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ICT COUNTRY PROFILE

SERBIA

2011

REGIONAL COMPETITIVENESS INITIATIVE

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This publication was produced for review by the United States Agency for International Development. It was prepared by ESI Center Bulgaria/Eastern Europe, a subcontractor to SEGURA Partners LLC under the SEGIR Global Business, Trade and Investment II Indefinite Quantity Contract (IQC), Number EEM-I-00-07-00001-00 Task Order # 05, Regional Competitiveness Initiative

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I. EXECUTIVE SUMMARY

The purpose of this report is to provide a look from outside at the ICT development in the country and to reveal the possibilities for regional ICT cooperation. A research of this kind could clear up what kind of activities related to ICT are held in the country and what national strategies, policies and action plans for ICT development are conducted.

The report should reveal the real picture of the local Serbian ICT market as it can be seen by external analyst of the sector. The respective sources of information are marked as foot notes at the end of each paragraph or section.

For the purpose of this report and with the aim of facilitating further research the author has used many relevant sources of information on the subject such as reports, analyses, legal documents published, action plans, statistics, and strategies, found in internet.

The ICT sector in Serbia is one of the priority sectors for the government in terms of progress and investments. Steps have already been taken by establishing the Ministry for Telecommunications and Information Society and a number of regulatory agencies working for further development and policy monitoring. Almost all necessary strategic documents have been adopted and much has been done about improving the legislation framework for the sector.

However, due to the late democratic transition of Serbia compared to the rest of the SEE countries and the lack of enough foreign investments after the privatization of state-owned enterprises it is still a difficult task to develop a stable and successful business in Serbia. Serbia has the lowest production rate in Europe for 2010 placing her behind almost all other European countries. The world economic crisis also contributed to the descending improvement of Serbian economy and the ICT sector as well.

Important sub-sectors of the Serbian ICT sector are the Telecommunications sub-sector which is relatively strong and progressive and the IT sub-sector which is weaker than the Telecommunications and is still lagging behind in its development.

The IT sub-sector in Serbia consists of mainly small enterprises with not more than 15 employees, not highly specialized. Because of this most companies have limited access to international markets. However a few companies have their positions on the outsourcing market, working for U.S. and Western European countries in the area of software modules production and embedded hardware parts.

As the demand for computers and hardware equipment is still quite high the majority of the IT companies in Serbia have the retail of hardware as main business activity.

Most of the ICT companies in Serbia are concentrated in the capital city Belgrade, as well as in Novi Sad and Nis creating a good potential for clustering.

ICT education in Serbia is still not at the required level as there is a lack of specialists for the domestic market and the quality of educations needs to be improved. The demand for specialists is increasing every year and there still is insufficiency of graduates to satisfy the needs of the ICT sector in Serbia. An increase in investments aiming to improve the quality of the educational system is most necessary. If compared to the other European countries the investments in the IT education per capita in Serbia are between 6 (compared to Croatia and Slovenia), and 90 times (compared to Western European countries) less.

The participation of Serbian private companies in research activities is quite limited as this is done mainly locally by public universities and research centers.

Cooperation between private companies and the public sector in Serbia is still at a very early stage, but since some private companies started creating consortia for tenders networking between public and private sectors started to improve and develop. This trend was also encouraged by the creation of clusters that gather together private companies, state universities and research centers, as well as by the ICT Forum organized by the Ministry of Telecommunications and Information Society.¹

¹ http://www.vojvodinaictcluster.org/Images/ICT_in_Serbia_At_a_Glance_2011.pdf

II. ANALYSIS OF THE ICT SECTOR IN SERBIA

A. PAST, PRESENT AND FUTURE TRENDS

The electronic communications and information technologies sector in Serbia can be described as being in the process of development and improvement. In terms of legislation a lot has already been done. The Law on electronic communications should be mentioned, which was adopted in 2010 and prescribes that activities in the ICT sector may be performed without special license but only if the general technical conditions are fulfilled and the prescribed fees, which are still to be determined by the Electronic Communications Agency, are paid. The law also deals with the forthcoming digitalization of the terrestrial television and radio signal. The deadline for finishing the digitalization imposed by the Digitalization Strategy is 4 April 2012².

In the telecommunications sub-sector the privatization of the present fixed telephony operator has already started and a license for a second national fixed telephony operator was issued in the beginning of 2010 for a period of 10 years. However the competition in the sector is limited by the fact that there is an agreement that similar licenses should not be allowed before the end of 2011.

In the field of information society services a significant progress was achieved with the adoption of a law regulating e-commerce as well as with the implementation of legislation regarding the law on electronic documents. In October 2009 the Serbian government adopted the Strategy for e-government development and the action plan for its implementation from 2009 to 2013 together with the national broadband strategy and action plan. In 2010 a ten year strategy for development of the information society in Serbia started to be implemented.

Serbia is participating in the Entrepreneurship and Innovation Program and joined the Information Communication Technologies policy Support Program in 2010, thus becoming a member of two out of the three operational programs under the EU's Competitiveness and Innovation Program. Serbia is also very active in its participation in the Enterprise Europe Network.³

The average annual growth rate of the Serbian telecommunications sub-sector revenues in the period 2005-2009 was a little over 10% and the in 2009 the sub-sector was worth about €1.5 billion.

The IT sub-sector almost doubled its growth in the period between 2005 and 2008 reaching €545 million, achieving a growth of more than 35% only in 2007, and a little less than 20% in 2008 due to the rapid development of the Serbian economy as a whole and the increased inflow of foreign direct investments in the sector. After a dramatic decline in 2009 due to the world economic crisis in 2010 the IT sector is expected to have a positive growth.

About two-thirds of the companies on the IT market are engaged in hardware equipment and computer sales, while the remaining one-third is for the software segment comprised mainly of IT services, system software, application programs.

According to the 2010 statistics published by the Statistical Office of the Republic of Serbia concerning the ICT usage in households and businesses 98.7% of the households have TV sets, 82% have mobile phones, 50.4% have personal computers and 11.2% have laptop computers. The ownership of ICT equipment is mostly concentrated among urban population with a monthly income of more than 600€ (86.2%). Almost every student in Serbia uses a computer, over 70% of the employees as well. However the use of computers in 2010 has increased with a mere 1% and almost half of the population still has no access to computers.

