GISOSS - One-Stop-Shop GIS

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Key words: One-Stop-Shop, GIS, spatial data, e-Governance, electronic services, interoperability, IGEA.

SUMMARY

Efficient and high quality public administration is the most important factor for sustainable development in the global economy. Over the past few years information and communication technology have started to redefine relationships between government and citizen. One-Stop-Shop electronic services that are consumed quickly, without waiting, completely, at one place and at the most appropriate time for user (24/7) are slowly establishing new template of living, working and social organizing. New e-Paradigm sets the focus on individual and his information needs, and generates steady pressure on state administration demanding deep restructuring and redistribution of established authorities and power. Public administration in Republic of Croatia collects, produces, reproduces and disseminates huge amount of geospatial information. Several ministries and state institutions share the competence on geospatial data, but they function like isolated islands, based on the legislation. Lots of geospatial information became available on several dozens of electronic services settled on Internet portals of public sector in recent years. The content of those portals reflects the unreasonable partition of state administration and the impossibility to fulfil the needs for information of modern citizen. This paper presents GISOSS, the new concept of One-Stop-Shop GIS, the electronic service that could meet all needs the citizens have for spatial information, and emphasizes the processes that should been established in order to function within inappropriate institutional frame. The wider social context of creating of GISOSS will be also discussed, as well as possible organizational forms, potential resistance and social benefits.

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1. INTRODUCTION

Nowadays people are much more aware of impact that efficient and high quality public administration can have on everyone life. Furthermore, efficient and high quality public administration is the most important factor for sustainable development in the global economy. In recent years, public administrations all over the world have launched many Internet portals with uncountable public electronic services. The most of these services were designed around existing administrative structures and processes supporting old paradigm with administration in the centre. One-Stop-Shop electronic services, which are consumed quickly, without waiting, completely, at one place and at the most appropriate time for user (24/7) are slowly establishing new template of living, working and social organizing. New e-Paradigm sets the focus on individual information needs, generating steady pressure on public administration and demanding restructuring and redistribution of established authorities and power.

Public administration in Republic of Croatia collects, produces, reproduces and disseminates huge amount of geospatial information. Several ministries and state institutions share the competence on geospatial data, but they function like isolated islands, based on the existing legislation. Lots of geospatial information became available on several dozens of electronic services settled on Internet portals of public sector in recent years. The content of those portals reflects the unreasonable partition of state administration and the impossibility to fulfil the needs for information of modern citizen. For almost all Internet portals, there is a lack of interoperability, which means that potential users have to visit several sites to get the full information. It should be emphasized that this is happening not because of technological but mostly political factors. It looks like antagonism between administrations and competition for the customers and users exists too.

This paper presents GISOSS, the new concept of One-Stop-Shop GIS, the public electronic service that could meet most of the needs the citizens have for geospatial information, and emphasize the processes that should be established in order to function within inappropriate institutional frame. GISOSS is based on the new paradigm, which brings in focus user and user centric services designed from the perspective of the user. Single data provision process, data reusing, and changing relationship between the front and back-offices are the key issues for GISOSS.

2. BASIC TERMINOLOGY

Semantics of some technical terms and phrases could change over time and place and could result in misunderstanding. That was the reason why this little terminology took place at the beginning of the paper.

Back Office - Back-office is a term relative to the front office. The back office receives and processes the information, which the user of service enters in order to produce and deliver the derived service. This may be done completely manually, fully automatically or by any combination of both. Back office is an integral unit of government agency. An agency is defined as a formal organisation with a separate legal standing and which has one or more formal purposes like public administration, a cadastral office, a railway authority, a hospital, a tax authority, etc. The difference between an agency and a back office is that the latter, although it may or may not be a formal organisation, does not have a separate legal standing. A back office may be located at the same or different physical address as other back offices within agency, and is normally distinguish within agency from other back offices by having one or more formal functions and normally by its own organizational structure and management, although these are joined at the higher levels within agency [(2)].

Front Office - A user interface to an online service. For a simple cadastral data, this interface could be cadastral office, mobile device, Internet portal or an authorised mediator

GISOSS - Acronym of the new phrase **G**eographical **I**nformation **S**ystem **O**ne **S**top **S**hop introduced in this paper.

Interoperability - Ability of components of an information system to exchange data and services. Organizational, technical and semantic aspects are the main aspects of interoperability. Organizational interoperability is concerned with defining business goals, modelling business processes and bringing about the collaboration of administrations that whish to exchange information and may have different internal structures and processes. Moreover, organizational interoperability aims at addressing the requirements of the user community by making services available, easily identifiable, accessible and user oriented. Technical interoperability covers the technical issues of linking computer systems and services. It includes key aspects such as open interfaces, interconnection services, data integration and middleware, data presentation and exchange, accessibility and security services. Semantic interoperability means that the actors should be able to understand the information they exchange, that is to share the meaning of the information elements with the less possible ambiguity and errors [(1)].

