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DIGITAL REALM: IMPLICATIONS ON URBAN DEVELOPMENT AND PLANNING

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The implications of ICT on urban planning and development is the topic of this paper. At the outset, the relationship between the "intelligent environment", and planning and development is outlined, followed by the discussion on new perspectives in the planning value system, and creation of the value-chains. The ICT based planning products and processes are outlined and explored. The author argues that ICT not only affects the very understanding of planning, its role and its attributes, but also changes the planning's scope, and the character of its performance. The challenges to the ICT alternative are highlighted in the last section, and debated vis-à-vis observed benefits. Implications for the concrete planning practice are at the heart of the overall discussion.

***Key words:** Information and Communication Technologies (ICT), www, Internet, Urban Development, Urban and Spatial Planning, Planning Methodology.*

INTRODUCTION

The use of ICT in the planning profession started already in 1970s. It took less than twenty years to move from the initial use whose function was to facilitate different statistical operations, computation, or map drawing, to the major support for planning and management purposes. Currently, there are many ICT technologies and services in operation, ranging from simple tools aimed at providing supplementary means to facilitate access and communication, or sustain urban democracy, to the most complex forms created and maintained to improve the public domain, and development and management of cities and regions. Public services and resources thus become closer to their citizens, while different actors participating in the development process are provided with a new arena for developing dialogue, cooperation, and exchange. Today, the ICT sector is viewed not only as a technology option which provides support, and facilitates managing different processes, but as a major development factor as well.

E-services are amongst the most rapidly growing industries today. In more developed countries, there are hundreds of thousands of operating modules in almost every city or region. Some countries, like Italy or Singapore, have begun to gradually replace the traditional model of the face-to-face office work by the e-alternative. The situation is quite different in the transition and developing countries, nevertheless there are examples of those who already embarked on strategies to successfully join the world of the new knowledge economy. Estonia, Cyprus, Slovenia or Hungary in Europe, as well as Korea, Malaysia and Thailand in Asia, or Brazil and Mexico in Latin America, are among the leading countries and provide good examples[1].

How does the "intelligent environment" affect the way we plan and manage places? Are we approaching a new planning paradigm? Is the conventional planning diminishing? These are some of the key issues the profession is challenged with today.

This paper casts light on some of these questions. The discussion focuses on the emerging e-based planning paradigm, and questions associated with it. The challenges of the alternative are highlighted/identified and debated vis-à-vis the observed benefits and shortfalls. The potentials for further development of its applications are identified, and several proposals for future strategies and actions are presented here.

[1] Millennium Indicators, UN, ESA/STAT, 2003.

THE STATE OF THE ART

Many countries place the information and communication technologies (ICT) high on their development agenda, and rank them amongst the key determinants of their future development. Although ICT taken alone is not a determinator of future development, nor it guides and shapes our cities and regions independently of other forces - political, social, economic and cultural, its influence on development is incontestable and increasing. The ICT space is a place where people meet, but it is also an economic place, a powerful economic resource that fully participates in shaping development of many regions and cities world-wide. It fully participates in many developing strategies, and make possible for countries, cities and towns to successfully integrate into the new knowledge economy.

Many actions taken both by governmental and nongovernmental sectors towards "wiring" their

nations are taking place worldwide. Creation of "intelligent nation" or "intelligent environment" is often placed among countries' main development objectives, and different institutions and bodies explore opportunities for new arrangements to ease the integration of ICT into their daily operations and actions.

Although the private sector has already established itself as a major shareholder in the cyber space, one can also observe a steadily growing influence of national and local governments. In some countries, ministries for ICT have been established, while others have developed specifically targeted strategic documents related to ICT, or development agendas within which ICT is placed among their top priorities for the next decade. The aim is to take ICT to its fullest potential in order to (a) "catch up" with the growing global knowledge economy, (b) increase opportunities to enter the world-wide technologically based economy, or to play a role within it, (c) improve efficiency of relevant institutional operations, and (d) enhance the quality of life for their citizens.

In some countries, their governments use the ICT revolution as a tool for human development and are therefore committed to transforming their countries into globally competitive, technology-driven societies. The objective is to enhance understanding of the role ICT has and adopt best practices to increase knowledge, develop and leverage competencies and create jobs with the ultimate aim of improving the socio-economic well being of their citizens (Bajić Brković, 2002, Sergi&Bajić Brković, 2002).

