

‘Smart city’ system as an asset of cultural landscapes development

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Abstract. The article touches upon the idea of ‘smart city’ and ways of how it could be applied to advancing contemporary urban environment. Highlighting variety of definitions this popular term demonstrates there is posed a problem of apprehension both in theory and architectural practice. Authors place particular importance on social aspects of the method to be improved to make it adaptable to integrate with cultural heritage. Having referred to successful examples of heritage technological improvement authors claim ‘smart city’ to possess a level of ‘transparency’ high enough to create the superstructure of urban history basis, which is particularly significant for small towns and settlements of Russia. Finally ‘smart technologies’ pretend to be an efficient strategy in Russian dispersal system for consistency enhancement.

1. Introduction. History of the Term

The early 2000-s marked global dispersion of information and communication technologies (ICTs). The information systems having been rapidly involved into all fields of social life, the most profitable commercial projects, business strategies and scientific activities allowed researchers to comprise more advanced level of ICTs understanding so that they considered them in relation to urban and state governance systems. It was then when terms ‘smart’, ‘intelligent’, ‘digital’, ‘telecommunication’ etc. came into frequent use. Despite the strong difference in meanings the abovementioned adjectives were all supposed to be employed for boasting of being technologically equipped as an unquestionable advantage for project marketing[1]. Among the latter there could be mentioned San Diego’s ‘City of the Future’ as a part of the Silicon Valley, Ottawa’s ‘Smart Capital’ and ‘Smart Communities’, Singapore’s IT2000 plan with its ‘Intelligent Island’. These kind of projects comprised the movement towards technological enhancement, widely manifested in 1997 at the World Forum on Smart Cities where there were suggested ‘around 50000 cities and towns to develop smart initiatives’ [1].

Subsequently such popularity made the term go viral in books and journals of 2000-2007 which caused confusion in notions. In 2002 N. Komninos in *Intelligent Cities: Innovation, Knowledge Systems and Digital Spaces* made an attempt to clarify ‘smart city’ idea [2] resulted in 4 most exercised concepts revealed. According to that classification the ‘smart city’ presumes that either:

1. Elements of ICT are embedded in the city, or
2. A range of electronic applications is used for urban system enhancement, or
3. ICTs modify fundamentally life and work in a territorial unit, or
4. ICTs integrate spatially designed project for providing its innovative, learning and creative potential



As it is seen, each concept points out changes in urban environment elements putting stress on a single characteristic of 'entirety' intrinsically linked to the 'smart city' – that of is particularly highlighted in the 4th definition. However, provided that it is looked up to in the aspect of management and systematization, complex adaptive systems, including all the structures of social origin possessing significant variability and complexly internally organized [3], call into question the advantages of the 'smart' approach. So what is the correlation between the concept and social basics of urban environment?

2. Projects and Critique of 'Smart City'

The discussion of the idea of 'smart technologies' raises a principal question: what place should social aspects have in this framework? As it is pointed by R.J.Hollands 'smart city' theory implies citizens to be deliberately agreed on any digitalization deployment in daily life and living environment [1]. Projects of that kind reaffirm the significance of newly built 'smart cities' and have already proved to be commercially oriented marketing campaign, bringing the tremendous growth in their profitability and attractiveness. Otherwise, ICT-oriented innovative parks (which is obviously clear from the definition) don't focus on a social component, though meanwhile they search for provoking creative activities in determined scientific branch. The failure seems inescapable without making simultaneously 'smart communities' [4].

Additionally, together with total digitalization there is a threat of crucial transformation of lifestyle, questioning the role of human put into the 'smart city' environment. In 2002 D. Thorns in his *The Transformation of Cities: Urban Theory and Urban Life* put forward the combination of architectural planning and creative manufacturing linked to social sustainability and ecological resilience under the name of 'smart growth agenda' [5]. It deals with issues of digital government as well as community participation, smart communities and social learning approaches, i.e. social and economic stability of urban territories.