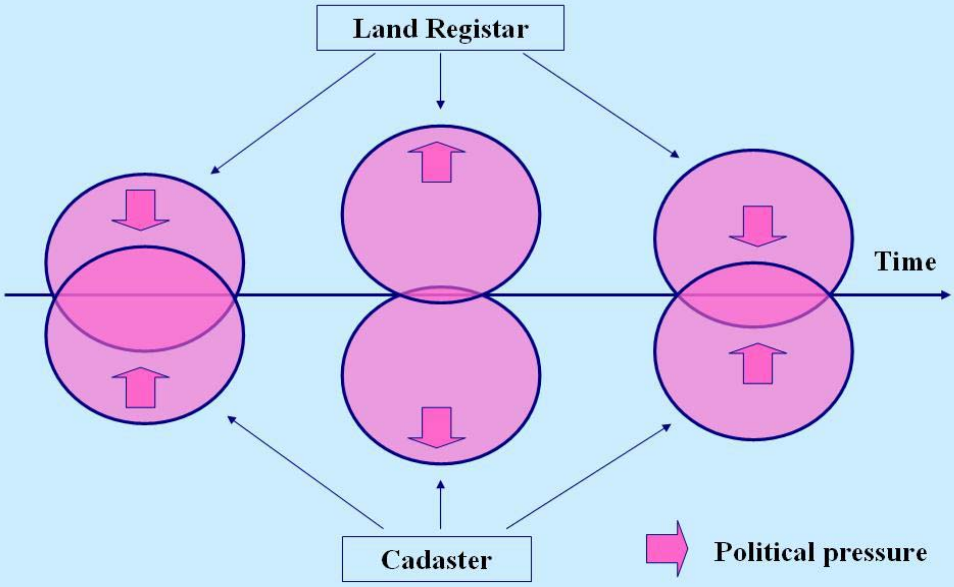
One-Stop-Shop - A single point of information where information is consumed at one place, quickly, completely, without waiting, and at the most appropriate time for consumer. One-Stop-Shop is not matter of technology but mostly the matter of business process reengineering.

3. CURRENT STATE

Public agencies in Croatia are organized according to funds used and each organisational unit can act independently in relation to the others. Almost all public services have been designed from the perspective of existing business processes and established administrative structures. End-user services are built upon the public sector perception of what their needs are. Often

there are conflicts of leadership between different governmental levels, a competition for potential customers and users, and a lack of cooperation between different governmental levels and public agencies. By way of illustration, the first figure represents a change of cooperation's degree between cadastre and land register in Croatia over the time. Quantity of cooperation is defined by the surface of overlapped area of two circles over the time. This figure could be abstract model for relationship between any two state administration and public organization in Croatia. The political priorities had, have, and will always have the strong influence on these interactions.

Figure 1. Cooperation between Cadaster and Land Registar over the time



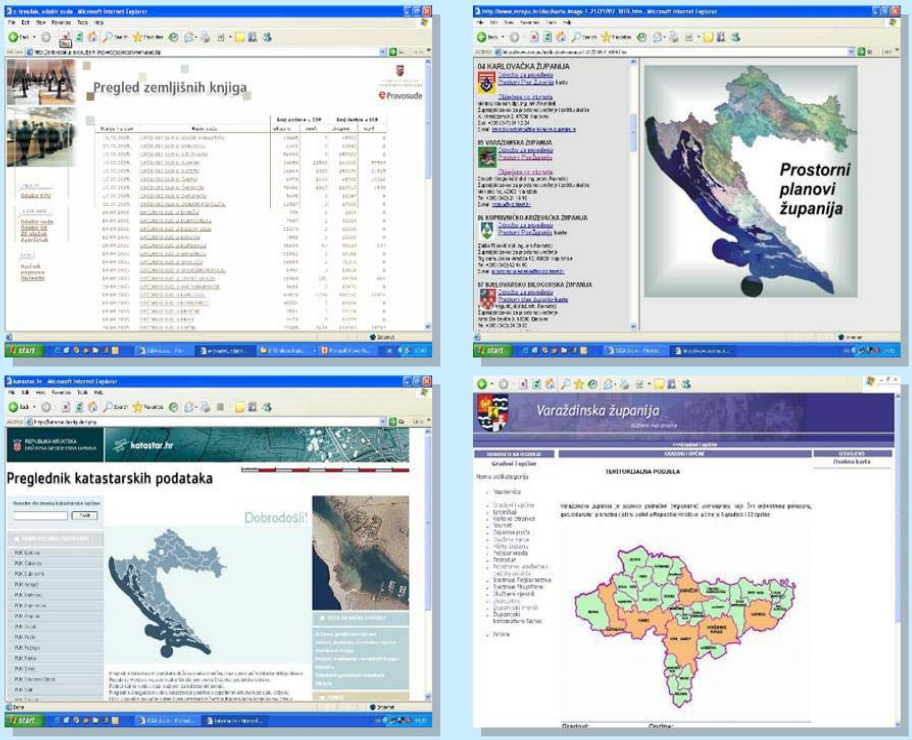
What are the consequences of such unsuitable relationships?