Almost 40% of the household in Serbia have internet access. The highest number of users is concentrated in Belgrade (about 50% of the households) followed by Vojvodina (nearly 42% of the households) and Central Serbia (nearly 32%).

² http://www.bdklegal.com/upload/Newsletter_09-2010_ICT.pdf

³ http://www.seio.gov.rs/upload/documents/lzvestaji/serbia_2010_progress_report.pdf

Internet is mostly accessed by DSL (ADSL) connections, other Cable/LAN connections and WAP/GPRS. As new investments have been made in order to build a new broadband infrastructure the modem/dial-up connections are decreasing more and more. Most of the internet users connect from home and the most important reason is e-mail communication. However ICT use in enterprises is more widely spread than in households. Almost all companies use computers and internet for doing business. E-Government services are used by more than 350,000 people. Most of the companies that have internet access use e-Government services, but only one third of them use e-Commerce. Only about 20% of Serbian companies have implemented policies on protection of information and property rights. Almost half of the large companies in Serbia use Enterprise Resource Planning (ERP). The number of medium-sized and small companies using ERP is much lower and the use of Customer Relationship Management (CRM) systems is yet to catch up the ERP usage. These numbers show that the usage of Information Technologies in Serbia is still in a process of developing and the introduction of IT services such as ERP, CRM, and website development have a substantial market potential. The demand for hardware solutions also remains at a considerably high level.

The quality of Serbian ICT infrastructure has highly improved in the last few years and is still in a process of development aiming to reach the level of EU countries.

A lot remains to be done in order to improve the environment for doing business in the ICT field in Serbia. Although a large number of regulations have been adopted in order to facilitate this process a number of older regulations and bureaucracy make business operations in Serbia quite expensive and therefore lower the competitiveness of the country in this sector. The situation in the telecommunications sub-sector is much better. Due to its size it has attracted some of the major multinational companies in that sphere.

The Republic Telecommunications Agency (RATEL)⁴ has the responsibility to regulate the telecommunications sector in Serbia. It is an autonomous national regulatory authority established under the Telecommunications Law. Its role is to ensure the efficient enforcement and promotion of the policy set within the telecommunications sub-sector and to contribute to its further development. Every year the Agency publishes an overview of the telecommunications market in Serbia, which presents a good source of information for the subsector.

As the IT sub-sector is quite smaller in size it is far more difficult to do business in that area. The small turnover and the lack of specialization also add to the difficulties to be overcome.

One of the largest problems that Serbia is facing concerning the development of the ICT sector is the brain drain of specialists which started in the 1990s. A lot of ICT graduates have left the country in order to work in USA, Canada, Western Europe, Australia.

One of the advantages of Serbian IT professionals is the good command of the English language, as a whole Serbia has the highest percentage of English speaking working population (almost 50%) in the SEE region.

Research activities in Serbia are mainly funded by public funds and are pursued in a few public institutes and faculties. However the capacity for research and development in Serbia is quite limited. The most important ICT research centre is the Institute 'Mihajlo Pupin', which has good capacities in the field, particularly in the embedded and motherboard design industries.

As the Serbian economy is still under transition the implementation of new technologies and IT solutions is highly recommended in order to speed up these processes.⁵

⁴ <http://www.ratel.rs/>

⁵ http://www.vojvodinaictcluster.org/Images/ICT_in_Serbia_At_a_Glance_2011.pdf

COMPETITIVE INDEXES AND DATA⁶

	Population (m)	GDP \$ (b)	GDP per capita \$	WEF GCR index Rank (value)	GCR innovation Rank (value)	WEF GITR Rank (value)	E-gov. development Rank (value)	E- participation Rank (value)
Albania	3,2	11,8	3,7	88(3,94)	121(2,57)	87(3,56)	85(0.4519)	86(0.1286)
Armenia	3,1	9,3	3	98(3,76)	116(2,63)	109(3,24)	110(0.4025)	135(0.0429)
Azerbaijan	8,9	51,1	5,7	57(4,29)	61(3,16)	70(3,79)	83(0.4571)	68(0.1714)
BiH	3,8	16,9	4,5	102(3,70)	120(2,59)	110(3,24)	74(0.4698)	135(0.0429)
Georgia	4,4	11,7	2,6	93(3,86)	121(2,51)	98(3,45)	100(0.4248)	127(0.0571)
Kosovo	1,8	5,6	3,1	n/a	n/a	n/a	n/a	n/a
Macedonia	2,1	9,1	4,4	79(4,02)	97(2,88)	72(3,79)	52(0.5261)	55(0.2143)
Moldova	3,6	5,8	1,6	94(3,86)	129(2,49)	97 (3,45)	80(0.4611)	58(0.2000)
Montenegro	0,6	4	6,4	49(4,36)	45(3,48)	44(4,09)	60(0.5101)	76(0.1571)
Serbia	7,3	39,1	5,4	96(3,84)	88(2,93)	93(3,52)	81(0.4585)	135(0.0429)
Ukraine	45,8	138	3	89(3,90)	63(3,11)	90(3,53)	54(0.5181)	48(0.2571)

B. ICT ASSOCIATIONS

SERBIAN CHAMBER OF COMMERCE – www.pks.rs

Serbian Chamber of Commerce (SCoC) is the most important business association in the country with more than 100 000 companies and even more entrepreneurs as members. The aims of SCoC are to promote the interests of the enterprises, to support the economy and foster foreign direct investments. It is quite active in the field of ICT development since the sector is considered as one of the most important and competitive branches of the Serbian economy. It is engaged in the organization of fairs, conferences, workshops, and B2B events and closely cooperating with the government structures and all other important stakeholders in the ICT field. The Chamber represents the interests of ICT companies to government institutions, and is also active in producing analyses and reports for the ICT sector in Serbia.

UNION OF ICT SOCIETIES OF SERBIA (JISA) – <http://www.jisa.rs/engleski/onama/index.htm>

Originally established in 1994 as the Yugoslav ICT Association, in 2003, JISA changed its name to The Union of ICT Societies of Serbia & Montenegro, and by the decision of the founder of June 20th 2006 JISA got its final name - Union of ICT Societies of Serbia (JISA).

The basic goals of the Association are to promote IT education and provide more and most recent information on new technologies by organizing seminars and specialized scientific-professional meetings and through its official magazine "JISA InfoReview".

