Comparative Analysis of e-Government Implementation Models and Progressive Services

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Abstract: - E-government refers to the intensive use of ICT, especially Internet and web, in delivering government information and services to citizens. E-government is defined as 'utilizing the Internet and the world-wide-web for delivering government information and services to citizens' (UN & ASPA, 2001). Jaeger (2003) added that, apart from Internet and web, it may also include other ICTs in providing superb governmental information services to the citizens (examples are database, networking, discussion support, automation, tracking, personal identification technologies). Means and Schneider (2000) define e-government as the relationships between governments, their customers and their suppliers by the use of electronic means. In this paper we give a brief review of e-government concept and the models of its implementation worldwide. A comparative analysis of e-government deployment is given and major activities stressed. E-government services and applications may positively affect the development of the Croatian emerging economy, as Croatia, even the EU candidate state, is still a country in transition. The review and discussion of current and future progressive e-government services and their impact on society and economy are given. The case studies results and analysis came up with the conclusion that efficient e-services my positively affect the transparency of various systems in Croatia such as justice, public procurement, health, etc.

Key-Words: e-Government, electronic public services, Croatia

1. Introduction

Information and communication technologies (ICTs) were recognized to have tremendous 'administrative' potential. (Yildiz, 2007). For example, ICTs may help create a networked structure for interconnectivity (McClure, 2000), service delivery (Bekkers and Zouridis, 1999), efficiency and effectiveness (Heeks, 2001), interactivity (DiCaterino and Pardo, 1996), decentralization, transparency (Layne and Lee, 2001) and accountability (McGregor, 2001). Electronic government (e-government) cover all these functions and, generally speaking, refers to the intensive use of ICT in providing the citizens an improved access to information related to public administrations as well as in providing them superb service quality. Gartner Group defines that e-government encompasses the multi-dimensional nature of the concept, referring to "information and communication technologies to optimize government service delivery, constituency

participation and internal government processes"[1]. Free Internet encyclopedia Wikipedia gives simpler definition[2]; e-government refers to government's use of information technology to exchange information and services with citizens, businesses, and other arms of government. Global consulting firm Booz Allen Hamilton cites[3] that the term "e-government", like "e-commerce" or "e-learning", is associated with the dot-com revolution of the start of the decade and has historically focused on use of the Internet to conduct business between government and citizens, government and businesses or between different parts of government itself. E-government has a number of corresponding

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[1] Gartner Group, "Key Issues in E-Government Strategy and Management," Research Notes, Key Issues, 23 May 2000.)
[2] http://en.wikipedia.org/wiki/EGovernment (accessed 24.11.2007)
[3] Beyond e-Government; Booz | Allen | Hamilton; London, November 2005;
http://www.boozallen.com/media/file/151607.pdf (accessed 24.11.2007), page 6

points with legal acquis, including privacy, access rights to specific confidential content, public access to public government information and information security. The solution of such public government can be seen as an effort to improve management and effectiveness of public services using technological resources. Electronic public government can be observed as a process[4]. From definitions stated above it can be concluded that e-government may be observed through transformation of existing government operations trying to achieve higher efficiency, and through efficient delivery of transformed public services to other subject (citizens, business subjects and other public government sectors), using informational infrastructure. Business journal the Economist in 2000 predicted that the next Internet revolution (after e-commerce and e-business) would be e-government[5]. Contrary to such optimistic expectations regarding e-government, a disappointment on how the situation evolved during next few years followed. The Gartner Group in 2004 brought analysis of e-government hype cycle in world (figure 1.[6]). After "peak of inflated expectations" in 2002 "trough of disillusionment" follows, and finally "slope of enlightenment" is coming.
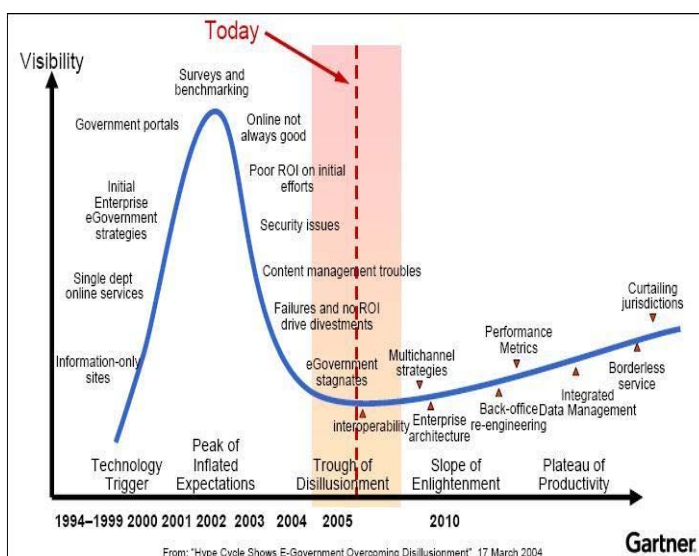