State administration in Croatia, like every administration in Europe, is under great pressure to deliver more and better services. To achieve this higher expectation, administration have already started its own restructuring and found it hard to cope with changes of traditional culture, mindset and methods. The most of changes are supposed to be result of common vision; but on the contrary, the most of them are the result of confused competition between completely different visions. Furthermore, the competition for new distribution of power and authority between state agencies is never finished and perhaps never will, but it is obvious that some of its aspects have very negative influence on sustainable development.

Under the pressure of public, state administration have launched many Internet portals with public electronic services in recent years. The second figure shows four very typical Internet portals in Croatia. All of them are very good designed, they are built using modern

technology and have attractive and important contents, but something is missing: there are no connections between them and they are functioning like isolated islands. The same data is fragmented, overlapped and duplicated between portals, difficult to understand, have more then one meaning, have more then one accuracy, etc.

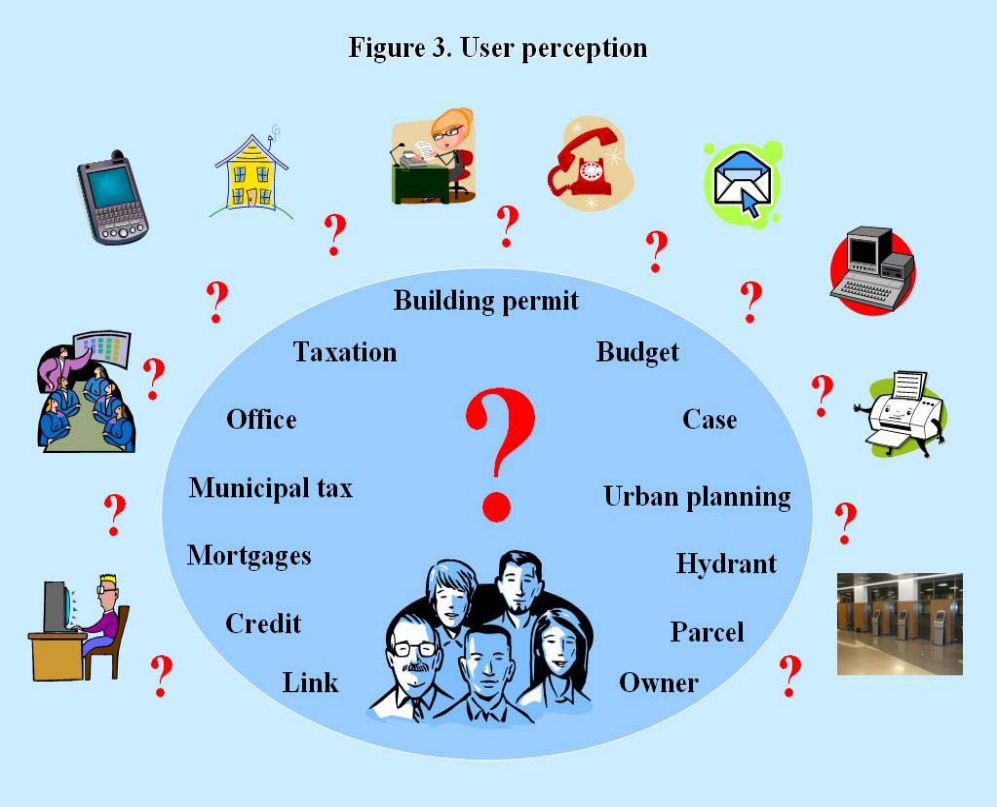
Figure 2. Political perception



Croatian government strongly believe that use of information and communication technologies are improving public services and democratic processes in Croatia. That is true but only when ICT is combined with organizational change and new skills. State administration is afraid that fully integrated portals may reduce its own autonomy and significance. Lack of interoperability between portals reflects all antagonism and resistance of administration units towards reorganisation process and redistribution of competences and authority.