In cooperation with the Assembly of the European ICT Association, the European Chamber of Commerce, as well as the Chambers of Commerce and ICT associations from the Western Balkans, JISA is in charge of the coordination of the annual information association DISKOBOLOS award given to companies for the modern use of ICT in their everyday business.

ICT NET CLUSTER – <http://www.ict-net.com/>

Website is not yet available in English.

The ICT Net Cluster was recently established by merging two cluster initiatives: Serbian Software Cluster (SSC) and Embedded.rs. Serbian Software Cluster (SSC) is a Business Association established in 2006. It has 16 members

⁶ http://www2.unpan.org/egovkb/global_reports/10report.htm; <http://www.worldbank.org/>
<http://gcr.weforum.org/gcr2010/>; <http://www.networkedreadiness.com/gittr/>;

– 13 of them are the most competitive private companies, and 3 renowned faculties of universities in Belgrade and Novi Sad. The vision behind the cluster is to improve cooperation and communication for the purpose of increasing the competitiveness of the entire software industry so that the Serbian software business would be able to achieve international success through innovative solutions, business expertise and networking. The Cluster's mission was to act as a catalyst for selection and definition of key areas of the vision and implementation of the actions associated with them. It was strongly supported by the Government of the Republic of Serbia, through the Ministry of Economy, and Ministry of Telecommunications and Information Society. SSC actively cooperated with the Serbian Chamber of Commerce, and international organizations such as GTZ, USAID, and SIPPO.

The Integrated Electronic Systems Cluster „Embedd.rs” was an initiative launched in 2008. The main objective of the cluster was to strengthen embedded technologies, improve the cooperation between educational and research institutions, and respond to current market needs through unifying business processes and improving their quality. Embedd.rs gathered 10 companies from the embedded sector, two universities and one research institute. Embedd.rs is an efficient channel for communication between Serbian ministries and key private enterprises.

In order to meet the needs of both IT and embedded based companies the administrators and members of the two clusters took the decision to merge the two clusters and make an umbrella association. The process of merging these two clusters should have been completed by the end of 2010. The ICT Net cluster was established with the objective to provide different services to the software industry in Serbia, although their activities are mostly concentrated in Belgrade.

VOJVODINA ICT CLUSTER – <http://www.vojvodinaictcluster.org/>

The cluster was founded through a bottom-up initiative in 2010 and is comprised of twenty-eight ICT companies from the ICT sector in Vojvodina. Among the strategic objectives of the cluster for the period 2010-2013 are to strengthen the association through capacity building and improvement of the infrastructure of the association, to generate new business opportunities by fostering the competitiveness of Serbian SMEs, and to build stronger connections between R&D and the market.

INFORMATION SOCIETY OF SERBIA – <http://www.e-drustvo.org/english/about.htm>

The Information society of Serbia is an Association for information systems and computer networks. It is a non-governmental and non-profit organization that gathers both experts in ICT and representatives of local IT companies. The main goals of the association are to promote new technologies, disseminate information and news in the ICT field, and organize conferences and trainings, especially the YU INFO Conference. Traditionally each year they organize a conference on e-Governance. The Association also actively participates in regional and trans-national projects funded under FP6 and FP7 such as SEE Innovation, TRISTAN and SCORE.

ASSOCIATION FOR COMPUTING, INFORMATICS, TELECOMMUNICATION AND NEW MEDIA OF SERBIA (ASIT)

ASIT is a prominent non-governmental organization, active in organizing high-profile conferences, seminars and trainings in the field of ICT.

Some of the most important events organized by ASIT are:

- Smart e-Government, the sixth international conference and exhibition of state-of-the-art e-Government Services and Trusted Electronic Identity, organized in cooperation with the Serbian Ministry of Interior, the Serbian Ministry of Telecommunications and Information Society and the Serbian Chamber of Commerce - www.smartegov.rs
- Technobank, an annual conference on innovation in the banking sector. In 2010 the conference was held in Belgrade, on April 14th & 15th, with participants from South-Eastern Europe. The theme of the conference was: Innovation in Banking and Retail Technologies. Among the discussed topics was the application of innovative ICT technologies in the banking sector. - www.technobank.rs

ASIT publishes an electronic magazine, Personal Magazin, which disseminates information and news in the IT sector in Serbia and worldwide. ASIT also participates in IT-related projects financed under international and EU grants.

INFORMATICS ASSOCIATION OF SERBIA – www.dis.org.rs

Website is not yet available in English.

DIS is a professional association, established in 1973. The association is active in organizing conferences, round tables, lectures and other events in the field of ICT. For the organization of its events, DIS closely cooperates with the Serbian Chamber of Commerce.

ASSOCIATION OF ACCOUNTING, INFORMATICS, TELECOMMUNICATIONS, AUTOMATION AND MANAGEMENT IN SERBIA (JURIT) – www.jurit.rs

The Association of Accounting, Informatics, Telecommunications, Automation and Management in Serbia is a non-profit organization, which organizes INFOTECH, one of the most significant ICT events in Serbia. INFOTECH is organized under the auspices of the Serbian Ministry for Telecommunications and Information Society, the National Bank of Serbia, the Serbian Chamber of Commerce and IEEE Serbia and Montenegro, and in cooperation with domestic and foreign companies and ICT users.

IEEE SERBIA AND MONTENEGRO – <http://www.ieee.uns.ac.rs>

IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. IEEE Serbia & Montenegro Section is the successor of the former IEEE Yugoslav branch. It is active in (co-)organizing conferences, forums and thematic events in the field of ICT.

DRUSTVO itSMF SRBIJE – www.itsmf.org.rs

Društvo IT Service Management Forum Srbije (itSMF Serbia) is a membership-based non-profit organization, established under the framework of the international IT Service Management Forum network. It was created in 2008 with the aim to develop and promote IT service management best practices in Serbia and to support its members in broadening their knowledge in the field of service management and the ICT sector in general. itSMF is active in organizing forum discussions and best practice dissemination in various fields of ICT.

ETRAN – <http://etran.etf.bg.ac.rs>

ETRAN is a non-governmental non-profit organization, active in the field of electronics, telecommunications, computer sciences, automation and nuclear engineering. ETRAN organizes an annual conference called "ETRAN", which gathers experts, policy makers and scholars active in the field of ICT.