The above mentioned theory is expressed in both speculative and real design projects of tele-villages, suggested on the peak of ICTs popularity but following the distinct environmental approach. On instance, Telluride in Colorado was one of the first digital villages, having been built in the place of former mining region [6]. The emergent local specialization appeared to produce the atmosphere particularly attractive for urban-dwellers in search of ecologically and mentally healthy living conditions. Reasoning from local web-host and integrated 'information zone' establishment there appeared to be possibilities for remote working as well as living in a rural setting. The village itself was both internally structured and externally connected by the means of Web. In 1996 that kind of modification was initiated in the municipality of Nevada by the collaboration of entrepreneurs - 'Nevada Tele-community', who laid up 225-hectares large tele-village wired with optical fibres network [6]. Tele-working is only a separate aspect to mention. Online education, skill upgrading, and moreover healthcare and shopping via the net had been already brought forward then. In addition it is necessary to place an importance on the background of tele-villages creation, which was dwellers' strive to acquire high quality of living conditions together with an intensive access to ICTs. In Collette di Castelbianco (Figure 1) and in Majorca (ParcBIT, Figure 2) development projects were commenced at an aim of ecological and economical enhancement due to the 'smart city'-like asset. They claimed the transformation to be based on an existing rural community fostering the process of territorial recovery.

All in all, it could be stated that one deals with the other urban system, having been out of the right framework position and corresponding function since the wake of century. An urban system is a complex body comprised of a number of co-interacting subsystems: traffic, utilities, waste management, cultural and social activities etc. There is no doubt that once a subsystems changes the reasons and aims are called into the question. Should it take a position of separate system imposing top-down targets awaiting community to adapt? Or should similarly architecture and urban planning transform in order to meet the requirements of total digitalization? Or, on the contrary, the changes would rather respond personal inquiries and enhance the existing historically determined

environment? These issues are of controversial type and, first of all, from the ethical point of view, as they interfere with traditional mode of life and identity as a spiritual component of any urban system [7].



Figure 1. Project of tele-village in Colette di Castelbianco: a – general view; b – street panoramas before and after the project implementation; c – project plans and drawings.

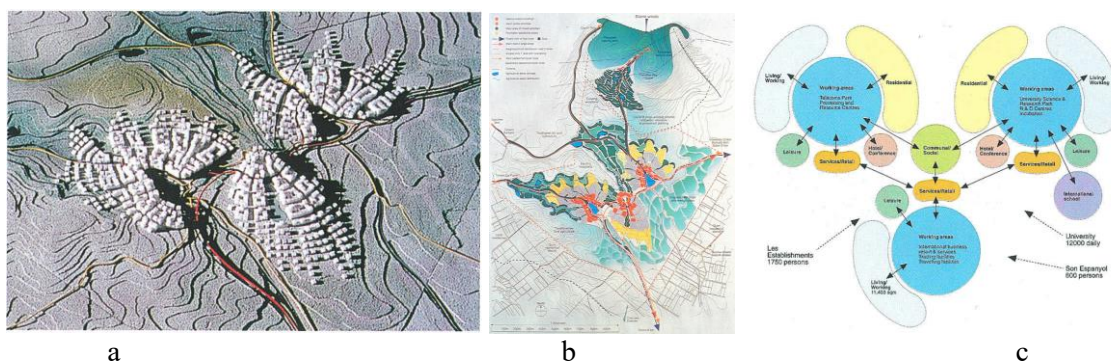


Figure 2. Project of ParcBIT tele-village in Majorca: a – concept model; b – plan; c – structural scheme.

3. ICTs' potential in relation to small historic cities of Russia

Nowadays worldwide experience is actively involved into development of 'smart cities'. With the exemplary Silicon valley now Cambridge and Liverpool innovations parks, Hong Kong and Zhong Guan Cun in Beijing, Singapore and Seoul are developed. The European Union is firm in conducting urban policies following the idea of cohesion enhancement by means of ICTs. Among cities rated on the level digitalization and frequency of 'smart' technologies and systems application in urban structures and environment the first places are occupied by Amsterdam, Stockholm, Copenhagen and

other large European cities, concentrating both national and global capital and financial markets [8]. Moscow is as well listed, though Russian practice of ICT implementation is distinguished by particular spatial characteristics. The country is noted for large distances and lack of connectivity. Rather small population density (not mentioning several regions of central Russia) makes it meaningful to shift priority from central overcrowding to internal structurization. Here the ‘smart city’ potential is equally high.