Figure 1: Gartner analysis - Hype Cycle for e-Government

At vast effort was made on electronic services for citizens and business subjects that were introduced by the local governments. Business services are much more accessible than citizen services, and services that are relatively accessible to citizens have rather low usage (for example - tax returns in EU countries[7]). Observing such services, a conclusion was made that up to 75% percent of editors of such web pages do not have any information regarding page attendance nor number of transactions executed at a certain moment.

UN World public sector report (from 2003[8]) was very critical analyzing global e-government achievements. The report defines developing strategies of such public governments as meaningless, wasteful, and uncoordinated. Dot.gov bubble term was recognized and defined as "persistent and very active public investment program that doesn't produce enough public value". Within report there is statement that huge infrastructure capacities were created but clients never used them accordingly. Regarding Dot.Com bubble case, the market made necessary adjustments. In this case corrections must happen through political processes. Taking public benefits as a measure of success or perspectives of different services with time a failed project are closed and successful ones are expanded further. Within few years of uncritical planning and creation of electronic public services approach (which can be observed through Gartner "trough of disillusionment" phase), an acknowledgement came that more careful planning, transformation of existing processes, and creation of public value is necessary.

2. E-Government concept

E-government concept originated at the beginning of 21st century, mostly as a copy of e-commerce into public sector[9]. All intentions were directed towards the presence of the public services on the Internet. In the early years of its development, e-government follows the evolutionary e-business evolving model (Earl, 2000), which in particular means that in the early days of e-government evolvement, primary focus of the e-services was simple appearance of graphic user interfaces with no

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[4] A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance, Jeffrey W. Seifert, 2003., page 4

[5] The Economist, "A Survey of Government and the Internet", June 24, 2000, page 3

[6] Hype Cycle Shows E-Government Overcoming Disillusionment; Andrea Di Maio, John Kost - Gartner Group; March 2004, http://www.gartner.com/DisplayDocument?ref=g_search&id=427810 (accessed 27.11.2007)

[7] e-Public services in Europe: past, present and future, J. Millard, Danish Technological Institute, Research findings and new challenges, Final Paper, Sep 2003, ftp://ftp.cordis.lu/pub/ist/docs/epublic-services.pdf (accessed 27.11.2007), page 7

[8] World Public sector Report 2003, E-Government at the Crossroads, http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN012733.pdf (accessed 1.12.2007), page 1

[9] Building eGovernment: European Regions alternative strategies By Gabriella Cattaneo, international projects coordinator, Databank Consulting, 2004., page 3

possibilities of interactions. Early enthusiasm during the mean time weakened but such experiences brought crucial acknowledgments. Today, because of those acknowledgments, the focus is on coordination and effective assessment of the needs, efficiency and public benefits for such services. The development of electronic public services enters in the new phase, which is mostly determined by reengineering of existing processes of public government. Public sector by its nature (based on information and communications) is ideal for international increase of efficiency and quality. Public government disappointment is triggered by bureaucracy, information abuse for internal purposes, increasing cost of transactions and mostly because of lack of responsibility for the client. Especially in European countries the problem of ever-growing public sector is present, making the concept the efficient e-government even more important. Regarding the participants engaging in e-government activities, four models can be recognized[10]:

-   G2C (Government to Citizens),
-   G2B (Government to Business),
-   G2E (Government to Employees; which includes workflow management and knowledge management), and
-   G2G (Government to Government; which includes Business Process Reengineering and ERP systems).