TELECOMMUNICATIONS SOCIETY – www.dt.rs

This is a non-profit organization established in 1993 with the mission of promoting advancements in the development of the telecommunication sector. DT is active in organizing conferences in the field of telecommunications, such as the Telecommunication Forum (TELFOR), traditionally organized in cooperation with the School of Electrical Engineering of the University of Belgrade and IEEE Serbia and Montenegro.

SERBIAN NATIONAL REGISTER OF INTERNET DOMAIN NAMES (RNIDS) – www.rndis.rs

RNIDS is an expert non-governmental and non-profit organization which manages the national registry of Internet domain names in the Republic of Serbia.

e-RAZVOJ (e-DEVELOPMENT) – www.erazvoj.com

eRazvoj is a voluntary, non-governmental and non-profit association, founded with the aim of accomplishing targeted goals in the field of information society development.

C. PROFILE OF SELECTED COMPANIES

Depending on the source, there are approximately over 2500 ICT companies most of which are based in Belgrade, some of them in Vojvodina and Niš and the rest are distributed around the remainder of the country. The ICT industry in Serbia has highly skilled specialists, who can be hired at very competitive prices. Net salaries can vary from €500 to €1,500 per month for qualified and experienced personnel. The overall salary cost of a programmer/systems expert is in the range of €850–2,500 per month.⁷

⁷ http://www.siepa.gov.rs/site/en/home/1/key_industries/it_industry/

Most of the companies from the ICT sector in Serbia are engaged in more than one activity. The ownership of the companies is predominantly private (LLCs) with the occasional state-owned subsidiary of big public companies or educational institutions.

Major international corporations, which are clients or partners of Serbian ICT companies, are IBM, Sun Microsystems, BASF, Raytheon, Ericsson, Siemens, and KPMG.

Some of the biggest companies in Serbia in the ITC Sector are:

SAGA – <http://www.saga.co.rs>

Saga is a leading system integration & professional services company offering ICT Professional Services in the field of infrastructure, telecommunications, business solutions, business critical computing and data centers, client desktop solutions, etc.

SPINNAKER NEW TECHNOLOGIES – www.spinnaker-nt.com

Member of the ComTrade Group, an international company offering IT Solutions and services worldwide.

COMTRADE GROUP – <http://www.comtradegroup.com>

A dynamic, fast-growing IT system with Solutions & Services, Distribution and Retail as vertical business units.

APOLLO – <http://apollog4.com/>

An independent Software Vendor specialized in e-Business solutions in Oracle environment.

ZESIUM MOBILE – <http://www.zesium.com/>

ZESIUM mobile utilizes emerging communication and information technologies to create original hardware/software solutions and fulfill clients' requirements and expectations in areas of usage of the mobile telecommunication.

BREZA SOFTWARE ENGINEERING – <http://www.brezasoftware.com/>

Breza Software Engineering is an independent software vendor which became one of the leading software companies in Serbia specialized in the design and development of business information systems.

EXECOM – <http://www.execom.eu/>

A Software Engineering company and IT services provider offering the complete development cycle, from design to maintenance of complex software solutions.

PROZONE – <http://www.prozone.co.rs>

A Software development and consultancy company which is primarily active in providing ECM (Enterprise Content Management) solutions.

PSTECH – <http://www.pstech.rs/>

Established in 1996 PSTech provides advanced software development services and fully integrated ICT business solutions. The company also has created the biggest regional center of excellence for software testing.

GISDATA – <http://www.gisdata.co.rs/>

One of the leading companies for international applications of Geographic Information Systems - GIS

ASYSTEMS – <http://www.asystems.rs/>

A company for IT System Integration and Engineering

ADDITIONAL COMPANIES

More companies can be found at: <http://www.yellowpages.rs/en/computers-and-internet/6-5/k>

D. ACADEMIC PROGRAMS

UNIVERSITY OF NOVI SAD

- a) Faculty of Technical Sciences - <http://www.ftn.uns.ac.rs/english>
- b) Faculty of Sciences - www.dmi.uns.ac.rs

UNIVERSITY OF BELGRADE - http://www.bg.ac.yu/en_index.php

- a) Faculty of Mathematics - www.matf.bg.ac.rs
- b) School Of Electrical Engineering (ETF) – www.etf.rs

UNIVERSITY OF KRAGUJEVAC - <http://www.kg.ac.rs>

- a) The Faculty of Natural Science and Mathematics - <http://www.pmf.kg.ac.rs/>
- b) The Faculty of Mechanical Engineering in Kragujevac - <http://www.mfkg.rs/eng/>

UNIVERSITY OF NIS - <http://ban.junis.ni.ac.rs/index2.htm>

- a) Faculty of Electronic Engineering –<http://en.elfak.ni.ac.rs>
- b) Faculty of Sciences - http://www.pmf.ni.ac.rs/pmf/studije/odsek/odsek_matem.php

METROPOLITAN UNIVERSITY

Faculty of Information Technology (FIT) - <http://www.fit.edu.rs/en/home/index.dot>

Within the framework of FIT there is a centre for professional development of human capital in the field of ICT, called Pro Academia. - www.proakademija.rs

RACUNARSKI FAKULTET (RAF, SCHOOL OF COMPUTING)

It was established by the private company CET – Computer Equipment and Trade, as an upgrade of their vocational training in the field of ICT. RAF was set-up in 2003, as a part of the Union University and focuses on information technologies and computer sciences within several programs at Bachelor, Master and PhD level. RAF publishes an electronic scientific journal entitled “e-RAF Journal on Computing” and is involved in publishing “Computer Science and Information Systems” (ComSIS), an international journal sponsored by the Ministry of Science and Technology Development of the Republic of Serbia. - www.comsis.org

MIHAJLO PUPIN TECHNICAL FACULTY IN ZRENJANIN – www.tfzr.uns.ac.rs

Department of Computer Sciences

ADDITIONAL INFORMATION

For more information on ICT education in Serbia you can see - <http://www.krstarica.com/eng/catalog/Science/Organizations/>

E. STATE AGENCIES AND ORGANIZATIONS

MINISTRY OF TELECOMMUNICATIONS AND INFORMATION SOCIETY - <http://dev.mtid.gov.rs>

The (MTIS) is a relatively new ministry which has been established in order to regulate government duties in the spheres of telecommunications and information technology. Some of the goals that the ministry is planning to achieve include synchronization with EU regulations, more effective application of the Law on Telecommunications, introduction of new electronic services, more effective legal framework and law implementation, improvement of ICT education, support and development of the Serbian ICT market and implementation of e-government projects.

