

eSSE ICT Sector Country Status Report - Croatia

May 2004

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Document Description and Status

The Purpose of Document:

This document presents the status of ICT sector in Croatia. It gives an overall situation review providing the strategic support to the policy and decision makers for Information Society related national policies and strategies.

Document Description:

The ICT Sector Country Status Report provides a review and analysis of existing policies and strategies impacting ICT sector. It also provides an in-depth analysis of major Information Society Development Pillars including description of ICT Sector related project.

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1. ABSTRACT

Croatia's readiness for information society, presented in this status report, is decreasing the gap on the way to e-Europe. Having created strong environmental conditions for e-developments (legislative, policy, regulations), strong developments of ICT infrastructure and services, creating the climate for decreasing of digital divide, fostering the e-government developments, developing open and competitive economy, as well as implementing ICT in public services (e-education, e-health, e-culture), changing e-Government initiated collaborative shape of ICT intellectual and industrial potential to clustered regional/international potentials, the dynamic (Ambient Intelligence) target year to join e-Europe rank is focused to 2007.

2. INTRODUCTION

2.1. RATIONALE

This document presents the status of ICT sector in Croatia. It is aimed to provide the support to the policy and decision makers for Information Society related national policies and strategies.

The ICT Sector Country Status Report provides a review and analysis of existing policies and strategies impacting ICT sector. It also provides an in-depth analysis of major Information Society Development Pillars including description of ICT Sector related project.

In addition to that, the document sets basic parameters for development of an indicator system for benchmarking status of:

- Internet Readiness
- Digital divides
- Information security
- Digital literacy, learning and training
- E-Commerce
- E-Science
- E-Government
- E-Health
- E-Education
- E-Democracy, and
- E-Culture.

Information and Communication Technology in the Strategy of Development of the Republic of Croatia¹, corresponding National Benchmarking Results², benchmarking

¹ Information and Communication Technology – Croatia in the 21st Century, Government of the Republic of Croatia, 2002

² National Report on Strategy Implementation – Information and Communication Technology – Croatia in the 21st Century 2002-2003, Ministry of Science and Technology, 2003

results of Croatia in the Global Information Technology Report³, National Recommendations⁴ respecting ICT developments, and derived analysis of the Author for the selected countries, are framing the main ICT activities for accelerated development to Information/Knowledge Society.

2.2. THE COUNTRY ICT/IS POLICY AND STRATEGY

The ICT/IS Policy and Strategy of Croatia is explicitly and/or implicitly defined by the following strategic documents:

<i>Strategy of Development of the Republic of Croatia - Croatia in the 21st Century</i>	In April 2000, the Government of the Republic of Croatia started a project entitled Strategy of Development of the Republic of Croatia - Croatia in the 21st Century.
<i>Information and Communication Technology in the Development Strategy of the Republic of the Croatia</i>	<p>One of the nineteen programme objectives focuses on the future role of information and communication technology (ICT) in Croatia's development. In June 2000, the Project Council and programme directors with task forces were appointed to work out specific programme objectives.</p> <p>On its 19th session of 25 January 2002, the Croatian Parliament adopted the paper and recommended its issuance to the Government. The Government reviewed the final draft on 25 May 2002, issued a strategy paper entitled <i>Information and Communication Technology – Croatia in the 21st Century</i>, and defined the responsibilities for the implementation of every strategic recommendation. Government decisions and the text of the paper were published in full in <i>Narodne novine</i>, issue 109/02 (corresponds to the EU Official Journal).</p>
<i>Annual Report and Recommendations on Croatian Competitiveness</i>	The National Competitiveness Council is an advisory body that brings together representatives of business, government, unions, science and education. It was founded in February 2002 by government decision. The initiative to form the council came from private business and the Croatian Employers Association. The Council stimulates dialogue between the private and public sector, raises the level of awareness and knowledge about the importance of competition, develops consensus on major economic issues facing Croatia, analyzes the strengths and weaknesses of the Croatian economy, and recommends and monitors policies that will contribute to long-term sustainable improvement in productivity and the competitiveness of Croatia.
<i>EU Membership Application</i>	<p>In February 2003, Croatian Prime minister Ivica Racan submitted Croatia's application for membership in European Union to the chairman of the European Council. The application was handed over along with resolution on Croatia's joining the EU, adopted by Croatian Parliament in December 2002.</p> <p>After evaluating Croatia's ability to become EU candidate, the Council would make a decision on granting the status and set a date for the</p>

³ Dutta S., B.Lanuin, F.Paua: The Global Information Technology Report - Towards an Equitable Information Society, International Bank for Reconstruction and Development / World Bank / World Economic Forum and INSEAD, 2004

⁴ 55 Policy Recommendations for Raising Croatia's Competitiveness, National Competitiveness Council, Croatia, 2003