G2B initiatives and services attract the most attention, mostly because the wish and pressure by business sector for the improvement of speed of the services and possible the crease of overall cost (for example - public procurement). For well understanding of e-government concept it is important to explain differences with e-business, and the role of e-business within e-government. Despite previous believes that e-government services may be started as private sector businesses, the true nature of public government is very different form the way private sector function and significant differences were recognized[11]. The most important differences are:

-   Ability to select customers and providers – in private sector customers and providers may choose between a number of services and customer groups. Within e-government sector clients do not have an option to choose.
-   Different incentives – in private companies it is profit and savings and the e-government should not overload end users too much because throw paying taxes the use of e-government is paid.
-   Risk-taking – public government mostly avoids risk taking and as such is rather slow in acceptance of innovations and new technologies.
-   Organizational structure – public sector is usually hierarchically constrained and such is not flexible for adjustments of clients needs.
-   Different motivators – public government reacts on social-political pressures, and its missions and procedures can be changed by laws and regulations only.

E-government can apply some elements of e-business concept very well[12]. The reasons why public government should overtake ideas and concepts of e-business is advantages in such a way of making business: the delivery of better and faster services with decreased costs. E-government creation is not a process that can be achieved within one simple step or phase. By its nature that process has evolutional properties; the process is conducted in couple of steps or phases. Organization AOEMA (Asia Oceania E-Business Marketplace Alliance)[13] gave comparison of three main models of phases in e-government development, which are the World Bank, United Nations and the Gartner Group. All three models cover the same area with certain activities contained in later or earlier phases:

-   First phase, Emerging (Presence, Publish) - An official government online presence is established. Content is predominately static and not necessarily in response to citizen expectations.
-   Second phase, Enhanced - Government sites increase. Information becomes more dynamic and regularly updated. There are downloadable forms, documents and features like site search and e-mail on web sites.
-   Third phase, Interactive (Interaction, Interact) - Users can download forms, e-mail officials and interact through web. Portal with links to related sites, specialized databases, online forms submission, user login.
-   Transactional (Transaction, Transact) or fourth phase - Users can actually pay for services and other transactions online. Secure access for online payments, email confirmation and acknowledgement receipt.

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[10] A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance, Jeffrey W. Seifert, 2003. Page 6
[11] E-Government Strategic Planning - A White Paper, NECCC Annual Conference, Las Vegas, December 2000, http://www.ec3.org/Downloads/2000/Planning_Document.pdf (accessed 5.12.2007), page 8

[12] Bernd Carsten Stahl, The Paradigm of E-commerce in E-Government and E-democracy, De Montfort University, 2005., http://www.cse.dmu.ac.uk/~bstahl/publications/2005_e-comm_e-dem.pdf (accessed 7.12.2007)
[13] AOEMA (Asia Oceania E-Business Marketplace Alliance), http://www.aoema.org/E-Government/Stages-Phases_of_e-government.htm (accessed 7.12.2007)

- Fifth or Integrated phase (Seamless) - Full integration of e-services across administrative boundaries. All services and links accessed through single central

portal, all transactional services offered through single integrated site, customizable user pages.

UN	Gartner Group	World Bank	e-ASEAN
Emerging	Presence	Publish	Emerging <5% teledensity <1% PC penetration
Enhanced			Evolving 5-10% teledensity 2-5% PC penetration
Interactive	Interaction	Interact	Embedding 20-40% teledensity 5-10% PC penetration
Transactional	Transaction	Transact	Extending >40% teledensity >20% PC penetration
Seamless	Transformation		

Table 1: Comparison chart of stages/phases of e-government, teledensity, and PC penetration variables

3. Analysis of e-government successfulness in the world

There are many efforts to approach the analysis of e-government successfulness in the world in form of rankings of the countries. Such research is conducted by international organizations (UN, European Commission), academic institutions (Waseda University Institute of E-Government[14]), and different consultant companies (Accenture[15], Capgemini[16], and TNS[17]). The majority of analysis is based on pages evaluation according of its content, according the evaluation of the availability of the services. Within last couple of years there are meaningful analysis of Accenture and Waseda Institute. Petricek, Escher, Cox and Margetts[18] in their article "The Web Structure of E-Government - Developing a Methodology for Quantitative Evaluation"

made a critical observation on the way of choosing of web metrics. They stated that most analysis in the world during assessment do not consider the structure of the links on public government web pages. During analysis different methodologies are used, which leads to different rankings of countries from analysis to analysis. A brief description of a few analyses follows.