Have the current processes and activities in state administration some common characteristics? We can clearly recognize and select some dominant group of characteristics that are common for present situation: competition, quantity, dominance and expansion. It should be stressed that all of the above-mentioned characteristics show non-cooperativeness and more or less self-sufficiency. They are all the patterns and forms of current paradigm where shock absorption of permanent political pressure is one of the main aims of that paradigm.

What is the user perspective in such environment? The next picture illustrates current user dilemma in Croatia.



Jurisdiction over geospatial data is shared among many agencies on state, county and local authority levels. There are too many Internet portals established by these agencies providing uncountable electronic services that deliver more and more data and information every day. On the other hand, many data and information are not yet available through Internet portals so the primary question in such environment is: Where is my information and what is the best approach to get it.

It is very hard to cope with this informational jungle. That is the reason why it is very hard and time consuming to get an answer on even very simple geospatial question like who is the owner of selected parcel. Up to now citizens in Croatia become more and more aware of that traditional model of government administration focused on defending precisely defined boundaries of jurisdictions, internal standards, rules and structural hierarchies is becoming obsolete. Deep changes must redistribute power and authority as well as establish common vision for better future.

4. NEW PARADIGM

The Internet is a channel with unlimited number of virtual dimensions. Million of Internet portals can be reached or coupled by a single click. Where and how information is stored are

not the fundamental aspects; the key requirement is that it should be available whenever it is needed. Figure number 4 shows user expecting and key aspects of new paradigm.