	<p>start of negotiations. In case of the best scenario come true, the country would join the Union in 2007 or 2008, together with Bulgaria and Romania.</p>
<p><i>National Programme of the Republic of Croatia for Integration into the European Union (NPIEU)</i></p>	<p>The National Programme of the Republic of Croatia for Integration into the European Union (NPIEU,) as a crucial control mechanism of the Government's activities in the area of European integration, reflects Croatia's readiness to carry out concrete measures in order to reach its priority goals in the process of integration into the European Union.</p> <p>In December 2002 Croatia launched its first National Programme for Integration into the European Union.</p> <p>The key event in relations between Croatia and the European Union in 2003 was undoubtedly the application for full membership. By applying for full membership on 21 February 2003, Croatia formally embarked on the EU accession process. Soon after, on 14 April 2003, the General Affairs and External Relations Council decided to implement the procedure laid down in Article 49 of the Treaty on the European Union and called upon the European Commission to submit an opinion (avis) on Croatia's application. The European Commission prepared a questionnaire required for the avis which the President of the European Commission Romano Prodi officially handed to the Croatian Prime Minister Ivica Račan on 10 July 2003. On 2 October the Croatian Government's answers to the Questionnaire were formally adopted and on 9 October 2003 the Croatian Prime Minister presented them to the President of the European Commission.</p>

3. COUNTRY'S READINESS FOR INFORMATION SOCIETY

Readiness and evidence of progress of Country's Readiness for Information Society in this report are presented by Country's Readiness Assessment for 2001, estimations being done through Government Office for Internet Infrastructure Development, Author's estimation of Readiness for the year 2003, and comparisons of improvements.

In order to identify the signs and dynamics of ICT developments, as well as provide unbiased assessments, Network Readiness Index Rank for Croatia in the Global Information Technology Report for 2003-2004 is used, along by additional comparative analyses.

The result is showing the main improvements of country's readiness in 2003 developed in information infrastructure, internet availability and affordability. Improvements are recorded in networked society and networked economy, with a room for additional accelerated developments. Discrete improvements are achieved in networked learning category.

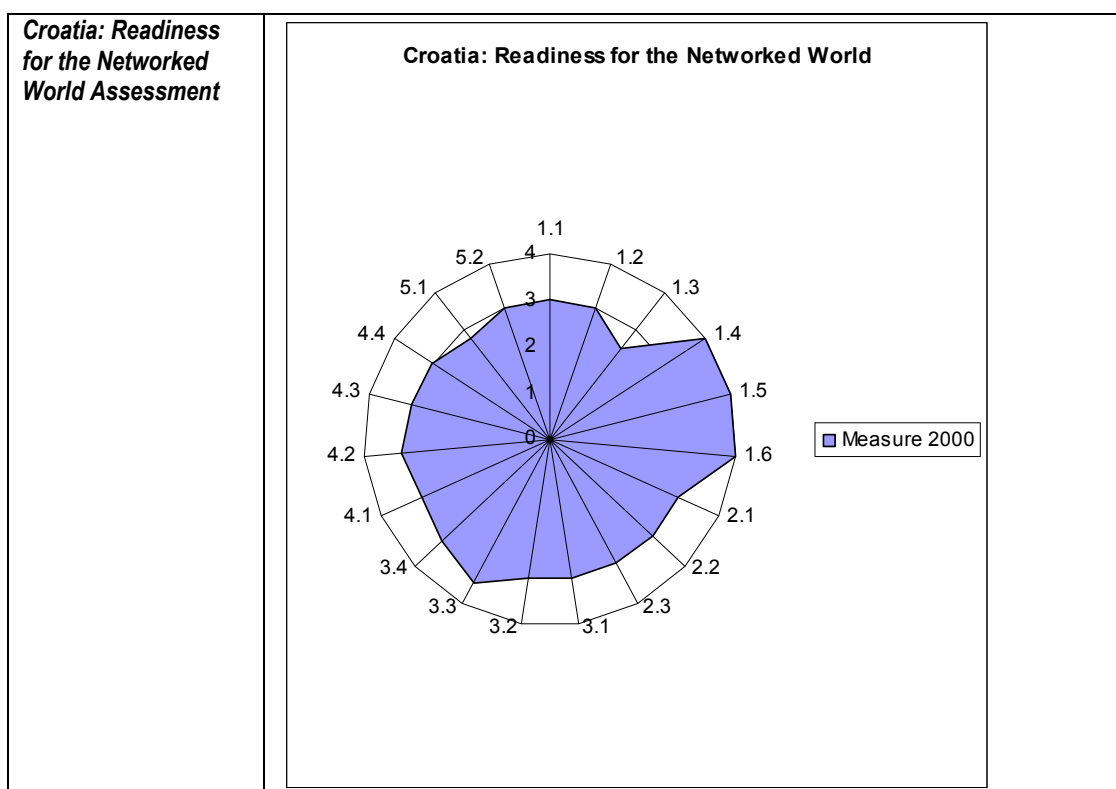
The overall readiness is increased from 3,17 in 2001 to 3,59 in 2003.