In order to exploit technology as a business and social facilitator, governments continue to invest, build and facilitate the development of information technologies, telecommunications and Internet infrastructures within their territories. The aim is to create intelligent nations, where technology is pervasive in use and is incorporated into every aspect of the improvement of society – at work, at home and at play. The key strategies usually include the establishment of technology parks, the liberalization of telecommunications sector, the expansion of Internet connectivity, development and implementation of different action plans, investments into physical communication infrastructure, etc.

Over the medium term, national strategies mainly focus on:

(1) Enhancing the infrastructure for increasing competitiveness by focusing on areas such as telecommunications, industry/academic collaboration in research and development, venture capital, long-term education policy and intellectual property protection;

(2) Creating and strengthening the market for ICT services through governments procurement procedures and encouragement of strategic alliances between local and foreign firms involved in information technology;

(3) Enhancing general capabilities, both in individuals through skills training as well as management development and in industry through the formation of business associations and co-operation among competitors, to deal with mutual issues and emerging trends in the ICT industries.

(4) Promoting transparency and accountability in conducting government business and encouraging public participation in decision making procedures. Delivering the sensitization programmes and developing instruments to monitor the work of public authorities and their designated officers.

(5) Developing policies and legislation which are critical to the process and further advancement towards the "intelligent nations" objective.

THE INTELLIGENT ENVIRONMENT AND PLANNING

The context within which planning works has dramatically changed in recent years. A major transition from traditional and rule-book practice has taken place world-wide. Traditionally, planning was concerned with creating "grand plans" for building and construction. Most planning systems were designed to cope with urban expansion in regions and cities conceived as relatively self-contained (Healy, 1997). The spatial policies were developed and implemented to shape the welfare state, and improve the overall living conditions for citizens, yet predominantly on the local or regional level. While these are still the characteristics of planning in some countries, in others they no longer provide general rationale for planning practice. A need for supply of functional spaces solely is diminishing, while another need for supply of opportunities is growing and taking a leading role instead. Places today are faced with pressures for economic competitiveness, greater accountability and participation, improved quality of life for citizens and global environmental responsibility (Healy, 1997). Flexibility and innovation, openness and partnership, transdisciplinarity and cooperation of professional and layman knowledge, are but a few new features of the planning practice today. The ideal model is not the one that prescribes, but the one that provides and supports (Bajić Brković, 2002). Planning has a different and a new role, it is aimed at creating flexible frameworks and orientation, while cities and regions continue to evolve.

While many factors have contributed to these processes and have influenced development of planning discipline, it is the development of information and communication technologies that marked the era and opened up the new frontiers for the profession.

The ICT support aims to ease access to different information resources relevant for development and management, to sustain and foster further development of "spatial" democracy, and annex new forms of management to the ones already in use. Public services and resources thus become closer to their citizens and different actors participating in the planning and management processes are provided with a new arena for developing dialogue, cooperation, and exchange. The ultimate goal is to construct a more comfortable social milieu and a more democratic and fair social environment.

There are many ICT based technologies/tools available today, which are, or can be used in planning, through a step-by-step process, to plan, design and develop best solutions. Some of them have been around since the advent of new streams in ICT, www, and Internet in particular. Others have gone mainstream over the last few years. The most simple is a website typically used as a foundation for delivering services, and the place where most citizens initially go to explore types of services

that are offered, while the more sophisticated include the Civic Web Network - CWN (Devetaković-Radojević, Bajić- Brković, 1999; Bajić-Brković 2002; Sergi and Bajić-Brković 2002), Online Portals (Steins, 2002), or Gateway (Creech et. al. 2001). All of these combine different tools and technologies, accordingly shifting from a simple "storage and communication space" to a new public realm or a business arena. All of them can be implemented as part of the knowledge networking and decision making strategy for planning, and development management.

The majority of technologies have not exclusively been designed for planning purposes. Many of them were invented and built up to improve communication in general. It was only after they turned into full use in other fields, that their potential application to planning become perceptible, and benefits for planning recognized. By employing the Internet based technologies, for instance, a more efficient and effective working surrounding could be created, more intensive and coordinated management of the environment developed, and a switch from monitoring to management attained.

THE ICT VALUE CHAINS AND THEIR EFFECTS ON PLANNING

The application and use of ICT on a large scale has brought in a new agenda, and created a substantial change with respect to culture, economy, public concerns, and social values. The ICT has significantly impacted all aspects and forms of human behavior, and started the transition of many disciplines, including planning and management of urban development.