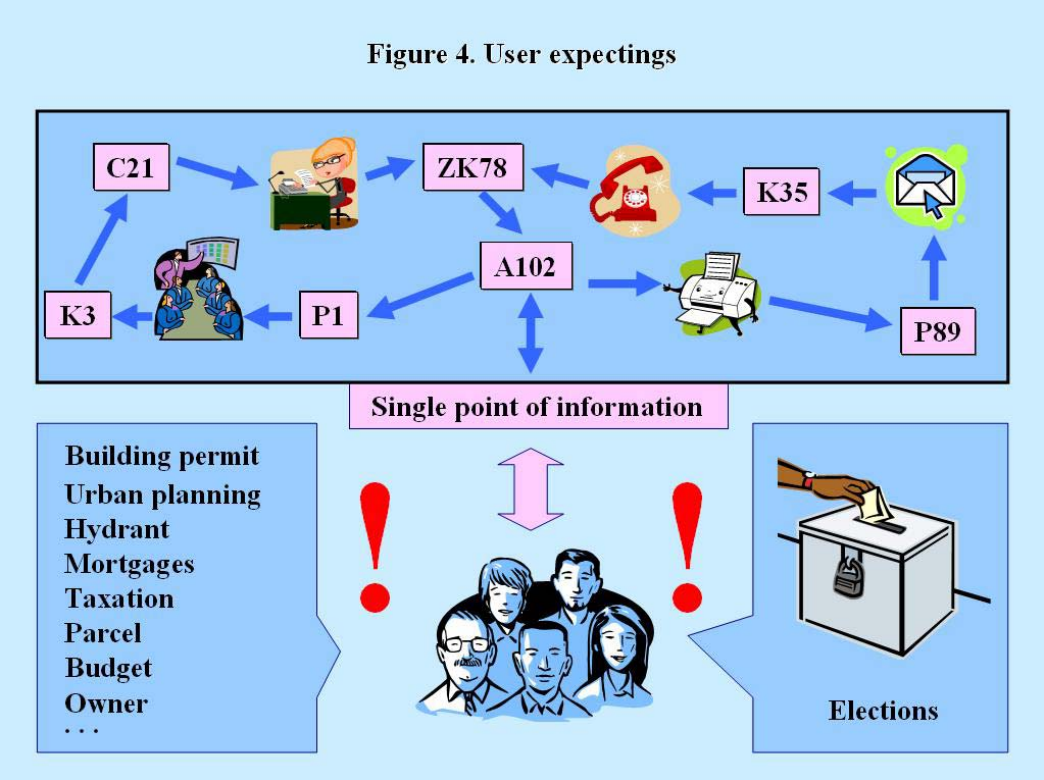


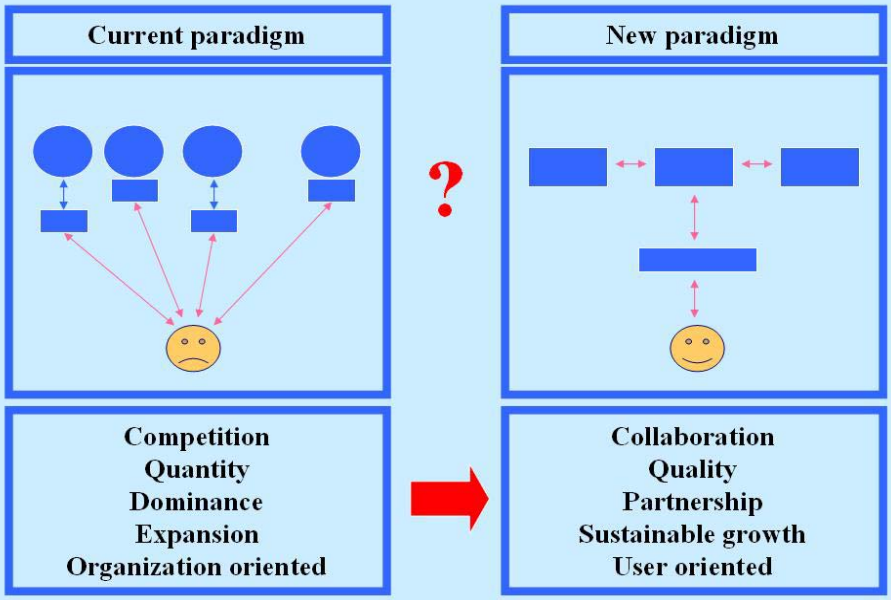
Figure 4. User expectings

For new paradigm, the key point must be benefit to citizens and democracy, rather than to the administrative unit itself. User centric services are designed from the perspective of the user. This implies taking into account the requirements, priorities and preferences of each type of user. In spite of the fact that many citizens nowadays do not know to articulate theirs information needs, already all of them know that current public services are not good enough. They are expecting a single front office that will function like one stop shop service: All information I want I can get at a single point and at the most appropriate time for me. Citizens do not want to deal with complex technology nor complex back-office processes. They only want a single point of information and everything behind that they want to be a black box for them. The citizens want state administration that is open, transparent, and understandable and that no one will be excluded from its services.

The way we do things can never be changed easily through process reengineering. Furthermore, technology cannot transform bad procedures into good ones. What is the easiest way for transition to the new paradigm? Change of paradigm is change of logical mindset. Change of logical mindset is a very slow and very sensitive process caused by acceptance of entirely contrary values and characteristics to the current.

Figure number five illustrate transformation of paradigm that is supposed to happen in all public agencies.

Figure 5. Transformation of paradigm



Every characteristic and value from the current paradigm on the left side of the figure has its own contrary counterpart in the new paradigm on the right side. We can say that transformation of any paradigm is transformation of all its characteristics and values. All values and characteristics of new paradigm are integrative and holistic. We could say that new paradigm brings in focus service oriented mentality, and moreover social-cultural transformation and entirely new culture. It would be very hard to make any changes in public agencies without drastic change of dominant paradigm. All public agencies in Croatia need deep structural and functional reconstruction and modernization. Deep structural and functional reconstruction need much time and effort and it is high time for state administration and all other public agencies to start making its own way towards user oriented culture. User oriented services should be the most important strategy of every politics which want to play important role on next election in Croatia.

5. WHAT IS GISOSS?

GISOSS is potential candidate for the group of new generation of public electronic services that are based on user centric paradigm, vertical and horizontal back-office cooperation, and one only data provision. For average citizen GISOSS is a single point of information for the most demanded geospatial and any other closely connected data. GISOSS gets data from different back-offices through authorized interoperability services and add new values to that data that are than available through user-oriented services. It is important to emphasize that GISOSS does not change any input data and has not any influence to established legal and business autonomy over data. Furthermore, all current channels for communication between

citizens and back-offices (CH-1, CH-x) are further available and GISOSS has not any influence to them. Figure number 6 presents conceptual framework of GISOSS.