Analysis of Network Readiness Index Rank for Croatia is presenting Croatia's transiting dynamics to mid cluster position, together with the EU candidate countries (Czech

Republic, Latvia, Hungary, Slovak Republic, Lithuania, Poland), targeted to take rank in the higher cluster 3 position (Estonia, Slovenia). Here are the results:

3.1.1. COUNTRY'S READINESS 2001

Croatia: Readiness for the Networked World Assessment	Category	Description	Criteria	Measure 2000
	Network Access	Information infrastructure	1.1	3
	Internet availability	1.2	3	
	Internet affordability	1.3	2,5	
	Network speed and quality	1.4	4	
	Hardware and software	1.5	4	
	Service and support	1.6	4	
Networked Learning	Schools' access to ICTs	2.1	3	
	Enhancing education with ICTs	2.2	3	
	Developing the ICT workforce	2.3	3	
Networked Society	People and organizations online	3.1	3	
	Locally relevant content	3.2	3	
	ICTs in everyday life	3.3	3,5	
	ICTs in workplace	3.4	3,2	
Networked Economy	ICT employment opportunities	4.1	3	
	B2C electronic commerce	4.2	3,2	
	B2B electronic commerce	4.3	3,1	
	e-Government	4.4	3	
Network Policy	Telecommunication regulation	5.1	2,75	
	ICT trade policy	5.2	3	
	Average		3,17	



3.1.2. IMPROVEMENTS OF COUNTRY'S RADINESS BY 2003

Croatia: Improvements of Readiness for the Networked World Assessment	Category	Description	Criteria	Measure 2000	Measure 2003
	Network Access	Information infrastructure	1.1	3	3,75
		Internet availability	1.2	3	4
		Internet affordability	1.3	2,5	3
		Network speed and quality	1.4	4	4
		Hardware and software	1.5	4	4
		Service and support	1.6	4	4
	Networked Learning	Schools' access to ICTs	2.1	3	3,3
		Enhancing education with ICTs	2.2	3	3,3
		Developing the ICT workforce	2.3	3	3,3
	Networked Society	People and organizations online	3.1	3	3,8
		Locally relevant content	3.2	3	3,5
		ICTs in everyday life	3.3	3,5	3,8
		ICTs in workplace	3.4	3,2	3,6
	Networked Economy	ICT employment opportunities	4.1	3	3,5
		B2C electronic commerce	4.2	3,2	3,5
		B2B electronic commerce	4.3	3,1	3,3
e-Government		4.4	3	3,5	
Network	Telecommunication regulation	5.1	2,75	4	

	Policy			
	ICT trade policy	5.2	3	3
	Average		3,17	3,59
	<p style="text-align: center;">Croatia: Readiness for the Networked World</p> <p>The radar chart displays 19 measures on a scale from 0 to 19. The 2003 data (maroon) shows scores ranging from approximately 1 to 18, while the 2000 data (blue) shows scores ranging from 0 to 18. The 2003 data is consistently higher than the 2000 data across most measures.</p>			

4. IN-DEPTH DESCRIPTION OF ICT ENVIRONMENT

ICT environment by the end of 2003 has resulted by high degree of EU harmonized ICT related legislation, implementation policies and implemented regulators, sound developments in ICT infrastructure and services, recognized positive internet market trends, indications of existence but conditional decrease in digital divide, stagnation in Government Computer and Communication Network implementations, but initiatives for National Smart Card and Institutional Infrastructure for e-Government implementations. Ongoing national projects and implementations are preparing the ground for new Internet enabled Intelligent e-Services.

National developments in Economy, Competition, Sectoral, Government and Public developments, as the strong forces for ICT implementations, are presented as follows.

4.1. LEGISLATIVE, POLICY AND REGULATORY ENVIRONMENT

The main focus of the national activities in Croatia is to harmonize legal environment and corresponding institutions to European Union's Legal Framework. Here is the list of harmonized ICT related legal environment by the end of 2003.

4.1.1. LEGISLATIVE

Electronic Signature Act	The Electronic Signature Act has been accompanied by the Ordinance on Electronic Signature Certificate Providers Registry (NN 54/02); Ordinance on Qualified Electronic Signature Certificate Providers Registry (NN 54/02); Ordinance on Use and Protection of Electronic Signature and Advanced Electronic Signature, Means for Creating an Electronic Signature, Advanced Electronic Signature and Certification System and Mandatory Insurance of the Qualified Certificate Provider (NN 54/02); and Ordinance on Technical Specifications for Connecting Electronic Signature Certification Systems (NN 89/02), which provide for the registration of unique digital public keys within the national and local governments.
Electronic Commerce Act	<p>The Electronic Commerce Act has been completely harmonized with the Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services in the internal market and with the existing contract law of the Republic of Croatia. However, a law regulating electronic documents, electronic payment and electronic money is still pending enactment.</p> <p>The Ministry of the Economy has prepared the Electronic Commerce Act which sets the legal foundation for removing the distinction between safe e-business administration and classical paper administration. This Act will provide a competitive edge to the Croatian economy and public administration and open the way toward a new technological era in which e-commerce will be a pre-requisite for competition in the world market.</p>
Telecommunications Act	<p>The Telecommunications Act has defined a new legislative framework for the telecommunications market in Croatia, particularly regulating market relations and customer protection.</p> <p>The new Telecommunications Act has introduced modern regulations to an open telecommunications market. It has provided for the establishment of the Croatian Telecommunications Agency - an independent national regulatory agency for telecommunications management. It has also provided for a licensing system, interconnection and network access, cable lease, universal services and user protection, tariff policy and cost assessment, addressing and numeration, and the right of passage.</p> <p>In addition, the Act has defined effective protection of data as well as the means of frequency spectrum planning and management. Despite the provisions stipulating the establishment of the Council of the Croatian Telecommunications Agency, this management body has not yet been formed.</p> <p>New laws related to the information society have been completely harmonized with the EU legislation and protect the interests of the Republic of Croatia using the same mechanisms as those used by the EU to protect its own interests in the international community. All information and communication traffic with the origin and destination in Croatia, as well as the transit traffic is subject to Croatian legislation and the monitoring of information and communication operations is based on the EU principles.</p> <p>A complete regulation of the telecommunications market requires a series of subordinate laws based on the Telecommunications Act. By now two such ordinances have been enacted, the Ordinance on Addressing, Numerating and Charging in Public Telecommunications (NN 177/03) and the Interconnection and Network Access Plan (NN 185/03). The Radiofrequency Spectrum Plan is pending publication in the official journal <i>Narodne novine</i>, and the following regulations are near completion: Ordinance on Telecommunications Services Franchising and Licensing; Ordinance on Telecommunications Services; and the</p>