Accenture – 2005 research[19] includes two main components: service maturity (which measures the level to which a government has developed an online presence) and customer service maturity (which measures the extent to which government agencies manage interactions with their customers) in 22 national public governments. The overall average for service maturity breadth in 2005 is at 91 percent and 20 out of the 22 countries surveyed having at least 80 percent of the national services measured online. The overall average customer service maturity score in 2005 was a mere 39 percent. First ten countries ranked by service maturity for the year 2004 were: 1.) Canada (60%), 2.) USA (49%), 3.) Singapore (47%), 4.) Finland (46%), 5.) France (45%), 6.) Denmark (44%), 7.) Australia (43%), 8.) Netherlands (42%), 9.) Japan, Norway and Italy (41%). 2005 report[20] gives an assessment that the growth

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[14] Waseda University Institute of E-Government, Graduate School of Global Information and Telecommunication Studies, http://www.giti.waseda.ac.jp/GITS/index_en.php?href=top_en.html

[15] Accenture, http://www.accenture.com

[16] Capgemini, http://www.capgemini.com/

[17] TNS – Taylor Nelson Sofres, http://www.tns-global.com

[18] The Web Structure of E-Government - Developing a Methodology for Quantitative Evaluation; Vaclav Petricek , Tobias Escher, Ingemar J. Cox and Helen Margetts (Oxford Internet Institute); www 2006 Conference, Edingburgh, 22.-26. May 2006; http://www.governmentontheweb.org/downloads/papers/WWW2006-Web_Structure_of_E_Government.pdf (accessed 8.12.2007), page 2.

[19] Leadership in Customer Services: New Expectations, New Experiences, Accenture, April 2005; http://www.accenture.com/NR/rdonlyres/F45CE4C8-9330-4450-BB4A-AF4E265C88D4/0/leadership_cust.pdf (accessed 8.12.2007)

[20] Leadership in Customer Services: Building the Trust; Accenture, May 2006,

of electronic public services maturity is slowing down but that overall average customer service maturity has increased from 39 to solid 48 percent. The leaders are still Canada and USA.

Waseda University Institute of e-Government – from Japanese university - Graduate School of Global Information and Telecommunication Studies. These reports process six sectors through 26 indicators. Sectors are: Network Preparedness, Required Interface-Functioning Applications, Management Optimization, Homepage/Portal Situation, Chief Information Officer and Promotion of e-Government. Research"2007 World e-Government Ranking"[21] was published at the end of January 2007 in addition, analyses e-Government success results for the year 2006. Top ten countries are: 1.) USA, 2.) Singapore, 3.) Canada, 4.) Japan, 5.) South Korea, 6.) Australia, 7.) Finland, 8.) Taiwan, 9.) UK, and 10.) Sweden.

UN - publishes a capability estimate of e-governments all over the world for all of its member countries, 191 in total in the 2005 report[22]. UN in its yearly research calculates quantitative e-government Readiness Index for each country. E-government Readiness Index is a composite index comprising the Web measure index, the Telecommunication Infrastructure index and the Human Capital index. According to global readiness of e-Governments for 2005 results the most successful country is USA followed by: Denmark, Sweden, UK, South Korea, Australia, Singapore, Canada, Finland, Norway etc. Croatia within this UN report takes 47th place behind Romania, Bulgaria and Thailand.

Economist Intelligence Unit – in cooperation with IBM Institute for Business Value publishes analysis of e-readiness of different world economies. „The 2006 e-readiness rankings"[23] report was made regarding

analyzing condition in 68 different countries. The ranking by e-readiness criteria was made by combining around 100 quantitative and qualitative criteria, organized in six different categories.

Top ten countries for the year 2006 are (in parenthesis is the place within 2005 report): 1.) Denmark (1), 2.) USA (2), 3.) Switzerland (4), 4.) Sweden (3), 5.) UK (5), 6.) Netherlands (8), 7.) Finland (6), 8.) Australia (10), 9.) Canada (12) and 10.) Hong Kong (6).

Parallel display and comparison of top ten countries through four studies

Table 2. presents parallel display of top 10 e-Government implementation countries 2005 results. Through parallel display a scoring system is made (first place brings 10 points, and 10th place brings 1 point); the last column shows top 10 countries over four different reports (total number of points for each country in parenthesis). The assumption is that all four studies are equally valued by its applied methodologies making the scoring system linear, without special weight factor for individual categories.

The ranking after 10th place: 11.) Switzerland (7), 12.) Norway and France (6), 14.) Germany and Hong Kong (5), 16.) Taiwan and Netherlands (4). From individual studies and comparative ranking can be concluded that the most successful countries in e-readiness and e-Government implementation are at the same time the most developed countries in the world that realized the importance of creating an information society for its continuous growth.