In planning, the most significant changes came across the value system the profession has been based on for decades. A whole range of new values appeared impacting the understanding of planning, its role and its attributes, as well as the scope and character of its performance. The universally well-known and widespread in use have become many, regardless of geography, culture, or planning system, like:

- real time or instant communication,
- speed,
- accessibility,
- efficiency,
- mobility,
- transparency, and
- visualization

For instance, the mobility of information and access to information are among the key development factors today. It was not so thirty or fifty years ago. With the advent of Internet, it gave to the world a global network with a tremendous and unanticipated capacity to link places and people with no regards to geography or time. The Internet world has changed many facets of day-to-day life, while its communicatibility and capacity to reconfigure access has changed the meaning of distance. Connecting places to places, or linking people to each other, has become an icon of modern societies, and an essential point for the planning practice if it is to be "good" or sustainable.

Or, the transparency, efficiency and economy, the key words of the e-option. All three are closely connected to the information networking and channeling organizational and operational resources for planning purposes. Planning departments and planning agencies, governments, or non governmental bodies, employ the new e-based technologies more and more often, and for different functions. Sometimes, simply for disseminating information about their day-to-day activities, on other occasions, to improve their management or to make their decision more visible or appealing to public.

What does any of these have to do with planning? Everything. The impacts they have are many-sided. Not only that ICT can be applied in almost every segment of urban and spatial planning and management, they also contribute to other planning related sectors by increasing their capacity to meet their own needs.

Once created, values do not stay idle or passive. They do not simply happen and then stay. Their introduction starts out another process, commonly known as ***the value-chain process, which leads toward creation of new products and new procedures.*** This is a general rule, which could be observed in any field or any profession where creativity and innovation provide a drive. The same applies to planning, and there is an abundant evidence to support that.

Over the last two decades a series of ***new planning products and planning related procedures*** have been invented and brought into practice. They are either entirely new, normally not known or used before, thus originally created, or came across as a result of the upgrading or improvement of the existing forms already in use. The later came out in response to the advancement of external factors usually with no relation to planning itself, like, for instance, specific technical solutions, availability of new infrastructure, etc.

The new products

The most widespread new products are the following:

- work at home
- e-government
- e-commerce
- e-education and e-universities
- e-entertainment
- e-museums
- e-libraries

These products create different effects on urban development strategies, the physical, social and economic profiles of cities and towns, the mobility in space and time, or influence particular urban services and sectors of economy. In countries where ICT have been implemented in a more thoroughly way, cities and regions are already changing their physical substance and shape. Not that often is that visible, nor it has been explicitly brought to our attention. But let us not ignore the evidence which already exists, e.g., only in California there are more than 200 000 no-place jobs created only over the last decade, or the 50% reduction of trips related to the local government operations with their citizens, in Bologna. Distance education based on ICT capacities, and www in particular, has mounted up to 40% in some universities which subsequently have reduced number of trips, demand for housing, etc. There are many other examples which support the belief expressed in this paper that our cities and regions are on a

big move, and will substantially change the way they operate and look, in the future.

- Will the new products replace the existing ones? Or, will they merge and work together?
- How shall we handle these changes in our cities and towns?
- Are we approaching a revolution in urban development, or is the evolution at stake?
- Are the new solutions sustainable? How can we measure their sustainability?
- What is the relationship between the growing ICT and other development drives we recognize today? Do they support each other, collaborate, or the other forms of their relations are emerging?

These are some of the questions the profession is faced with nowadays. They need further clarification and the systematic and in depth investigation, while their importance progressively grows in time. They are as important for the theory, as they are for the everyday planning practice.

The new procedures

Along with the new products, a range of the new planning related or decision making procedures emerged during the last two decades. An account of their progress resembles the one previously described for the new products, and takes approximately the same path. They emerged either through the process of upgrading of the existing forms which at the time were already in use, or via the inventions of new ones. In contrast to the products though, these changes appear to be far more complex, more advanced and comprehensive, and took place in a comparatively less time. A list of new procedures is rather extensive; the more sophisticated ones are often of a restrictive use, and are employed in more developed countries only, while there are others whose implementation has already took place on a massive scale worldwide. Among the most common are the following:

- e-decision making
- e-elections
- e-public polls
- e-public participation
- e-institutional collaboration
- e-public hearings, etc.