	Ordinance on Telecommunications Service Fees, other Fees and Payment.
Electronic Media Act	Electronic Media Act, a new legislative framework for the electronic media market in Croatia (NN 122/03).
Technical laws	A group of technical laws (Standardisation Act, Technical Requirements for Products and Conformity Assessment Act [NN 158/03], Accreditation Act [NN 158/03] and Product Safety Act [NN 158/03]) has been completely harmonised with the EU directives, International Organization of Legal Metrology (OIML), international and European standard series EN 45000 and EN ISO/IEC 17000 and international homologation system UN-ECE.
Intellectual property rights	Laws related to the protection of intellectual property rights (Copyright and Related Rights Act [NN 167/03], Patent Act [NN 173/03], Trademark Act [NN 173/03], Industrial Design Act [NN 173/03], Geographical Indications and Designations of Origin of Products and Services Act [NN 173/03], Protection of Topographies of Semiconductor Products Act [NN 173/03]) have been harmonised with the EU directives and international contracts ratified by the Republic of Croatia: The WTO Agreement on Trade- Related Aspects of Intellectual Property Rights (TRIPS Agreement), International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations, Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite, World Intellectual Property Organization (WIPO) Copyright Treaty and the WIPO Performances and Phonograms Treaty, European Patent Convention, Cooperation Agreement between the Government of Croatia and the European Patent Organization, Madrid Agreement Concerning the International Registration of Marks and the related Protocol, the Hague Agreement Concerning the International Registration of Industrial Designs and the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration.
Data Protection Act	The Data Protection Act (NN 103/03) defines the protection of personal information and the control over the collection, processing and use of personal information in the Republic of Croatia. The purpose of this law is to protect privacy and other human rights and freedoms from possible infringement through the collection, processing and use of personal data. In the Republic of Croatia, all persons are entitled to the protection of privacy, regardless of their citizenship, residency, race, sex, language, religion, political and other inclinations, nationality, social background, wealth, birth, social position or other personal traits.
Consumer Protection Act	Consumer Protection Act (NN 96/03). Special emphasis has been done to protection of consumers in the electronic environment.
Right to Information Access Act	The Right to Information Access Act (NN 172/03) regulates the right to access information in the possession and control of public services, defines the principles upon which such access is granted, exceptions to this right, and the means to exercise it and defend it. The purpose of this law is to grant all natural and legal persons access to information controlled by public administration. The work of public administration must be open and transparent in accordance with this and other legal provisions.
Convention on	International relationships in respect to ICT are related to the implementation of

Cyber crime	the Convention on Cyber crime of the Council of Europe, signed by the Republic of Croatia on 23 November 2001 (NN International Agreement 9/2002). This Convention is necessary to deter actions directed against the confidentiality, integrity and availability of computer systems, networks and computer data, as well as the misuse of such systems, networks and data, by providing for the criminalisation of such conduct, the adoption of powers sufficient for effectively combating such criminal offences, by facilitating the detection, investigation and prosecution of such criminal offences at both the domestic and international level, and by providing arrangements for fast and reliable international co-operation.
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4.1.2. POLICY AND INSTITUTIONAL INFRASTRUCTURE