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http://www.accenture.com/xdoc/en/industries/government/acn_2006_govt_report_FINAL2.pdf (accessed 8.12.2007)

[21] 2006 World e-Government Ranking, Waseda University Institute of e-Government, Graduate School of Global Information and Telecommunication Studies, Tokyo, January 29, 2007,
http://www.obi.giti.waseda.ac.jp/e_gov/3nd_rankings_en.pdf (accessed 9.12.2007) , page 8

[22] United Nations, Global e-government readiness report 2005 - From E-Government to E-Inclusion, Department of Economic and Social Affairs Division for Public Administration and Development Management, New York, 2005.
.http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021888.pdf (accessed 9.12.2007)

[23] The 2006 e-readiness rankings, A white paper from the Economist Intelligence Unit; Economist Intelligence Unit;

Written in co-operation with The IBM Institute for Business Value; London, 2006.;
http://a330.g.akamai.net/7/330/25828/20060531174642/graphics.eiu.com/files/ad_pdfs/2006Ereadiness_Ranking_WP.pdf (accessed 9.12.2007)

	Accenture	Waseda	UN	Economist	Compared sequence
1.	Canada	USA	USA	Denmark	**USA (38)**
2.	USA	Canada	Denmark	USA	**Denmark (27)**
3.	Denmark, Singapore	Singapore	Sweden	Sweden	**Canada (22)**
4.		Japan	UK	Switzerland	**Singapore (20)**
5.	Australia, France, Japan	South Korea	South Korea	UK	**Sweden (16)**
6.		Germany	Australia	Finland, Hong Kong	**UK, Australia (15)**
7.		Taiwan	Singapore		
8.	Norway, Finland	Australia	Canada	Netherlands	**Japan (13)**
9.		UK	Finland	Norway	**South Korea (12)**
10.	Netherlands	Finland	Norway	Australia	**Finland (11)**

Table 2: Parallel display of top ten countries over four studies for the year 2005

4. E-Government environment in the Republic of Croatia

Internet and Broadband access

The Internet market in Croatia grows all the time, but is insufficiently developed mostly because of monopoly position of the leading telecommunications company in Croatia (T-com) that continued until recently. By formation of Croatian Agency for Telecommunications and liberalization of telecommunications services market, a competition was made possible between telecom service providers and operators including alternative Internet access technologies (especially for Wi-MAX access). Market opening triggered increased offering and a price decrease making Internet broadband users climb from basically nothing up to 100 000 (2.35 penetration)[24]. At the beginning of March 2007 Croatia had 6.25% of broadband users (around 275 000 users) and 15370000 citizens (35%) used Internet[25]. According to such numbers Croatia was at the very bottom of European countries ranking. Development strategy of broadband Internet access in Croatia until 2008 and Action plan for implantation plan to reach 500 000 broadband users in 2008.

Croatian e-Government progress

Croatia for the last couple of years continuously progresses in its application of information technology. It is shown by the World Economic Forum report regarding global competitiveness and application of information technology[26]. Denmark was graded as the most competitive economy for 2006.-2007.; Croatia was 46th making an eleven point's better ranking than in the year 2005. (57th place[27]). These reports continuously emphasize the great importance of information technology application for the fast economic growth.

NRI index (Networked Readiness Index) is used by the report mentioned above for the country readiness evaluation of information technology acceptance. Because of huge influence of corruption within Croatian

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[24] Operational plan for the implementation of e-Croatia 2007 program for 2006 (only in Croatian)
, Central State Administrative Office for e-Croatia, Zagreb, April 2006, http://www.e-hrvatska.hr/repozitorij/dokumenti/downloads/plan_provedbe_e-Hrvatska_za_2006.pdf, page 17

[25] Croatian telecommunication and Internet market (cro.Hrvatsko telekom i Internet tržište), Journal Mobil Media Online (only in Croatian), http://www.mobil.hr/novosti/one.php?sid=2306, 09.03.2007.

[26] The Global Information Technology Report, World Economic Forum,
http://www.weforum.org/en/initiatives/gcp/Global%20Information%20Technology%20Report/index.htm (accessed 10.12.2007)

[27] The Networked Readiness Index Rankings 2005.,
http://www.e-hrvatska.hr/repozitorij/dokumenti/downloads/rankings_2006.pdf (accessed 10.12.2007)

society in March of 2006 a National program for combating corruption was brought[28].