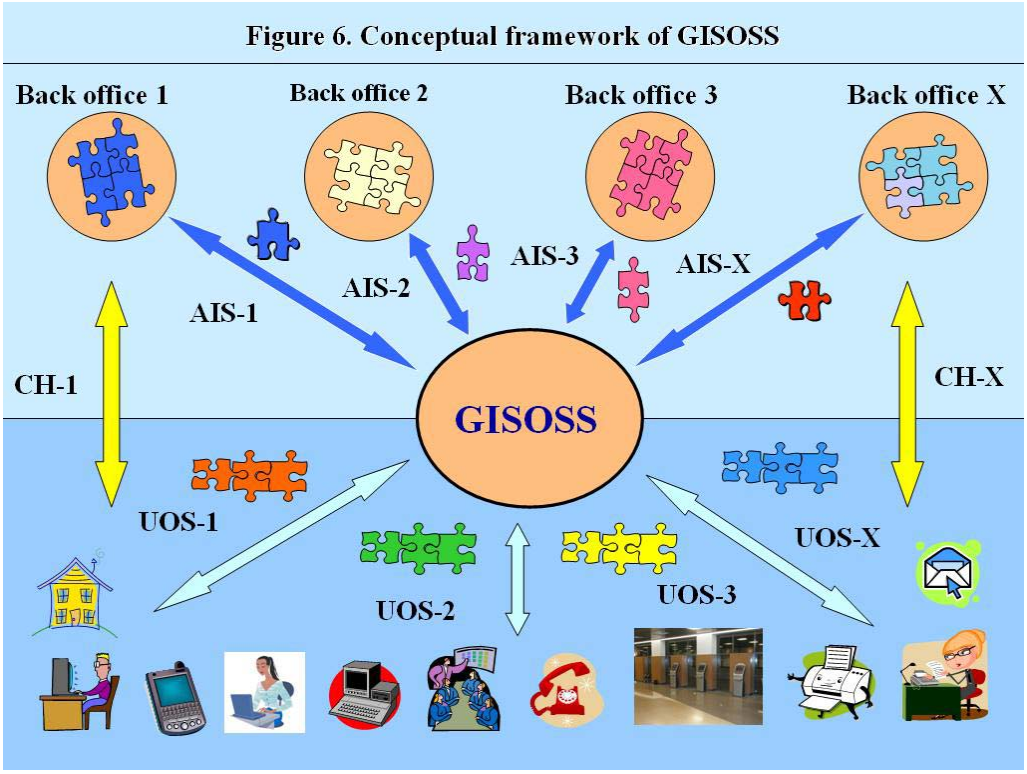
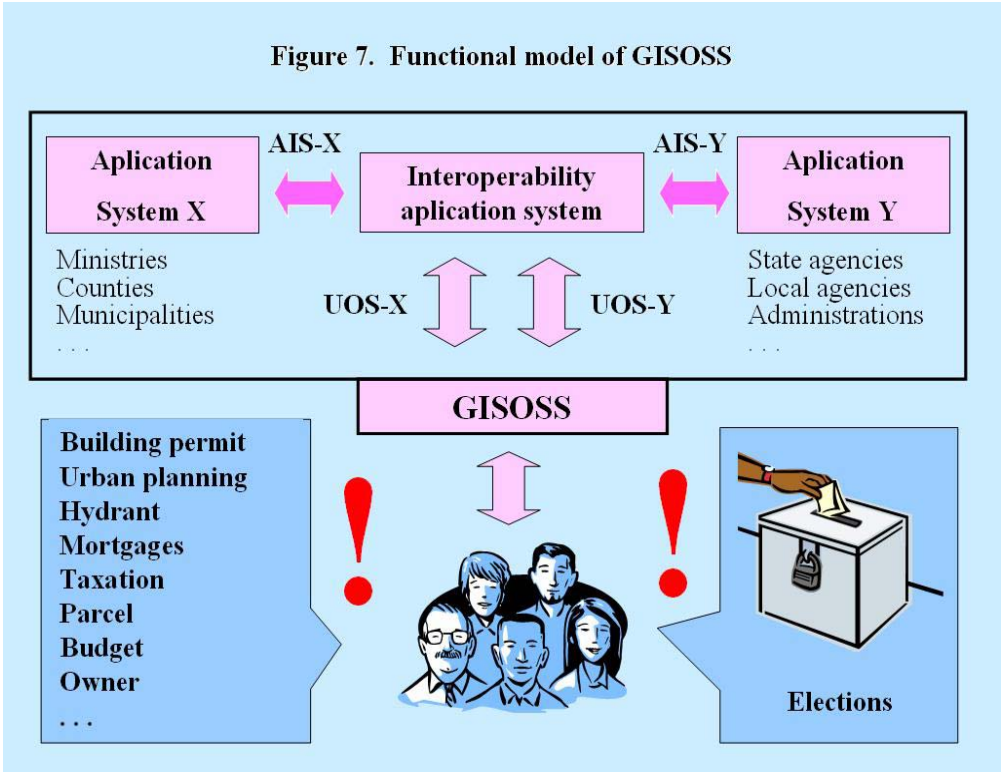