<p>Policy and Institutional infrastructure</p> <p>The Government Office for the Internet Infrastructure Development</p> <p>Central State Office for e-Croatia</p> <p>Ministry of Science and Education</p> <p>Ministry of Maritime Affairs, Transport, and Communications</p>	<p>National ICT policy and implementation is based upon the Section 2.2. strategic documents, harmonized ICT Legal Environment, and the legally defined role of the Government and government and public institutions.</p> <p>The Government of the Republic of Croatia by its Decision of 26 July 2001 (NN 70/01) has established the Office for the Internet Infrastructure Development which has been responsible for developing Internet infrastructure, and especially for: providing technical, human, organizational, legal, security and financial resources for a comprehensive introduction of the Internet in everyday work and life; stimulating and coordinating the building of Internet infrastructure; preparing common standards for the introduction of the Internet into public administration and ensuring modern communication between government bodies and citizens; and the promotion of the Internet use as an integral part of culture and education.</p> <p>The Office has been acting on directions and under the surveillance of the Internet Infrastructure Development Committee, whose members were the vice-prime minister, deputy prime minister, minister of science and technology, minister of European integration, minister of finance, minister of trades, small, and medium-sized enterprises, minister of justice, public administration and local self-government, minister of education and sports, minister of labor and social welfare, minister of the interior, minister of environmental protection and zoning, and minister of health.</p> <p>The Office has had an expert body, the Council for the Internet Infrastructure Development gathering Internet experts who are appointed by the Internet Infrastructure Development Committee.</p> <p>By implementation of the Central Government Office for e-Croatia as well as the Croatian e-Envoy, the Government mission and role for accelerated ICT development in Croatia has been improved.</p> <p>In order to strength administrative capacity, by the end of 2003 Central State Office for e-Croatia has been formed. The Office has taken the mission of predecessor Office, and strengthens the link to e-Europe 2005 strategy and action implementations.</p> <p>The Ministry of Science and Education (former Technology) is responsible for planning, coordination and accelerated development of ICT infrastructure for EU Ambient Intelligence implementations, the interoperability and integration of the information systems for the Information and Knowledge Society in Croatia, and particularly for the implementation of ICT in science and education.</p> <p>The Ministry of Maritime Affairs, Transport, and Communications provide administrative and expert services in telecommunications as the basic national information infrastructure. Communications Department is focused on legal and</p>
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	regulator environment for the new telecommunication market implementations.
Ministry of the Economy	The Ministry of the Economy is responsible for drafting bills and other regulations on the information society which are relevant for the economy, and proposes measures, implements policies, laws and other regulations in that area.
Ministry of Justice, Public Administration and Local Self-Government	The Ministry of Justice, Public Administration and Local Self-Government in co-operation with the Croatian Information and Documentation Referral Agency (HIDRA) drafts new regulations to modernise office administration in the Republic of Croatia and adjust it to the requirements of e-administration and communication in accordance with legal provisions of the EU, on the basis of EUROVOC classification.
Finance Agency	Finance Agency Act (NN 117/01) has established the national Finance Agency (FINA) as the institution which integrates all information and communication infrastructure supporting the systems of state and public finances, registries and information services for public administration, as well as regional and local government. On 23 September 2003, the Government of the Republic of Croatia and FINA signed a contract whereby FINA assumed the responsibility for the support and development of application services and e-government solutions.
University Computing Centre (SRCE)	University Computing Centre (SRCE) Zagreb is the oldest academic institution whose activities include ICT infrastructure building and application. Its role is to build a stable, reliable, well designed and advanced information infrastructure that should meet the requirements of the academic community in Croatia, and to provide efficient and readily available help in the use of this infrastructure and ICT. SRCE encourages co-operation with all participants in information infrastructure building and ICT application in Croatia, especially with the Ministry of Science and Technology and the Croatian Academic and Research Network (CARNet).
Croatian Academic and Research Network (CARNet)	The Croatian Academic and Research Network (CARNet) is a public institution covering the entire territory of the Republic of Croatia, whose responsibilities have been defined by the Government decision (NN 16/95), as follows: the development, construction and maintenance of advanced information and communication infrastructure servicing the academic and scientific community, including a fast and secure network, a variety of programs and services, connection with international organizations and other academic/scientific networks, and the establishment and maintenance of centralized national Internet services such as CIX (Croatian Internet eXchange) – national Internet exchange service and CARNet CERT (Computer Emergency Response Team) – services related to computer network and system security in Croatia. CARNet manages the Croatian top-level domain ("hr") and Internet domain registration within the top-level domain in accordance with the powers invested in it by the Internet Assigned Number Authority (IANA) in 1993 and in accordance with the current custom and world trends, and especially with the Top-level Domain Management Plan. Technical management of the Croatian domain is the responsibility of Zagreb University Computing Centre (SRCE) and its HR-DNS service.
Zagreb Municipality EDP Centre	Shared ICT support for Zagreb Municipality and, in conjunction with FINA, to Ministry of finance for the tax and custom administration, and REGOS – National Social Insurance System.

4.1.3. REGULATORY ENVIRONMENT

Regulators, regulating the new established ICT related rules on the market and society, are implemented in the following areas:

Telecommunication Market	Croatian Telecommunications Agency, an independent national regulatory agency for telecommunications management.
Consumer Market	National Agency for the Consumer Protection. Agency for the Protection of Market Competition Cyber crime Protection Division (within the Ministry of interior).
Personal Data Protection	The Agency for the Protection of Personal Data.