The Ministry of Telecommunications and Information Society has started a number of projects cooperating with other Ministries or public sector agencies, but also with international development organizations and the private

sector. The projects on e-Governance⁸ (in cooperation with the National Information Technology and Internet Agency) and Digital School⁹ (in cooperation with primary schools) are worth mentioning.

AGENCY FOR FOREIGN INVESTMENTS AND EXPORT PROMOTION - www.siepa.gov.rs

The Serbia Investment and Export Promotion Agency (SIEPA) is a government organization which actively supports prospective and existing foreign investors with research and resources in order to successfully execute investments in Serbia.

NATIONAL INFORMATION TECHNOLOGY AND INTERNET AGENCY – www.rzii.gov.rs

The National Information Technology and Internet Agency (NITIA) is a professional organization which is responsible for the development and implementation of e-Government services. The agency also provides support and supervises the realization of the public administration reform. The Agency has administrative responsibilities in the field of application of information and communication technologies in public authorities, self-government bodies and public services, regulated by laws and other regulations.

One of the objectives of the Agency is to transform public administration into e-Administration.

REPUBLIC AGENCY FOR ELECTRONIC COMMUNICATION (RATEL) - <http://www.ratel.rs/>

The Agency was established under the Electronic Communications Law as an independent public organization. The main goals of the Agency are to: regulate and monitor the activities in the ICT sector, to encourage and support the market competition of electronic communications networks and services, improvement of network capacity and quality of IT services, and to establish conditions for efficient implementation and promotion of the telecommunications policy in the Republic of Serbia.

MINISTRY OF SCIENCE AND TECHNOLOGICAL DEVELOPMENT- <http://www.nauka.gov.rs/eng/>

The Ministry of Science and Technology Development (MSTD) has prepared the Strategy for Scientific and Technology Development of the Republic of Serbia for the period 2010 – 2015¹⁰. Among the achievements of the Ministry is the implementation of a funding program for scientific research in the period 2006-2010, and the organization of a national competition for the best technological innovation. The Ministry is also in charge of the coordination of the Seventh Framework Programme of the European Union for Research, Technological Development and Experienced Activities. It has taken part in a number of initiatives funded by FP6 and FP7 among which SEE-ERA.NET, WBC-INCO.NET, ERA Western Balkans, and the ICT Policy Support Programme, funded under the EU Competitiveness and Innovation Programme (CIP).

ICT INSTITUTE 'MIHAILO PUPIN' - <http://www.pupin.rs/>

ICT Institute Mihailo Pupin (IMP) is state-owned enterprise which provides a full range of products, services, and IT solutions. It is the leading Serbian R&D ICT institution, as well as the biggest and the oldest ICT institute in Southeastern Europe. It was established in 1946. Among the services that the institute offers are customized IT solutions, hardware & software outsourcing, technology consulting, engineering, prototyping, and system design & integration.

VOJVODINA INVESTMENT PROMOTION FUND - www.vip.org.rs

VIP is a regional investment promotion agency established and funded by the Parliament of the Autonomous Province of Vojvodina. The main goal of the agency is to facilitate the inflow of foreign direct investments by providing full assistance and advisory services to foreign investors that wish to locate their business in the region of Vojvodina, thus supporting the economic development and local competitiveness of the region.

⁸ www.euprava.gov.rs

⁹ www.digitalnaskola.rs

¹⁰ The strategy is available for download at the MSTD website:
http://www.nauka.gov.rs/eng/images/stories/vesti/Strategy/serbian_rd_strategy.pdf

F. NATIONAL STRATEGIES AND POLICIES FOR ICT DEVELOPMENT

In March 2011 the **DIGITAL AGENDA ADMINISTRATION** (<http://www.mtid.gov.rs/#>) was set up as part of the Ministry of Culture, Media and Information Society. It assists the completion of projects from the information and electronic sectors, such as digital cabinets, which are part of Digital Schools, and development of e-administration portals. Former Minister of Telecommunications and Information Society Jasna Matic, who will be in charge of the Digital Agenda, pointed out that the Administration, was created to give weight to the telecommunications sector and harmonize it with the EU regulations. Matic said that the Digital Agenda is a basic strategic document that consists of the Strategy of Information Society and the Strategy of Electronic Communications. As part of the Digital Agenda, there are projects that will contribute to a higher level of normalization in Serbia, greater use of information and communication technologies (ICT), and harmonization with the EU standards, she explained.¹¹

The **STRATEGY FOR E-GOVERNMENT DEVELOPMENT** together with the Action Plan for its implementation in the period from 2009 to 2013 set out the objectives of the strategy, which is expected to allow more efficient and effective operation of administrative bodies and public authorities in the provision of public services to citizens, companies and other organizations. Other strategic documents defining the priorities in the field of e-government are the *Strategy for Development of Information Society in Republic of Serbia to 2020* and the *Strategy of Scientific and Technological Development of Serbia 2010-2015*. The guidelines for improvement and modernization of the statistics system in Serbia are defined in the *Development Strategy of the Official Statistics in the Republic of Serbia 2009-2012*.

The **STRATEGY FOR DEVELOPMENT OF ELECTRONIC COMMUNICATIONS** (2010-2014) indicates that the development of electronic communications in the Republic of Serbia should provide open broadband access available to everyone, effectively removing barriers to new standards, products, types of services and conditions of service delivery in the field of electronic communications, as well as the transition from analogue to digital broadcasting of television programs. The Strategy stresses on the importance of comprehensive progress in the field of electronic communications, indicates the obstacles to the development of electronic communications and thereby defines directions for overcoming these obstacles.

In line with the **ACTION PLAN OF THE TELECOMMUNICATIONS STRATEGY**, the Ministry of Telecommunications and Information Society has adopted the **STRATEGY FOR SWITCHOVER FROM ANALOGUE TO DIGITAL BROADCASTING OF RADIO AND TELEVISION PROGRAMS**. The rules on switchover from analogue to digital broadcasting of television programs and multiplex access in digital terrestrial broadcasting have been finalized and adopted in the document. The Strategy's media plan will arrange the most suitable way of informing citizens, broadcasters, equipment manufacturers and other interested parties about the digitalization process in the Republic of Serbia, and prepare an estimated budget, including potential costs for the implementation of the media campaign.