All of them generate rather substantial impacts on planning, urban development and urban management. They change routines of daily operations, and secure positive effects as for efficiency, effectiveness, accessibility, and time-budget, regardless of where they are applied or level of management in question. They create:

- Opportunities for improved service delivery at lower cost;
- Increase efficiency of delivery, and improve quality of decision-making processes;
- Improve quality of communication between different local/national bodies and departments;
- Provide easier access to different information, government departments and bodies for all concerned, including citizens;
- Improve quality of communication between local authorities and their citizens, by adding new opportunities for participation expansion in the local community affairs;
- Provide opportunities for citizens to communicate with their governments in an easier and more efficient way;
- Support the democratization process and public involvement.

Development problems often arise from shortcomings associated with inappropriate national or local institutional arrangements, quality of decision-making procedures, availability of information, or mode of communication between different governmental bodies, local governments and citizens. Experience from both developed and developing countries demonstrate that an effective approach for confronting these issues is to formulate an appropriate management strategy and develop action plans, as well as to provide appropriate tools for their management. The strategic approach is based on participation, building commitment and choosing effective policy interventions. The key policy messages that inform this approach center around: (1) public support and participation, (2) policy interventions, (3) service delivery, (4) institutional capacity, and (5) bridging the knowledge gap about the development issue.

The information and communication technologies and especially the Internet based technologies provide the considerable support in developing and executing these strategies and procedures. Their employment does not only improve the existing practice, but may also influence its further development, and support the creation of momentum for the overall better environmental management by:

- Providing the tools for mobilizing public support and participation;
- Improving policy interventions;
- Building institutional capacity;
- Strengthening service delivery;
- Closing the knowledge gap.

The employment of ICT, and Internet based technologies, in particular:

- Facilitate communication between all parties involved in every development/environment related decision making, be it the governmental, citizens', international or national organizations, or any other concerned party;
- Support and facilitates the informed consultation process through which development/environmental issues are clarified, key actors are drawn in, political commitment achieved, and local priorities are set;
- Facilitate the formulation of an overall development/environmental strategy;
- Facilitate exchange of environmental information between different agencies, national and international, as well as functioning of the network of national focal points and regional centers with other organizations;
- Provide complementary technical support for national or local monitoring systems, e.g., in the follow-up or consolidation phase;
- Support global environmental/spatial monitoring by providing a link between hundreds of national or international organizations which monitor changes in the atmosphere and climate, freshwater, coastal and air pollution, food contamination, deforestation, the building up of the greenhouse gases, acid rain, and all other environment related issues;
- Create opportunities for citizens to participate in planning and development related issues, as well as in all related decision making procedures;
- Improve quality of communication between governments and their citizens.

RESPONSIVE PLANNING AND GOOD PLANNING PRACTICE

As for the planning alone, the substantial changes and diversification have occurred in selecting the mode planners use to communicate with each other, ways and means they use in creating or formulating planning related knowledge, or in communicating their products to public and third parties.

A variety of user-friendly technologies is already available. Its range is constantly enlarging, either by employing new and innovative solutions, or by modifying the existing ones or using them in a more creative and innovative way. This dynamics has been observed and explained by Bajić Brković (2008 and 2004) in a comparative study on the employment of the Internet based technologies over the period 2004 to 2007.

Not all technologies are equally functional. Some of them may be employed throughout the whole planning process, while others may be good only for a particular segment of the process, or serve at specific stage. The more sophisticated they are, the broader and more extensive they are. As for the perspective of a single use, it has been observed that complexity and refinement do not always play a major role. For instance, a simple webpage is a very useful instrument for many pre-planning activities, and quality of its performance makes it equal to the most sophisticated ones. However, it is not the same as for other procedures. In the plan-making process, decision making, or for those used throughout the implementation process, only the most sophisticated rank as very successful, while the more simple often are of no use. Some of them could be extremely useful for a particular situation or specific project only. Notwithstanding their usefulness, a careful scrutiny of their applicability reveals that often their use is conditioned, and functional only in the well prepared environment. Web GIS, on-line communities and CMS are the most successful and can practically be applied at any stage as superior tools.

If the assessment is carried on against the criteria of the quality of planning, the situation is rather different. In the analysis Bajić Brković developed (Bajić Brković, 2004) it was a set of criteria usually used for describing every good planning practice that was employed, and against which the potentials of the e-based option was evaluated.