4.2. ICT INFRASTRUCTURE AND SERVICES

4.2.1. ICT – STATISTICAL DATA

Country background information	2000	2001	2002	2003
Population				4.437.460
Area (km ²)				56.542
Urban population (% of total population)				58
GDP (Croatian Chambre of Commerce, billion \$)				27,40
GDP per capita				6.228
GDP growth			5,2	4,7
ICT infrastructure and access				
Telephone mainlines (per 1,000 people)				422
Mobile phones (per 1,000 people)				563
ISDN lines (per 1,000)				62
ADSL services (per 1,000 people)	-	-	+	0,53
Computers and the Internet				

Personal computers (per 1,000 people)	112	136	169	208
Internet users (per 1,000 people)			178	211

4.2.2. ICT INFRASTRUCTURE

Telecommunications	<p>Croatia is at a relative advantage with respect to its neighbors as regards the existing physical infrastructure to support high-speed networking (100% fiber optic backbone network in Croatia). HT- Hrvatske telekomunikacije d.d, have more than 14,000 km of underground cables laid in plastic tubes with the total average of installed capacity of app. 300 000 km of optic cables.</p> <p>Fully 100% of the switches deployed on HT's backbone are digital. HT is connected to DT's extensive European backbone network. This connectivity, coupled with connections to Austria, Italy, Hungary, Slovenia, and the U.S., gives Croatia international connectivity to 35 countries.</p> <p>As of the beginning of 2005, HT-Hrvatske telekomunikacije d.d. will be obliged to provide access to its unbundled local loop, as well as the services of number portability and pre-selection of operators.</p>
New Services	Significant increase of ISDN (42,1% in 2003) and ADSL connections and services in 2003.
Fixed telephony	Differentiated tariff package for fixed telephony implemented in 2003 (Mini Hallo, Hallo Plus).
Mobile communications	<p>HTmobile – reported 1.300.000 customers in 2003. Along to mobile telephony following services are implemented: SMS, WAP, MMS, GPRS, Java support, WLAN, mobile Internet.</p> <p>VIPnet - one of the most successful start-up companies in its field. By the end of the year in 2003, Croatia had a penetration of 55.0% - the Croatian market continues to have growth potential. VIPnet was able to secure 113,000 additional customers in 2003 - in all, more than 1.2 million customers utilize the VIPnet network for their mobile phone services. Croatia is a classical prepaid market, the share of contract customers is 15.4%. Implemented services are: SMS, WAP, MMS, GPRS, Java support, WLAN, mobile Internet.</p> <p>The growth in the data segment was especially influenced by the high SMS usage (73 SMS per customer and month) and the successful m-commerce service VIP.parking, the predecessor of the Austrian m-parking (2.1 million transactions were made using VIP.parking in 2003, which is a 100% increase in comparison to the year 2002).</p> <p>Preparations for 3rd GSM operator and concession for UMTS have been finalized by end 2003.</p>
Internet connections	<p>The dominance of dial-up connection. HT reported 479.422 dial-up connections (71,3% of dial-up market) and 506 subscribed permanent connections in 2003 (36,9% of permanent connections market with the increase of 34,2%).</p> <p>See 4.5.3. for more details.</p>

PKI	Financial Agency (FINA) has implemented Register of Digital Certificates by the end of 2002, and started to issue Smart Card driven Advanced Electronic Signature in July 2003.
<p>Cards, Smart Cards</p> <p>Financial Credit/Debit/Charge Cards</p> <p>National Smart Card Initiative</p>	<p>According to the latest collected data for the state of 30 June 2003 (Croatian Chamber of Economy, Banking and Finance Department), 26 banks and two card houses issued in total 5.149.902 credit and debt cards. The share of credit cards in total number is 21,5% and debits 78,5%. In relation to the same period of the last year the number of cards increased for 26,3%.</p> <p>Total number of cash dispensers is 1.422 (what in relation to the same period of the last year represents growth of 29,7%) while EFT POS terminals were 27.055 (what represents growth of 40,9%).</p> <p>Projects of chip cards application are getting to the end of development and start being applied.</p> <p>Based on Advanced Electronic Signature ...to national...</p>
ISPs	<p>In 2003, the Croatian telecommunications market has consisted of seven ISPs (HTnet, Iskon Internet, Globalnet, VIP Online, Vodatel, Net4U, VM mreže, europroNET).</p> <p>Htnet/Hinet: HThinet launched commercial operations in 1996. The firm operates as an ISP arm of incumbent telecommunications operator Croatian Telecom (HT – Hrvatski Telekom). Besides general ISP services, HThinet provides virtual private networking, Web hosting, domain name registration service, Web advertising (banners), etc. Since June, the firm's business users are offered roaming services for 23 countries. Its official Web portal at moj.hinet.hr counting on average more than 300,000 visits a day. In May, it became the first Croatian Web portal to make content available to hand-held PC and PDA users.</p> <p>HThinet counted more than 350,000 dial-up and a 350 leased line users at the end of 2002. In comparison with the previous year, the numbers increased by 46.7% and 25.9% respectively. The majority of dial-up users were accessing the Internet using subscription-free packages. In June 2002, HThinet introduced pilot version of DSL service. Since November 2002, the service has been offered commercially, but only available in eight major cities in the country. At the end of the year, the firm reported some 1,000 users of the DSL service packages.</p> <p>VIPNet: In 1998 VIPNet, a consortium of Western Wireless (U.S.) and Mobilcom (Austria), won the second concession to provide GSM services in Croatia. Their operations as the first private competitor to HT began in July 1999. Since then they have developed rapidly, with 170,000 subscribers in January 2000, and strong acquisition of market share following the monopoly breakup. By the end of 2003 1.200.000 subscribers were reported.</p> <p>VIPNet offers a WAP as well as Internet portal and Internet Services in conjunction with their mobile cellular service. The company provides a complete schedule of Internet-related services including e-mail, dial-up connectivity, leased lines, wireless technology, server collocation, Web design and Web hosting, and Virtual Private Networking (VPN). They also offer consulting services to business on Web content and development as well as Internet and Intranet strategy and development.</p>