The Ministry of Justice presentation, which elaborates the progress, presents the activities taken for corruption combating. Critical shifts aided by electronic public services application happened within justice system, health care system, public acquisitions and concession management[29]. The project Informatization of primary health services is initiated. The first part of the project regarding the development of central locations of primary health care system which is in production is already successfully completed. Second part of informatization of primary health care system regarding connections of ordinations onto central system of primary health care system is under way. An electronic register of concessions is made and is published on the Internet[30]. That should to the great extent influence a decrease in corruption and black economy for concession agreements.

In September of 2006 Croatia Market Research Institute – GfK made a research on electronic public services in Croatia stating obstacles for the usage[31] of such services. A survey was made on 102 companies that have all of the prerequisites for making business over the Internet. One-half of the companies included in this survey do not use a single electronic public service; another half uses just one or two. The reasons for not using electronic public services are: lack of awareness regarding the possibility of the usage, favoring traditional way of doing business and an opinion that technical conditions for such services are not met. The majority assumes that the usage of electronic public services saves time and decreases the costs of doing business and more than one-half thinks that doing business over the Internet is the best way of doing business with public services departments. The vast majority of the companies (75%) think that it will start using electronic public services

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[28] National program for combating corruption 2006. – 2008. (cro. Nacionalni program suzbijanja korupcije) (only in Croatian), NN 39/2006, Zagreb, March 2006, http://www.nn.hr/clanci/sluzbeno/2006/0945.htm

[29] National program for combating corruption 2006. – 2008. (cro. Nacionalni program suzbijanja korupcije), presentation of The Ministry of Justice (only in Croatian), March 2007, http://www.pravosudje.hr/Download/2007/03/26/prezentacija_antikorupcija_20_ozujka_2007.ppt

[30] http://regkon.fina.hr/RegistarKoncesija.web (only in Croatian)

[31] Online public services – barriers for using and informatization priority (cro. Javne usluge putem Interneta – prepreke za korištenje i prioriteti za informatizaciju), Quantitative research; GfK – Market Research Institute, (only in Croatian), September 2006, http://www.e-hrvatska.hr/repozitorij/dokumenti/downloads/Istrazivanje_prioriteta_i_prepreka_u_koristenju_javnih_e-usluga.pdf

over the Internet within one year. The Benchmarking study on the availability of public services was published in Croatia in October 2006[32]. This is the third yearly research and now there are available research results for the period 2004-2006. The study, besides the comparison of conditions for the previous three years, provides the comparison of Croatia with the member states of European Union for the area of electronic public government. It appears that the availability of e-public services in Croatia is satisfactory (60,41% of the criterions for G2B and 46,48% for the G2C).

The availability of electronic public services in Croatia will (as well as by opening of new services) increase, but will in certain moment require improvement of quality of services, usefulness for citizens and business subjects and beneficiary satisfaction. Shown parameters (for 2006) place Croatia by availability before Latvia (47%), and in the same line with Slovakia (51%). The leaders in the development of electronic public government are Austria (95% of availability), Malta (92%) and Scandinavian and Baltic countries: Estonia, Sweden and Norway (90%). Croatia and Macedonia have been mentioned in the Report (World Investment Report, UNCTAD) [33] as the examples of states that have opened the government One-Stop Shop services (named in Croatia as HITRO.HR), for the acceleration of dealing with the state administration in order to support the measures for easier investments.

5. Progressive electronic public services in Croatia

There have been important progresses in the implementation of public services on Internet, i.e. in the informatization of public government. The Benchmarking study online availability of public services for Croatia in 2004 was launched in January 2005.[34] The Benchmarking study has, for the first time in Croatia, systematically determined the services by clusters, according to the EU methodology. One Stop Shop services (HITRO.HR) for the communication with the bodies of public administration in the area of

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[32] Benchmarking study online availability of public services for Croatia in 2006. (third research), T&MC and e-Croatia, October 2006, http://www.e-hrvatska.hr/sdu/en/Dokumenti/StrategijeIProgrami/categoryParagraph/06/document/Bench_2006_english.pdf

[33] World Investment Report, UNCTAD, New York and Geneva, 2006, http://www.unctad.org/en/docs/wir2006_en.pdf, page 25

