireless signal is in the Košice city permanently expanding, through which it is possible to connect free to the internet, the so called Hotspots - (in the year 2013 approximately 19 (Úrad pre reguláciu elektronických komunikácií a

poštových služieb, 2013). Similar conclusions can be state about the clients from the field of business sector, because the segment of ICT companies belongs in Košice to the quickest growing (Sasáková, 2012, ICT profile of the Košice self government region, 2012).

Over the last 5 years was in the field of electronisation as internal area of "smart governance" of city services slight development. Selected electronic formulas were introduced (in the years 2009 – 2013 their number ranged on the level of 14 – 19 depending on changing legislative). In this connection is important to stress out, that usability of these formulas was in the observed period very low – in the year 2009 – 3,35%, in the year 2011 – 2,5%, in the year 2012 – 0,35%, in the year 2013 – 0,2% (Evaluation reports of program budget of the city Košice 2010, 2011, 2012, 2013). One of the reasons was also, that the e-formula weren´t from the view of e-government fully functional and did not reach s classical transaction level. Parallel with digitalization of formulas another intelligent solutions can be observed, which the city introduced through applications as City Monitor, launch of RSS canals, GISPLAN, info kiosks within the ECCC, or introduction of an complex integrated information system (NORIS) etc. Except the activities of the city, also the city districts realized their own digitalization policy. Systematic and a significant degree of change from the perspective of long-term sustainability and development should since 2014 bring the realization of the project "Electronisation of city services – eCities" from the Operational programme of Informatisation of Society (OPIS). This project should significantly change the level of e-Government in the city Košice, by the integration of applications to one unit and provide electronic services to citizens more effectively. In important step is also, that it will connect information systems of the city and city districts on the level of registers. All together it is planned to electronize 80 services within this project (35 of them are currently provided by the city districts and 73 provides the magistrate). Also 14 canals of mobile application for tablets and Smartphone are in preparation (Project of Services Electronization of the City Košice, 2014).

As already mentioned, digital infrastructure plays in the smart cit concept one of the key roles, but in the field of "smart governance" we are inclining to the opinions, that on the similar range of importance set enabling of knowledge transfer through connection of key stakeholders in the city.

In this context it seems as important, to strengthen the initiative role of city self government and efficient using of the potential of universities (in Košice city there are 3 public universities and some faculties of public universities -The Technical University in Košice, The Pavol Jozef Šafárik University in Košice, The University of Veterinary Medicine and Pharmacy, Faculty of Business Administration of the University of Economics in Bratislava, faculty of Catholic University in Ružomberok, private education institutions - Security Management College), eventually other scientific-research institutions (Competence Center for Knowledge technology innovation production systems in industry and services, Software Competence Center – CELUM, Competence Center for biomodulators and nutritional supplements. – Probiotech, Competence center for industrial research and development of light metals and composites, University Centre for Innovation, Technology Transfer and Intellectual Property Protection – UCITT, Research and educational center of information technology – VECIT, Centre for research on the effectiveness of combined systems integration renewable energy, Joint R & D and innovation center for the use of thermal processing of raw materials, Slovak Academy of Sciences) and businesses in the area of networking and active involvement into development. This fact is declared by constant development of scientific-technological and innovative infrastructure (cluster IT Valley),

scientific-technological parks (Technicom, Medipark etc.), industrial parks, start-ups etc. Košice city is currently preparing also a "Strategy of sustainable city development" with regard on own functional territory and it is becoming - with connection to development planning on using the city region conception -another important determinant for future.

3 Conclusion – What about smart city region?

In our contribution we pointed out the theoretical starting points of modern city functioning and we evaluated the smart city conception as a current and flexible possibility of city development. The original Smart city conception defined by Giffinger clearly defines six characteristics and their concrete indicators, with which improvement the quality of living and business in the city will occur. We evaluated this approach as static and we are of the opinion, that can´t in his complexity of relations and components focus only on improvement of these parts, where it already smart is. The city should perceive his components, realities, policies and mainly actors as separate factors, which development has the tendency to be smart from the long-term perspective, if the perception of the city will change to dynamic.

We also recommended, that the action of each actors isn´t possible to leave out and that the perception of these subjects only as some descriptive characteristics would be very simplified. If the city will be really smart, it should take into consideration the interactions between each sectors on his territory and at the same time take these interactions as a main development source of whole territory. We introduced the action of the actors in the form of academic, civil, business and political dimension in our model in the Figure 3.

Beside that in the relation to the city region conception we think that the city, if it wants to fully plan its development with an emphasis on effective use of resources and long-term sustainability, must include the surrounding municipalities in his development potential. These municipalities are mainly the source of labor force, represent the purchasing power of demand, create leisure zones, reduce the tight housing policy of big cities. These aspects should the city take also into consideration within his development planning. On the basis on that we formulate an idea of individual concepts connection: smart city + city region = smart city region (Figure 4).

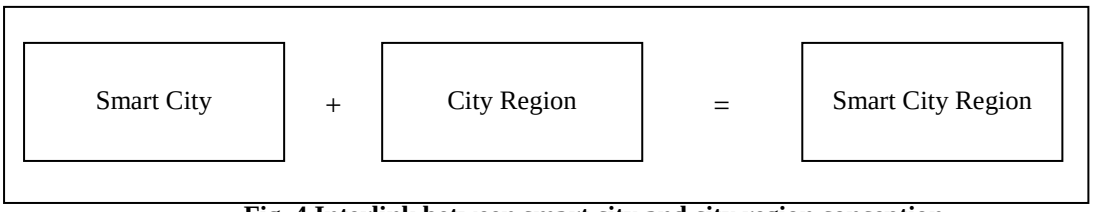

Fig. 4 Interlink between smart city and city region conception
Source: own work

In our contribution we tried to apply the individual theoretical background on the city Košice, which currently stands in front of many difficult tasks. Košice must accord the city development planning, city districts development planning and city region planning. Considering the current status quo, which we have also through expressing the weaknesses and definition of possible opportunities in the text described, it will be in the case of the city Košice a courageous and difficult process. In this process the PESD as a planning document, as it is stated by the regulation, will not by himself be helpful for the city. Based on all knowledge from the mentioned conceptions it is clear, that only the involvement of all actors with an emphasis on initiative of the local government and assuming good smart governance,

connecting characteristics of the smart city, the Košice city could occur an ideal use of potential, efficiency and satisfaction of inhabitants.

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