	<p>CARNet - Zagreb University: A regional leader in bringing Internet to Eastern Europe, CARNet was started in 1992. CARNet is a non-commercial, academic ISP owned and funded by the government. The CARNet nationwide backbone, using leased lines and the widearea network (WAN) backbone of HT, connected all academic and research institutions in Croatia. Staff of the Zagreb University Computing Center (SRCE) served as the technical and engineering support for the network.</p> <p>Since December 2001, CARNet has been connected to GEANT, a pan-European academic network connecting some 3,000 research and educational institutions in 30 European countries.</p> <p>In February 2002, it launched a new application for users authorization within system of modem access nodes (called CMU). CARNet's WAN connects 193 locations in 23 major cities in Croatia. It is founded on ATM technology and allows internal traffic at the bandwidth of 155Mbps. The number of access modems doubled year-on-year to 2,160 at the end of 2002. At the end of 2002, CARNet had more than 87,000 dial-up users. Compared to the year before, the number increased by more than 50%.</p> <p>Since September 2000, CARNet manages Croatian Internet Exchange (CIX), a nonprofit service enabling more efficient inter-country Internet traffic (without encumbering international networks). Besides CARNet, other founders of CIX were Croatian Telecom, Iskon, AT&T Hrvatska, VIPnet GSM and Croatian Radio Television. CARNet holds the exclusive right to administer and assign Internet domains within Croatia. Other services provided by the ISP include CCERT Computer Emergency Response, helpdesk, education programs, and Internet related publishing (Edupoint, electronic magazine that aims to increase IT usage in the education sector). It also organizes seminars and conferences.</p> <p>Iskon Internet: Founded in 1997, Iskon Internet was one of the first private challengers to the HThinet's (Croatian Telecom's) monopoly in the ISP area. The company paved the way for Internet connections from any part of the country. The company is 30% owned by local individuals and businesses and 70% owned by foreign investors.</p> <p>In 2002, the total number of connections provided by Iskon surpassed 74,500. In comparison with the year before the number increased by 28.5%. Some 66,850 home and 7,350 business dial-up users together represented 99.5% of the total number.</p> <p>Number of leased-line users reached 316. In September 2002, Iskon started covering the Zagreb area with a fixed wireless network. The project resulted from a feasibility study financed by US Trade Development Agency. By the end of the year, the ISP served 22 FWA users.</p> <p>The company provides a complete schedule of Internet-related services including e-mail, dial-up connectivity, leased lines, wireless technology, server collocation, Web design and Web hosting, and Virtual Private Networking (VPN). They also offer consulting services to business on Web content and development as well as Internet and Intranet strategy and development.</p> <p>Globalnet: The first private ISP in Croatia, GlobalNET launched operations in 1996. Originally, it was a department of BBM, an SME accounting software vendor. GlobalNET has been a commercial ISP since the end of 1997, and in early 1999 became an independent company. In June 2000, venture capital fund Croatia Capital Partnership invested \$5.3 million in the company to acquire a majority ownership stake. Other shareholders include the European Bank for Research and Development and a number of individuals with minor stock shares.</p>
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	<p>At the end of 2002, GlobalNET served some 20,000 dial-up users. As the number of firms and organizations accessing the Internet through the ISP's infrastructure was some 2,300, home clients accounted for majority of the user base. The number of leased lines renters amounted 130.</p> <p>In February 2002, GlobalNET introduced a pilot version of fixed wireless Internet access opportunity, the first Croatian ISP to do so. Commercial operations started in June and the service has been available only in Zagreb. The new service, providing Internet access independent from Croatian Telekom, counted 90 FWA service users.</p> <p>New ISP entrants: Vodafone.</p>