[34] Study on online availability of public services for Croatia, Capgemini, Zagreb, January 2005, http://www.e-hrvatska.hr/sdu/en/Dokumenti/StrategijeIProgrami/categoryParagraph/08/document/Online_Availability_2004.pdf

establishing of trading companies and crafts were opened in May and June 2005. Furthermore, the Ministry of Justice launched the on-line service for Digital land registry, and afterwards published The Judges Web. The special media attention was given to the possibility of the on line search of the Digital land registry. This was part of the vision of the e-Croatia 2007 that aimed to modernize public services, initiate productivity and create favorable environment for private investments and increase employment by the end of 2007. The following electronically services of HITRO.HR have been introduced after the first public services on Internet: e-REGOS (The Central Registry of Insured Persons), during 2006 e- VAT and e-Registration (registration on retirement insurance). Knowing the previous conditions, those activities in the period of 2005-2007 were the key shifts. Electronic public services in Croatia can be determined by following areas: e-Justice, e-Business, e-Government, e-Health and e-Education.

E-JUSTICE

On-line service for digital land registry[35] - By the end of 2005, all 87 courts which enter data in digital form opened a digital land-registry, and all Municipal courts are equipped for digital entry of land-registry data. E-Cadastre (cro. e-Katastar)[36] - The Central Office of the State Geodetic Directorate maintains cadastre data for the Republic of Croatia which unifies data from all of the 115 cadastre offices. In November 2005, a browser for cadastre data was established within the e-Cadastre project and thus providing insight via the Internet into the central cadastre database of the Republic of Croatia. The cadastre database contains more than 16 million registered land plots which are entirely accessible by using the web browser. In first two days of its usage, almost 2 million people visit that web site. The e-Judicial Practice[37] - The e-Judicial Practice site provides an insight into the case-law published in printed versions of the Supreme court, but also gives access to complete texts on the rulings of the Supreme Court of the Republic of Croatia since 1993 year. The e-Court registry[38] - The Court registry contains all entities that are being founded including trading companies, co-ops, institutions, etc. The Judges Web[39] - The Judges Web is a non-governmental and unprofitable organization whose aim is to use modern technology in order to speed up and improve the quality of court operations and to make

information relating to court proceedings accessible to the public. E-Registration[40] - Croatian Institute for Retirement Insurance provides submission of e-registration, first service within this project, which present method of registration on retirement insurance combines with possibility of submission by electronically method. E-judicial documentation[41] - e-Spis is a unique IT system for the management of judicial documentation in Croatia.

E-BUSINESS

E-REGOS (The Central Registry of Insured Persons)[42] - The e-REGOS service provide electronic transmission of an official form (called R-Sm form; which is the insured person's specification based on calculated and paid compulsory contributions for the pension fund insurance). E-VAT[43] - is the first electronic service which for all taxpayers (business subjects) in Republic of Croatia provides simple and safe delivery of data in periodical calculation of VAT for particular accounting period. E-Custom declaration[44] - Within Information system of Custom Administration in Croatia, is developed online application for electronically submitting custom declaration. Register of Annual Financial Reports[45] - financial reports and quarterly statistical reports of entrepreneurs is possible, beside in hard copies, obtain by web service. WEB-BON[46] - is the service aimed for business subjects and includes the information on the solvency of entrepreneurs. E-CREW[47] - The e-CREW system was established in order to enable all legal and natural persons who are in the business of renting yachts and boats to register. It is possible to register crew and passengers via the Internet using smart cards with a digital certificate based on acquired user rights.

E-GOVERNMENT

The Electoral Register[48] - Data from the Electoral Register are available online to citizens (online or SMS). This is service of the Central State Administrative Office for Public Administration. The Central Database

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[35] On-line service for digital land registry, http://e-izvadak.pravosudje.hr/mpweb/main.jsp

[36] E-Cadastre, http://www.katastar.hr/dgu/ind.php

[37] The e-Judicial Practice, http://sudskapraksa.vsrh.hr/supra/

[38] The e-Court registry, https://sudreg.pravosudje.hr/SUDREG3/index.jsp

[39] The Judges Web, http://www.sudacka-mreza.hr

[40] E-Registration, http://e-prijave.mirovinsko.hr/ep-prijave

[41] Introduction of the E-judicial documentation (only in Croatian), e-Croatia, http://www.e-hrvatska.hr/modules.php?name=News&file=article&sid=166 , 04.06.2007.