The **NATIONAL BROADBAND STRATEGY** and its Action Plan were adopted by the Government in 2009. The Strategy aims to promote competition between all communications networks, to improve service and content provision in networks, to increase broadband demand, and to further develop and improve the special measures in fields with no adequate demand for commercial broadband supply. One of the goals of the National Broadband Strategy is to increase the number of broadband subscribers, lower prices and improve the regional availability of broadband services. According to the Strategy, introducing special measures for fostering the development of the broadband infrastructure (access network) in the underdeveloped regions of the country will lead to a decrease of the digital divide in the Country.¹²

In June 2010 the internet portal of Serbia's e-administration was activated. Through the portal companies and citizens would be able to obtain over 50 different documents which are under the jurisdiction of the public

¹¹ <http://www.srbija.gov.rs/vesti/vest.php?id=74668>

¹²

http://www.seio.gov.rs/upload/documents/dacu/needs_of_the_republic_of_serbia_for_international_assistance_in_the_period_2011_2013.pdf

administration. Payments to the treasury and tax administrations also can be made via the portal www.euprava.gov.rs.

In November 2010 the Deputy Prime Minister for European Integration and Minister of Science and Technological Development Bozidar Djelic said that Serbia is planning to invest €15 million in the creation of four information incubators, while €8 million will be invested in the supercomputer in Block 39 in New Belgrade. 'Opening a regional forum for advancing research in the information and communications technologies (ICT) sector, Djelic confirmed that Serbia has provided €400 million of extra-budgetary funds for investment in scientific and technical infrastructure. He recalled that in March 2010 a loan agreement for €200 million was signed with the European Investment Bank whereas in the end of 2010 Serbia signed an agreement with the Council of Europe Development Bank for a €35 million loan and €23 million has been granted to Serbia from IPA pre-accession funds. In the 21st century ICT is the cornerstone of competitive development. Therefore Serbia as a country without significant natural resources must take advantage of its human resources potential in order to become an important factor in the global science and technology, asserted Djelic.'¹³

The most significant advancement in the field of research and development is the adoption of the **STRATEGY FOR SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT** of the Republic of Serbia for the period 2010-2015¹⁴. The main goal of the Strategy is that by 2014 investments in science will reach 1% of GDP, not counting infrastructure investments. Currently, investments in science in Serbia are not more than 0.3% of GDP. The Strategy also aims at reorganization and capacity-building of the R&D institutes in Serbia, as well as to invest €300 million in infrastructure.

Seven national priorities have been identified within the Strategy, among which information and communication technologies as well.

The importance of Research and Development in the area of ICT and the necessity of further development of ICT infrastructure, e-Government, e-Education, e-Health and e-Business have been taken into consideration in the **STRATEGY FOR THE DEVELOPMENT OF AN INFORMATION SOCIETY (2006)**.

Serbia has also been included in the Seventh Framework Programme (FP7) as an associated country since 2007.

G. DONOR PROGRAMS IN THE IT SECTORS

The development of the ICT sector is an area where the government has focused a lot of attention. The main donors and business support programs that have made the most important contributions to the Serbian ICT sector and the software development segment in particular are:

GIZ

GIZ (former GTZ) has elaborated an extensive program in support of the Serbian ICT sector. The activities are focused on the creation of an ICT Cluster, export promotion in Germany and capacity building for IT associations. In 2010 GIZ supported efficiently the process of creation of the ICT Net Cluster in Serbia. GTZ/WBF is also in a close cooperation with the Ministry of Economy and Regional Development of Serbia, SIEPA and the Serbian Chamber of Commerce. Serbian software companies also have been encouraged and supported by GTZ/WBF to take part in important trade fairs such as CeBIT, Embedded World, SYSTEMS, etc.

Apart from organizing B2B events with German stakeholders GIZ was also active in supporting Serbian IT industry by publishing the catalogue "ICT Directory of Serbia 2009", which includes information about Serbian ICT companies and an analysis of the IT sector in Serbia.

Additionally, GTZ/WBF has had a significant role for the implementation of the CMMI quality standards within Serbian IT companies.

¹³ <http://www.srbija.gov.rs/vesti/vesti.php?id=71454>

¹⁴ http://www.nauka.gov.rs/eng/images/stories/vesti/Strategy/serbian_rd_strategy.pdf

USAID

The US is Serbia's largest bilateral donor. USAID coordinates its work closely with the Government of Serbia, other bilateral and multilateral donors and international financial institutions some of which include Germany, Sweden, Canada, and the United Kingdom.

USAID, together with the OSCE (Organization for Security and Co-operation in Europe) Mission in Serbia, the Canadian International Development Agency (CIDA) and the Canadian Executive Services Organization (CESO) supported Serbia in the opening of its first Business Incubator center in Knjazevac. The BIC's mission is to provide small enterprises working within the manufacturing and production business arenas, with a comprehensive set of services such as business support services, clustering and networking opportunities, strategic guidance from industry experts, and operational space and assistance.¹⁵

The USAID Competitiveness Project, a four-year, \$14.7 million initiative launched in October 2007, aims to promote economic growth by substantially increasing the competitiveness of Serbian private enterprises. The project identified seven sectors with the greatest potential to compete in international markets, including ICT. USAID is supporting key Serbian software enterprises to participate in important global IT fairs in order to build capacity and gain international competitiveness. The ICT Training and Certification Program project of USAID is actively exploring ways to enhance Project Management trainings and certification of employees in Serbian companies.¹⁶

In January, 2011 the Novi Sad Business Incubator supported by USAID opened its doors to its first tenants. 'The main goal of the business incubator is to help companies get the jump-start they need to become economically viable. "Through USAID, we have worked in partnership with city officials to develop a comprehensive and strategic vision for the economic growth of Novi Sad. The business incubator we open today is part of the implementation of that vision", said Ambassador Warlick at the inauguration. The Vojvodina ICT Cluster and the European Entrepreneurship Network will also have their offices within the Incubator and provide services for the faster development of the companies. The project was funded by USAID, the Austrian Development Agency (ADA) and the Autonomous Province of Vojvodina through its Secretariat for Economy with 7.9 million Dinars.'¹⁷ The website of the Incubator <http://www.businessincubatorns.com/> is not yet available in English.