Nevertheless, modern Russia puts an effort thoughtlessly into copying western samples proved to be locally successful. In this regard one could mention actually functioning innovation centres, such as ‘Skolkovo’ in suburbs of Moscow and ‘The Innopolis’ in Kazan. These formations mostly constitute a semi-closed urban type. Having been put up at empty sites they lack urban environmental basics – cohesion and identity, and encounter difficulties in forming communities anew. Taking into consideration investments put into, the projects haven’t given reasonable feedback, as they were supposed neither to be incorporated into existing structures nor to enrich them. Meanwhile, as it is pointed out by M. Ruano, it is ICTs which may benefit from intrinsic transparency and are flexible enough for integration with environment [6]. This especiality is under a serious attention of technological promoters as a resource of digital systems materialization.

For the pursuit of urban trends Russia often neglects the principal potentiality of bright national identity, expressed into an immense amount of cultural heritage, including that of architecture and urban planning. The comparatively great majority of monuments and ensembles are located in small towns and urban settlements left in total abandonment and economic crisis. However, these urban formations demonstrate complex entirety, deriving from existing communities and active local social groups. Since the beginning of time, the foundation of community was hidden into common memory and surroundings; town was a living body to accumulate natural and anthropic processes, creating a particular cultural landscape. Today urban-dwellers have strong preferences to living in nature outdoors, which could become real via implementation of ICT’s wire system. At the same time technologies are solely urban components unable to create an autonomous living system, because it does not reflect the spiritual body and memory. Therefore urban architecture and planning set the basis of local identity valuable for the following generations. Thus it is possible to state that symbiosis of ICTs and historical environment might be seen as a method of preservation and revival.

4. Technologies and heritage

[1] In 2002 the initiative of the EU started the DigiCULT project called to correlate rapid technological changes with transformation of tools and role of cultural aspects. The project aimed at enhancement of heritage preservation bodies through the use of innovative technologies, which referred to archiving, cataloging, monitoring and application of interactive strategies [9]. The projects covered in reports and information publications demonstrated the inscription of technologies into heritage results in effective solutions and produces additional modern cultural values. Moreover, the implementation of ‘smart’ systems rises public attractiveness and accessibility of monument and ensemble. The fact goes directly in line with the recommendations of the EU report ‘Cultural Heritage Counts for Europe’ [10], which places particular importance on a complex approach to cultural heritage preservation. The preservation process itself supposes the synergy of all the spheres of public activity. Thus proactive integration of heritage into urban environment processes should be provided by the deployment of functions and establishment of activities, aimed at cultural education (according to Legislative Decree 22 January 2004, n 42: Cultural Heritage and Landscape Code). In the Strategic plan of the Russian Federation spatial development till 2025 the priority is set upon ‘led growth of socially and economically underdeveloped territories, possessing self-potentials of economic growth’, which indicates indirectly the possibilities of cultural heritage in small towns.

It is necessary to mention, that according to the theory of Kondratiev waves, world is currently reaching the edge of the fifth cycle and is stepping into that of sixth. The basic branch of economics is seen to be aims and technological transformations of organic systems – bio-tech, nuclear physics and chemistry. In this regard high-tech modifications in the living systems of historic towns are considered

feasible. As it was already mentioned, small towns and settlements are particularly inclined to self-integration. Thus it is highly reasonable and strategically significant to embed the 'smart city' structure into the historic urban environment. Besides local sustainability the powerful basis of identity both tangible and intangible could lay a foundation for abstract and lacking ethical consistency (though effective as a functional system) 'smart technologies'.

5. Conclusion

To sum up, it is important to mention that the perception of the 'smart city' notion is mentally challenged today, putting stress on the use of technology solely. Meanwhile, when common public wealth is called into question by the prompt technological transformations in urban organization, the issue needs to be under a serious control, being connected closely to principals of national self-consciousness and personal outlook. The authors suggest the reciprocal combination of flexible systems of technological cohesion and both tangible and intangible assets of cultural landscapes. This kind of co-integration is especially applicable to Russian reality, as it possesses the possibility of enhancing spatial integrity of dispersal system and preservation of local identity in highly vulnerable and simultaneously socially important units of historic towns. Under the conditions of high demand for natural environment, proximity to land, it seems more feasible to see instead of any futuristic architectural forms another network of connections, created on the grounds of neighborhood and professional communities, using technologies for convenient urban spaces design, integration between science and practice, culture and manufacturing, for putting up a city with no 'superfluous men'.

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