[42] e-REGOS, http://eregos.fina.hr

[43] E-VAT, http://www.porezna-uprava.hr/e-porezna/ePDV.asp

[44] E-Custom declaration, https://www2.carina.hr/was/websped

[45] Register of Annual Financial Reports, http://rgfi.fina.hr/IzvjestajiRGFI.web/main/home.jsp

[46] WEB-BON, http://bon.fina.hr/BONweb.web/main/home.jsp

[47] e-CREW, http://ecrew.pomorstvo.hr

[48] The Electoral Register, http://195.29.186.154/sduzu92b/index1.php

Registry on Personal Data[49] - This online service was done in accordance with the regulations of the Law on the protection of personal data and the Ordinance on the management method and form for recording private data

E-EDUCATION

The Information System of Higher Education Institutions[50] - project for developing software for the implementation of an information system in institutions for higher education and contracted software maintenance. The Web Portal for Elementary and Secondary Education[51] – is aimed for teachers, pupils and parents. Hosting Services for High and Elementary schools[52] – enables the usage of the Content Management System for schools (setting and maintaining web pages through the web browser). The system enables the access to distance learning portal "Nikola Tesla"[53] that provides online access to ECDL and other courses.

The directions of future development

The Croatian electronic public government will have to realize the remaining e-services agreed at the level of EU member states and EU candidate states during the forthcoming period. The services for citizens are: income taxes, social security benefits, personal documents, building permit and health-related services. For the business subjects the following services have to be realized: public procurement, submission of data to the statistical office, and social contribution for employees. The new Government of the Republic of Croatia (as of January 2008) has in its program for the reform of public government and aligning with EU, anticipated the projects of introducing the e-passport and e-driving license based on the technology of smart cards and implementation of electronic signature. These projects can ameliorate the introducing of new electronic services for citizens. However, the best base for the implementation of remaining services would be the electronic personal smart card (e-ID) with digital certificates for identification and digital signature. Croatian personal card already has certain assumptions for the transition to the smart cards technology (smart card format, assumed place for chip). Similar to already used implementations in Europe (Belgium, Estonia), the smart card would have two digital certificates. The beneficiary could use card as visual and electronic

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[49] The Central Database Registry on Personal Data, https://registar.azop.hr
[50] ISVU, https://www.isvu.hr/korisnici/jsp/korisnici/login.jsp
[51] CARNet portal, http://www.skole.hr
[52] HUSOŠ - Hosting Services for High and Elementary schools, http://www.skole.hr/cms
[53] Distance learning portal "Nikola Tesla", https://lms.carnet.hr/lms

identifications and could create electronic signatures with legal validity with PKI technology.

6. Conclusion

The electronic public government can play an important role in the development of the Republic of Croatia. Croatia is the country in transition and has visible delays in many areas when compared with developed countries. This can be quickly compensated with good strategic frameworks and quality organization. One of the few advantages of the current state of affairs is the possibility to build many electronic public services from the scratch, by using already known knowledge, results and experiences of the others. E-Government in Croatia has made significant shifts in the last few years. Many reports prove that (e.g. World Economic Forum report "The Global Information Technology Report"). One of the biggest problems of Croatia as transitional country is corruption and perception of corruption. By developing efficient electronic public services it is possible to increase the transparency of various systems in Croatia such as justice, public procurement, health, etc. Currently, the creation of electronic advertisement of public procurement of Republic of Croatia is in the process. The project Informatization of primary health services has been initiated-it will enable control of medical procedures and actions as well as money flow monitoring. Many electronic services are newly opened in justice and state administration. By opening the on-line service for digital land registry the number of clients on the counters of land registry offices has decreased. There are many new services for business users. The GfK has initiated a big research in September 2006 on the electronic public services in Croatia and obstacles for their usage. Majority of examinees considers that the usage of public electronic services saves time and decreases costs. More than half thinks that the dealings on Internet is the best way to do work with the bodies of state administration so they have more time for productive business work. The researches on the availability of public services in Croatia date from 2004. From the three already published researches (2004, 2005 and 2006) it can be determined that availability of electronic public services continually increases. While in 2006, the member states of EU have on average achieved 75 % of availability of public services, in Croatia the availability was 50,63%. Such results are not negative since are approaching the results of EU countries. Namely, Croatia is in availability before of Latvia (47%), and very close to Slovakia (51%) and Poland (53%).

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