Table 1: Perception on Use and Applicability (2004)

	Pre-Planning	Planning Process	Decision Making	Implementation	Monitoring
E-mail	●				
Webpage	●●●	●	●	●	●
Electronic Listserv / Discussion Group	●●●	●	●		
Web-based Audio/ Video Conference	●	●			
Electronic Journal/ Newsletter	●●	●			
Online Sharing of Documents/Publications	●●	●	●	●	●
Online Database of Legislation / Policy	●●	●	●	●	●
Web GIS	●	●●	●	●●	●●●
On-line Planning Studio		●●●		●	
Web Portal/ Electronic Gateway	●	●●	●	●●	●●
On-line Communities	●●●	●●●	●●●	●●	●
Content Management System	●	●●●	●●●	●●●	●●

Number of dots indicates the level, ranging from applicable (one dot) to very applicable (three dots).
Source: Bajić Brković, 2004

Table 2: Perception on Use and Applicability (2007)

	Pre-Planning	Planning Process	Decision Making	Implementation	Monitoring
E-mail	●	●	●	●	●
Webpage	●●●	●●●	●●	●●	●●
Electronic Listserv / Discussion Group	●●●	●●	●		
Web-based Audio/ Video Conference	●●	●●	●●		
Electronic Journal/ Newsletter	●●	●		●	
Online Sharing of Documents/Publications	●●	●●	●●	●	●
Online Database of Legislation / Policy	●●	●●	●	●	●
Web GIS	●	●●●	●●●	●●	●●●
On-line Planning Studio	●	●●●		●	
Web Portal/ Electronic Gateway	●●	●●	●●	●●	●●
On-line Communities	●●●	●●●	●●●	●●	●●
Content Management System	●	●●●	●●●	●●●	●●

Number of dots indicates the level, ranging from applicable (one dot) to very applicable (three dots).
Source: Bajić Brković, 2008

The criteria are:

- Efficiency (performing in the best possible way and least wasteful manner);
- Effectiveness (capacity for producing a desired result/effect);
- Collaboration/cooperation (capacity for enabling two or more parties to work together effectively);
- Transparency
- Public involvement
- Equity of access

In general, all technologies contribute to the quality of planning, and enhance the quality of its performance. However, some of them contribute more in respect to a particular criterion, or a set of criteria. The general rule observed before - the more sophisticated instrument the more effective it is, does not apply always and everywhere. For example, a website ranks as good as some of the most sophisticated ones against the criterion of effectiveness, transparency and to some degree is relevant for the public involvement, or equity of access. The fact that even the simplest technology may improve the planning practice and enhance its responsiveness, indicates how important the e-option could be for planning, especially vis-à-vis often heard argument that financial and technical limitations restrict its use.

The majority of instruments meet the criterion of providing or improving the transparency of the planning process. They may also be used to enhance collaboration and cooperation among the stakeholders in the planning process in general. Some of the instruments are likely to increase the efficiency and effectiveness of planning, while others can be employed to support public involvement and empower public participation.

THE PROSPECTS: ARE WE READY FOR THE ALTERNATIVE?

The ICT is already there, and the planning profession is well aware of its existence. However, an effective and efficient alternative can develop only under the condition that the profession itself is ready for it, or is willing to change and adapt, at least as to the following:

- To restructure and reform its knowledge, and develop new forms and types of knowledge; there is a need to develop a new ***know-how*** as to ***what***, and as to ***how***; the relationship between the existing and the ICT conditioned knowledge should be particularly focused, and the appropriate responses developed;
- To expand its capacity ***to accept new***, and ***to adapt***; the ability to adapt itself imposes specific requirements on status and development of the know-how capacity, not only as to what, but as to how as well.

The know-how

- Do we have the right knowledge to successfully perform in an ever changing ICT world?
- How relevant is the current knowledge planners have vis-à-vis the requirements strictly arising from the growing application of ICT?
- What constitutes a new knowledge?
- Will the universal knowledge take us to the knowledge society?
- Is the general knowledge on ICT sufficient and suitable for planners, or is there a need to develop the specific ICT know-how tailored to the needs planners have?
- Is the profession fully aware of different impacts of the transition that is taking place, and does it recognize a profile of a new knowledge?
- What is the relationship between the cyber and physical space, and what is the role of planning within it? Shall we start planning the cyber equivalents of our cities and towns, shall we include them in strategies and plans which we develop for the physical space, or, shall we ignore the existence of cyber reality altogether?