Figure 6. Conceptual framework of GISOSS

Authorized interoperability services (AIS-1, AIS-2, AIS-3, AIS-x) are electronic services which are responsible for selection and transfer of data from back-offices. Authorized interoperability service means that organizational, technical and semantic aspects of service must be defined by formal and written agreement between the owner of data and supplier of user-oriented services (UOS-1, UOS2, UOS-3, and UOS-X). The special attention in agreement must be dedicated to precise definitions of all aspects of data itself like quantity, accuracy, availability, frequency, semantics, standard formats for data exchange, and many others. From mosaic of entire back-office data GISOSS need only one peace of data for its services. Legal and transparent agreements for data transfer are maybe the most important precondition for bringing GISOSS into being.

Figure number 7 presents functional model of GISOSS. Authorized interoperability services (AIS-x, AIS-y) enable data exchange and data interoperability with application systems in different back-offices. These application systems can be very different in any system aspect like standard, data format, semantics, technology etc. Interoperability application system gets data, add new values to data and disseminates data over highly personalised services (UOS-x, UOS-y) centred around customers needs.

Figure 7. Functional model of GISOSS



Why we do not have user-oriented service like GISOSS in Croatia yet? Appearance of user-oriented services is closely connected to the level of democracy. What is the level of democracy higher and higher, the higher is the pressure on government for better and better services. From time immemorial, the permanent battle has taken place between two options: current governmental political priorities in supporting citizens' needs and real citizens' needs. A temporary winner of this permanent battle is proclaimed publicly after every election for state, county or municipality authority level. Up to now, user-oriented culture has never been political priority for the winners.

6. GISOSS IN VARAZDIN MUNICIPALITY

Varazdin is an old town with first mentions dating back as far as the 12th century and tales of an even earlier roman city at its place. Within the range of Middle-European cities Varazdin is not only one of the oldest and the most beautiful but also one of the most extraordinary Croatian cities with its unique identity - the city of Baroque, music and flowers. In addition, this city has been built for over eight hundred years to meet the demands of its citizens and has kept its uniqueness, rare harmony and specific atmosphere. It is a place of learning, hosting several colleges attended by students from all over Croatia. A large student population gives the town a young and lively atmosphere. The overall atmosphere in Varazdin has always been very good for development and implementation of new ideas and technologies. One of the first high schools for informatics in Europe was founded in Varazdin before more than thirty years.

One of the most important programmes accepted and budgeted in 2006 by the Municipality of Varazdin and their Utility Services Department was the Project of building the GIS system, which would support the complex needs of city authorities and citizens, including:

- accurate geodetical representation of Municipality area
- reference to existing legacy data (land registry, land cadastre, …)
- re-establishing the cadastre of utility infrastructure and facilities (electricity, gas, water and sewage, DT pipelines, …)
- urban planning and building
- new, free of charge Internet communication and data exchange for all companies and governmental offices in the city area
- improved Internet communication with citizens.

In parallel, the concept of GISOSS was presented to municipal authorities of Varazdin based on the vision of providing user centric service with high-level GIS technologies (Figure number 8).