In May, 2011 the USAID Business Enabling Project was officially opened at a ceremony organized in the Belgrade City Assembly. This is a \$16.7 million, five year initiative aimed to provide technical assistance, trainings, and other support to improve the business enabling environment, maintain macroeconomic stability, and further develop financial markets. All project activities are based on the priorities of the private sector and the Serbian Government.¹⁸

EU

Support to Enterprise Competitiveness and Export Promotion (SECEP) - www.secep.rs

SECEP is an EU Instrument for PreAccession Assistance (IPA) Technical Assistance Project, which seeks to improve the competitiveness of Serbian SMEs through Cluster Development, Supply Chain Development and Promotion of Serbian SMEs and development of their export abilities.

Initial Strategic Research Agenda: "ICT Research Priorities for Serbia, 2007-2013"

The project is funded by the European Commission under the "Information Society Technologies" Thematic Priority of the 6th Framework Programme for Research and Technological Development. The main objective of the Agenda is to contribute to the establishment of a future EU-Western Balkan research co-operation, through relevant EC research policies and funding programs (e.g.FP7 ICT work-programs).¹⁹

¹⁵ http://www.usaid.gov/locations/europe_eurasia/press/success/business_incubator_center.html

¹⁶ <http://www.compete.rs/?q=en/about/competitiveness-project>

¹⁷ <http://serbia-montenegro.usaid.gov/code/navigate.php?id=846>

¹⁸ http://www.bep.rs/english/news_2011_05_31_en.php

¹⁹ http://consultations.score-project.eu/attach/sra_rs_en.pdf

THE FUND FOR OPEN SOCIETY (FOS)

FOS Serbia, part of the international Open Society Institute has an IT program which provides grants to public sector entities, universities and non-governmental organizations to run projects closely connected with the priorities of the Program. The main goals of the Program are:

- Harmonization of the objectives of the domestic information policies with the Lisbon Agenda and the Electronic South Eastern Europe (eSEE) Initiative;
- Participation of stakeholders and the public in decision-making processes related to the development of an information and knowledge-based society;

Use of information and communication technologies (ICT) with the objective of developing a knowledge-based society, founded on inclusion, rule of law, accountability, civic participation, control of public authorities and openness towards diversities.²⁰

H. EXHIBITIONS, CONFERENCES AND EVENTS

The major events held in Serbia in 2011 are:

- 6th March – 9th March, 2011
YU INFO
<http://www.e-drustvo.org/yuinfo/en/About.html>
- 6th April – 8th April, 2011
E-trgovina 2011 - eBusiness Conference
<http://www.etrgovina.org/ebusiness-conference/>
- 19th April, 2011
ICT – Business Innovation Driver
<http://www.vojvodinaictcluster.org/ict-business-innovation-driver/>
- 9th May – 13th May, 2011
55th International Fair of Technique and technical achievements
www.beogradskisajamtehnike.rs
- 31st May – 2nd June, 2011
INFOTECH – 26th International Conference & Exhibition
www.infotech.org.rs
- 1st June, 2011
itSMF SEE 2011
<http://www.itsmf.org.rs/drupal/>
- 6th June – 9th June, 2011
55th ETRAN Conference, Banja Vrućica (Teslić)
http://etran.etf.bg.ac.rs/index_e.html

As a result of the conducted desk research, it could be concluded that it's hard to find any current and valid information about forthcoming IT events in Serbia.

I. IT NEWS: SOURCES OF INFORMATION

- Computer world - Online edition of PC magazine: tests, games, new software. <http://www.sk.rs/>
- Internet Mirror - First Yugoslav monthly magazine about Internet. <http://www.internetogledalo.com/>
- InfoReview – Magazine of JISA- Union of ICT Societies Serbia. <http://www.inforeview.biz>

²⁰ <http://www.fosserbia.org/programs/>

- Personal Magazine – web-based IT magazine - www.personalmag.rs – no English version available.
- Magazine "Digital Art"- Oriented to digital Art and Culture: cyber culture, design, design and photography, web design, PhotoShop. <http://www.digitalarts.co.rs/>
- Mikro - PC World - Popular computer magazine whose Internet edition you can see on this page. <http://www.mikro.rs>
- mikroElektronika online- Magazine for applied electronics, automation, industrial electronics, programming, new technologies, hardware and software. <http://www.mikroe.com>.
- PC Press- Private computers magazine with new, actual and educational contents and information connected with computers, internet and advanced technologies. <http://www.pcpres.co.rs>
- SciTech- Monthly magazine dedicated to the scientific, technological, philosophical and research breaks in all areas of our planet. <http://www.sgi.co.rs>
- e-RAF Journal on Computing - an electronic scientific journal which is published by School of Computing, University Union, Belgrade. e-RAF JoC has the main objective to support the research development in the area of computing, by becoming an important collection of current achievements, technologies and services in the area. <http://joc.raf.edu.rs/>
- Telekomunikacije - electronic version of the magazine TELEKOMUNIKACIJE published by the Republic Telecommunication Agency (RATEL). <http://www.telekomunikacije.rs/about.123.html>

ADDITIONAL INFORMATION

More Serbian sources of information and IT media can be found at

<http://www.krstarica.com/eng/catalog/Media/Magazines/> and <http://www.abyznewslinks.com/yugos.htm>

III. IT FOR OTHER INDUSTRIES IN THE COUNTRY

Despite the low level of software deployment in Serbia compared to the rest of the European countries there is a growing awareness among Serbian companies concerning the beneficial influence of IT usage for the business development, achievement of higher efficiency and strong positions on local and international markets. The number of companies increasing their investments for IT implementation in order to improve their business communication, manufacturing processes modernization and capacity building is steadily growing.

Serbian companies are not specializing in any particular product niche and operate in a number of sectors and categories. However, in recent years, the ICT development in Serbia shows strong ambitions leading to further progress. It is planned to develop a more competitive mobile industry, competitive ISP sector and strengthening the software development sector which would respectively contribute to the overall growth of the different sectors of Serbian economy.

A few Serbian companies are presented on the web platform IT2Business (www.it2business.org), an online catalogue with successful practices and Information Technology (IT) solutions for the business, aimed at increasing the ICT competitiveness in Eastern Europe and Caucasus. The platform is designed and launched by the USAID funded RCI (Regional Competitiveness Initiative) project through the European Software Institute - Center Bulgaria/Eastern Europe. It fosters the direct contact between the IT and other economic sectors. This enables the promotion of the local industry and the region as a whole. Currently there are 51 companies from the region offering 117 products/solutions from which 5 are Serbian companies registered in the platform.