So far, these questions have been addressed rather sporadically and only by a few researchers. The research on these is rather at the initial stage. The theory is rather hypothesizing than investigating, while the practitioners exercise the pragmatic and if-then approach.

The ability to adapt

- Do we have capacity to adapt?
- Who should evaluate planners capacity to

Table 3: Technology vis-à-vis the Quality of Planning

	Efficiency	Effectiveness	Collaboration/cooperation	Transparency	Public Involvement	Equity of Access
E-mail			•		(•)	
Website		•	(•)	•	(•)	•
Electronic Listserv / Discussion Group		•	•		•	
Web-based Audio/ Video Conference		•	•		(•)	
Electronic Journal/ Newsletter				•		
Online Sharing of Documents/Publications	•		•	•		•
Online Database of Legislation / Policy		•		•		•
Web GIS	•	•	(•)	(•)	(•)	(•)
On-line Planning Studio	•	•	•	(•)	(•)	
Web Portal/ Electronic Gateway	(•)	(•)	(•)	(•)		•
On-line Communities			•	(•)	•	(•)
Content Management System	•	•	•	•	•	•

(•) conditioned or optional *Source: Bajić Brković, 2008*

adapt? Should the assessment be taken from within-by planners, or should it be taken from outside?
- Should the process of adaptation be guided, or rather be left open?
- If guided, whose responsibility is to guide it? Does the responsibility rest with planners, or governments, schools, professional associations, or ...?
- What is a specific role planners should take throughout the process of adjustment?

Thus far, introducing the ICT and e-based option into planning procedures, have not necessarily lead to the entirely new paradigms or planning models. Rather, the alternative is aimed at providing a supplementary means to facilitate and support the existing ones, providing additional means to ease the access to different information resources relevant for urban development and management, to sustain and foster further development of urban democracy, and to annex new forms of urban management to the ones we already exercise today (Bajić Brković, 2008; Bajić Brković, 2007).

However, it is the ever growing ICT that reminds us that there may be another perspective, and makes intellectuals and professionals think that the other option is also likely to happen. The profession should not stay aside and let things happen; rather a more proactive approach should be taken.

On another side, there is a question of resources. Often they are not sufficiently developed to support the alternative, or are missing. Many countries have not developed their comprehensive ICT strategies yet, or have approached their development in a rather partial or defragmented way.

In order to provide a comprehensive support, and create a momentum for the shift, apart from what already is in force, other actions should include:

- Supporting all interested parties to become proactive, instead of being responsive and "letting the technology happen";
- Supporting national/local business in developing and using the web based alternative;
- Supporting local initiatives, by developing specifically designed incentives for local community projects;
- Opening up the educational barriers, and focusing on human capital. Approach the issue of the e-education in a comprehensively and with clarity of long-term vision;
- Include the question of infrastructure provision/development into their national priority development plans;
- Design and develop incentives for development of ICT;
- Develop the appropriate regulatory and administrative framework in order to enable and encourage digital communications and transactions;
- Create a high-quality local component, and use the technology to create local capacity;
- Place greater attention on capacity building, civil society development, public participation, and alike.

CONCLUDING REMARKS

A momentum has been gained in developing the ICT based alternative for networking for planning purposes. There is a "digital opportunity" and apparently many efforts and actions are on the way not only to transform this opportunity into the advantage for the profession, but for the development in general. Different technologies have been developed and brought into the practice. Their capacity to facilitate the plan-making and decision-making processes, to make planning more efficient, and to support the democratization of societies and extend public involvement, have been underlined and pointed out most often. It is on these premises that they gained their success in many countries by now.

There are still those who question. Would high-tech and high-touch technologies truly replace the traditional way we communicate in the profession, build our knowledge network, and participate in the planning/decision making process?

In addressing the concerns of those who are skeptical, it should be noted that the ICT based alternative does not necessarily need to replace the existing and traditional mechanisms. It does however offer a more efficient alternative and as such provides an option. There are solutions that are applicable in virtually every city, north and south, rich and poor; but these solutions will need to be tweaked in particular ways to suit local conditions, local constraints and local opportunities.

The issues discussed in the paper are of a particular significance for Serbia. The country is faced with a need to restructure its planning and management system, and make it more efficient and effective, closer to its citizens, with the decision-making to reflect local involvement and trust. A digital option provides many opportunities and potentials for that by opening up new areas for the planners' work. It brings in many advantages, and has a potential not only to replace the traditional planning and management practice, but also to substantially improve the performance of the existing one by creating an added value.

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