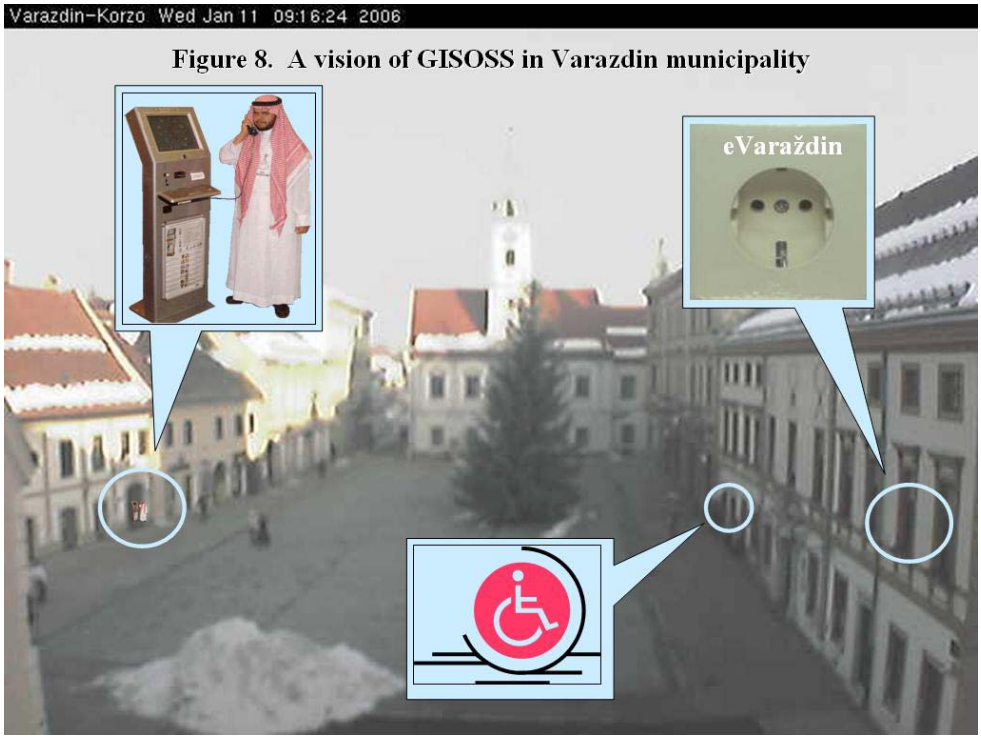


Figure 8. A vision of GISOSS in Varazdin municipality

6.1 What are the Main Topics of that Vision?

First of all, Citizens and visitors of Varazdin must be able to get essential information in digital forms from many different one stop shop points located all over the town like computer terminals at streets and squares, data sockets at homes, special computer terminals and booths for people who cope with disabilities, computer terminals at public notaries and lawyers, and many others. This vision have sense in Varazdin because of many important

preconditions are satisfied: essential data are already available in digital format, Varazdin has a very good infrastructure which is very important for implementation of user centric services; and last but not least, almost all homes and public institutions are connected to broadband local area network and have available many multimedia services through data sockets. We could say that user oriented culture has already taken place in Varazdin.

In June 2006, the Major of Varazdin has entered into contract with IGEA on a project GIS-GV (GIS project of City of Varazdin) with main aim to identify the business needs and specify the requirements of the new GIS based IT solution. The study should be produced until the mid of August 2006 and be used as a basic TOR documentation for series of development projects needed to establish GISOSS in a three years timeframe.

6.2 Current State of the GIS-GV Project:

The Major of Varazdin set up the working group for technical and political long-term support of project. That is very important for success of project because a large number of good ICT projects failed in the absence of any political support.

IGEA set up the project team of experts and consultants with high competency and knowledge in developing geographical information systems and Internet electronic services. Very good knowledge of all important aspects of geospatial data like legality, semantics, locations, formats, contents and many others is very important for success of project too. IGEA's experts visited almost all administrative units and public institutions at municipal level that are responsible for any kind of geospatial data and precisely documented all aspects of data available in digital formats. These sources of data are good candidates for authorized interoperability services for GIS-GV.

The study has to be delivered until the end of July 2006 and be approved by working group of the Major of Varazdin until the end of August 2006.

The next phase (during the last quarter of the year) would be based on the accepted project implementation plan. It will include procurement of some basic hardware and software for GIS-GV, and testing of broadband municipal network. Software design would be focused on establishing complex GEO-database with accurate geodetical representation of Municipality area and interoperability reference to existing data within and outside of the Utility Services Department.

It was agreed that GIS-GV would be established as a technical unit within existing organizational framework of local administration. Later, responsibility for GIS-GV could be transferred to municipal-commissioned or customer-commissioned intermediaries. Such an intermediary could be either a 'for profit' business or a 'not-for-profit' business. However, municipality authorities should consider collaborating with intermediaries to create opportunities to open up local administration.

We strongly believe that this project would not fail, and the question who owns the selected parcel (mentioned in the third chapter of this paper) would become obsolete for every citizen of Varazdin until the end of the year.

7. CONCLUSION

There is a clear trend in European countries of more widespread use of electronic services for dissemination of data and information in the public sector in recent years. Public sector information has a considerable economic potential. The difficulties to exploit public sector information therefore have negative effects on sustainable development. Municipalities should actively use modern information and communication technology to create accessible and efficient management and high quality services for citizens and businesses. ICT provides the opportunity to interact electronically with other levels of government and public agencies to create one-stop-shop public services, regardless of the organisational structures or the physical location of personnel and technical equipment. The new added-value information products as GISOSS is could have a positive economic impact, increasing efficiency and leading to better-informed decisions.

We found it conveniently to finish this paper with Prime Minister Tony Blair's thoughts from the speech to National Policy Forum 9 July 2005: '... This is a time to push forward, faster and on all fronts: open up the system, break down its monoliths, and put the parent and pupil and patient and low-abiding citizen at the centre of it. We have made great progress. Let us learn the lessons of it not so as to rest on present achievements but to take them to a new and higher level in the future ... '[(4).]

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