IV. QUALITY TENDENCIES

The web platform Quality2IT (www.quality2it.org) – Eastern Europe Training and Certification Network, provides excellent opportunities to participate in the establishment of a common regional ICT brand based on high quality and innovations. It is designed and launched by USAID funded RCI (Regional Competitiveness Initiative) project through European Software Institute - Center Bulgaria/Eastern Europe. For the time being there are 19 companies with 90 services registered in the platform. There are 3 Serbian companies registered in the portal.

A. ISO

The Government of the Republic of Serbia issued the Decision for the establishment of the Institute for Standardization of Serbia in February 2007 (originally, it was established on 1946). The Institute for Standardization of Serbia (ISS) is recognized by the Law on Standardization as the only National Standards Body in Serbia. The ISS is an independent non-profit organization responsible for developing and adopting standards. The specific legislative framework for voluntary standardization in the Republic of Serbia is in place and fully operational. The ISS is a full member of ISO and IEC, affiliate member of CEN and CENELEC, and has accepted the WTO TBT Code of Good Practice for the Preparation, Adoption, and Application of Standards.²¹

There is also an office of the quality system registration body TUV Cert (Based in GERMANY) in Serbia established in November 2010 in Belgrade.²²

Over the last few years, GTZ/WBF has been engaged in providing support to Serbian companies in the implementation of the necessary quality standards. EBRD's Business Advisory Services (BAS) Programme in Serbia and SIEPA have also been active in providing financial support to Serbian SMEs for the introduction of the necessary standards.

The website of the United Association of Serbia for Quality (YUSQ), <http://www.jusk.org/>, does not have an English version.

According to a World Bank report from 2010 the ISO certification ownership (% of firms) in Serbia was 21.8 in 2009.²³

B. CMM/CMMI

There are no CMM or CMMI certified companies in Serbia. However some awareness initiatives for promotion of the CMMI methodology have been undertaken and as a result of these activities some Serbian companies, Universities' representatives and other stakeholders became aware of CMMI and the need to implement the latest standards relevant to IT companies.

In 2009 three companies participated in a pilot project for ITMark implementation including Software Engineering Processes based on CMMI, Information Security Processes based on ISO 27000I and General Business Processes. The project was supported by GTZ. Since 2009 four Serbian companies have received ITMark certification.

²¹ www.iss.rs

²² <http://www.tuev-sued.com/serbia/home>

²³ <http://data.worldbank.org/indicator/IC.FRM.ISOC.ZS>

V. SWOT ANALYSIS

The SWOT analysis of Serbian ICT environment generated the following conclusions:

Strengths:

- Serbian companies are aware of the need to implement the latest standards;
- Labor costs are considerably lower than in Western Europe;
- Serbia has qualified human resources – about 70% of the skilled workforce in the ICT sector in Serbia has college degree;
- Good communication networks within the country and externally;
- Presence of leading international ICT companies, e.g., IBM, Microsoft, Oracle, etc;
- Wide-spread fluency in English language and high educational profile of the workforce;
- Companies have key knowledge of emerging markets in the Balkans and the Eastern markets;
- Businesses have language and localization skills for Central and Eastern European and Russian markets;
- The Government has realized the need of faster ICT development in all sectors of the country. The ministries in charge have started a broad range of reforms concerning ICT development;
- Young, vibrant and emerging sector with active, innovative behavior;
- Strong capacity to adjust to new conditions and market demands;
- Proximity advantages when it comes to outsourcing;

Weaknesses:

- Country does not have the image of an IT supplier;
- Outdated products/services;
- Lack of quality certification and development methodologies;
- State and public monopolies in the area of telecommunications, leading to low-quality service and high prices;
- Lack of specialization among ICT companies;
- Lack of international marketing skills and expertise;
- Lack of focused international marketing strategy;
- Company size and resources of many ICT companies are too small for international expansion;
- Lack of project management skills and/or industrial production of software;
- Lack of capital for implementation of new competitive standards which can ensure the potential clients in the quality of the provided services;
- Potential for work sharing in the region is not extensively used;
- Lack of cooperation among companies as well as other stakeholders;

Opportunities:

- Increased understanding of software process improvement methodologies;
- Implementation of world recognized models and practices;
- International competitiveness;
- International growth prospects;
- European Union market potential;
- Partnerships with significant foreign companies can subsequently support the „professionalization“ of ICT companies;
- Strategic alliances with foreign companies to increase exports;
- Clustering with other competitive sectors in Serbia and the region;
- Strengthen business-education links;

- Low penetration of IT/ICT within Serbian business sector makes a good market potential in future;
- Geographical proximity to the European market opens outsourcing potentials;
- The government, line ministries and international development organizations recognize ICT as one of the key sectors;

Threats:

- The industry's representation may remain fragmented;
- Lack of domestic market to enable industry to develop expertise;
- Lack of a coherent industry image;
- "Brain Drain" of leading IT specialists;
- Financial crisis and other instabilities at targeted international and domestic markets;
- Unfavorable policies and regulations as well as non-transparent public procurement system;
- Great inflow of foreign IT companies might seriously hamper the existing IT labor market;
- Social charges as one of the most burdensome types of tax. Since the IT sector is very labor intensive by definition, it is understandable that this is seen as a problem;

CMMI IMPLEMENTATION CAN SUPPORT FOLLOWING OPPORTUNITIES:

- Increased understanding of software process improvement methodologies;
- Implementation of world recognized models and practices;
- International competitiveness;
- International growth prospects. Partnerships with significant foreign companies can subsequently support the „professionalization“ of ICT companies;
- Strategic alliances with foreign companies to increase exports;
- Clustering with other competitive sectors in Serbia and the region;

CMMI IMPLEMENTATION CAN HELP MITIGATE THE FOLLOWING WEAKNESSES

- Country does not have the image of an IT supplier;
- Outdated products/services;
- Lack of quality certification and development methodologies;
- Lack of project management skills and/or industrial production of software;
- Potential for work-sharing in the region is not extensively used;
- Lack of focused international marketing strategy;

For further information please do not hesitate to contact the RCI IT team in ESI Center Bulgaria/Eastern Europe, office@esicenter.bg, tel. +359 2 4899740