4.2.3. INTERNET SERVICES

<p>Internet Domains</p>	<p>CARNet is the body designated by the Government of Croatia as the official registrar for the Top Level Domain (TLD) namespace of Internet domain names for .hr, the TLD of the Republic of Croatia. The cumulative statistics is presented as follows:</p> <div data-bbox="523 952 1385 1512" style="text-align: center;"> <table border="1" data-bbox="544 1435 1364 1496"> <thead> <tr> <th>Year</th> <th>1992</th> <th>1993</th> <th>1994</th> <th>1995</th> <th>1996</th> <th>1997</th> <th>1998</th> <th>1999</th> <th>2000</th> <th>2001</th> <th>2002</th> <th>2003</th> </tr> </thead> <tbody> <tr> <td># of domains</td> <td>12</td> <td>59</td> <td>73</td> <td>91</td> <td>240</td> <td>781</td> <td>1647</td> <td>2994</td> <td>5631</td> <td>9582</td> <td>14790</td> <td>20711</td> </tr> </tbody> </table> </div> <p>Regarding the registered number of entities in Commercial Court Registry, ones having any recorded economic activity in 2003, it can be concluded that 1/3 of them have some kind of Internet activities. Exponential growth of registered domains shows the growing recognition of ICT and Internet as the Infrastructure for Business and/or Services.</p>	Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	# of domains	12	59	73	91	240	781	1647	2994	5631	9582	14790	20711
Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003															
# of domains	12	59	73	91	240	781	1647	2994	5631	9582	14790	20711															
<p>Internet payments</p>	<p>Financial Sector (Banks, Business Card Companies), with more then 5.100.000 banking cards, is leading the implementation of secure Internet payments.</p> <p>Inter-banking Services Institute (MBU), but the banks themselves, has prepared technology and support for secure Internet payments.</p> <p>New secure Internet payment services are implemented by HT, leader of ISP in Croatia, in the „HTnet Pay Way“ and „HTnet Shopping centar“.</p>																										
<p>mPayment</p>	<p>INA Oil Company – the early bird applying mobile phone based m-payment pilot implementation for gasoline consumers (INA Gasoline Station Zagreb-Miramarska).</p>																										

	<p>Zagrebparking has implemented new system of payments using VIPnet and Htmobile services. VIPnet reported the successful m-commerce service VIP.parking (2.1 million transactions were made using VIP.parking in 2003, which is a 100% increase in comparison to the year 2002). Innovative implementations have attracted the interest of cities as Wien, London, and many large cities of the world.</p>
i-Banking	<p>The whole banking sector in Croatia has been implemented Internet Banking for private and corporate customers as one of the distribution systems for their services.</p>
e-Commerce	<p>Due to respective developments of electronic card business in Croatia (and the first implementations of Smart cards), connected with electronic payments, B2C e-Commerce component is achieving strong economic and professional shape.</p>
Aggregate revenue	<p>An IDC survey of the 2002 B2C market indicated that the aggregate revenue totaled at around \$9. million. Tourist agencies generated the most revenue in 2002, around \$3.03 million, which translates to about 60% of the total B2C market revenue in 2002. This sum was generated in about 32,000 transactions, with the customer base consisted mostly of foreign tourists.</p> <p>Online computer shops generated about \$1.1 million in 2002, about 25% of the total 2002 B2C market revenue. Online bookstores in 2002 made up around 7% of the B2C market, generating revenue of around \$0.4 million in about 17,560 transactions. Online shops for electronic and electric household appliances and accessories make up about 4% of the 2002 B2C market. They have generated revenue of around \$0.2 million in more than 6,000 transactions. Sales of consumer goods online did not prove all that successful, constituting only about 4% of the total 2002 B2C market share.</p>
B2B Market	<p>Croatian B2B market segment still remains quite underdeveloped in comparison to other Central European countries. Major initiatives are needed to drive the market forward in the following years and have yet to be undertaken. However, there are several exceptions in the B2B market segment.</p> <p>Resulte for the 2003 are showing progressive growth rates.</p>
National contest	<p>4th VIDI organized competition with more then 1500 sites, in which the entrants demonstrate their potentials and implemented skills, has been organized. Winners in all ten categories were presenting up-to-date e-commerce functionalities. For 2004 contest more then 2400 applications are submitted.</p>
Online travel agency	<p>In 2003, Croatia's largest online travel agency, adriatica.net, recorded the figure of 33.788 guests who have booked their holiday accommodation via adriatica.net's web pages, an increase of 30% compared to 2002. During high season, adriatica.net's web site was visited by over 15.000 new users daily. Besides regular accommodation quality control, in 2004, adriatica.net is planning to offer its guests an even more extensive offer of skiing, cruises, as well as other tourist products. Guests will, as up till now, have at their disposal our Customer Service in 12 languages, 365 days per year</p>

4.2.4. INTERNET MARKET

e-Business in Croatia (in mil. USD)	Progressive growth rates are shown as follows:
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Market segment	2002	2003
B2C	4.92	9.82
Increase		99.6%
B2B End user	2.22	4.49
Increase		102.3%
B2B Process	42.10	85.41
Increase		102.9%
B2B Total	44.32	89.90
Increase		102.8%
Total	49.24	99.72
Increase		102.5%
Market ratio (%)	2002	2003
B2C	10.0%	9.8%
B2B End user	4.5%	4.49
B2B Process	85.5%	85.6%
E-commerce per capita (in mil. US\$)	2002	2003
B2C	1.12	2.23
B2B End user	4.49	0.50
B2B Process	9.57	19.41
Total	11.19	22.66

Source: IDC, 2003

There is strong evidence of growing e-business market in Croatia.

Anticipation of eCommerce

2002 did ring a breakthrough to the Croatian ecommerce market. Increased government interest in Internet-related area resulted with passing of electronic signature act and starting a project of enabling national PKI Infrastructure in Financial Agency. Passing of other necessary elements of legal framework were scheduled for 2003, including the consumer protection act. The developments, together with expected favorable movements in the country's economy will bring a stronger growth to Croatian ecommerce market. Consequently, IDC anticipates that the total value of eCommerce transactions will be increasing at a CAGR of 71.4% during the forecasted period ending in 2007.

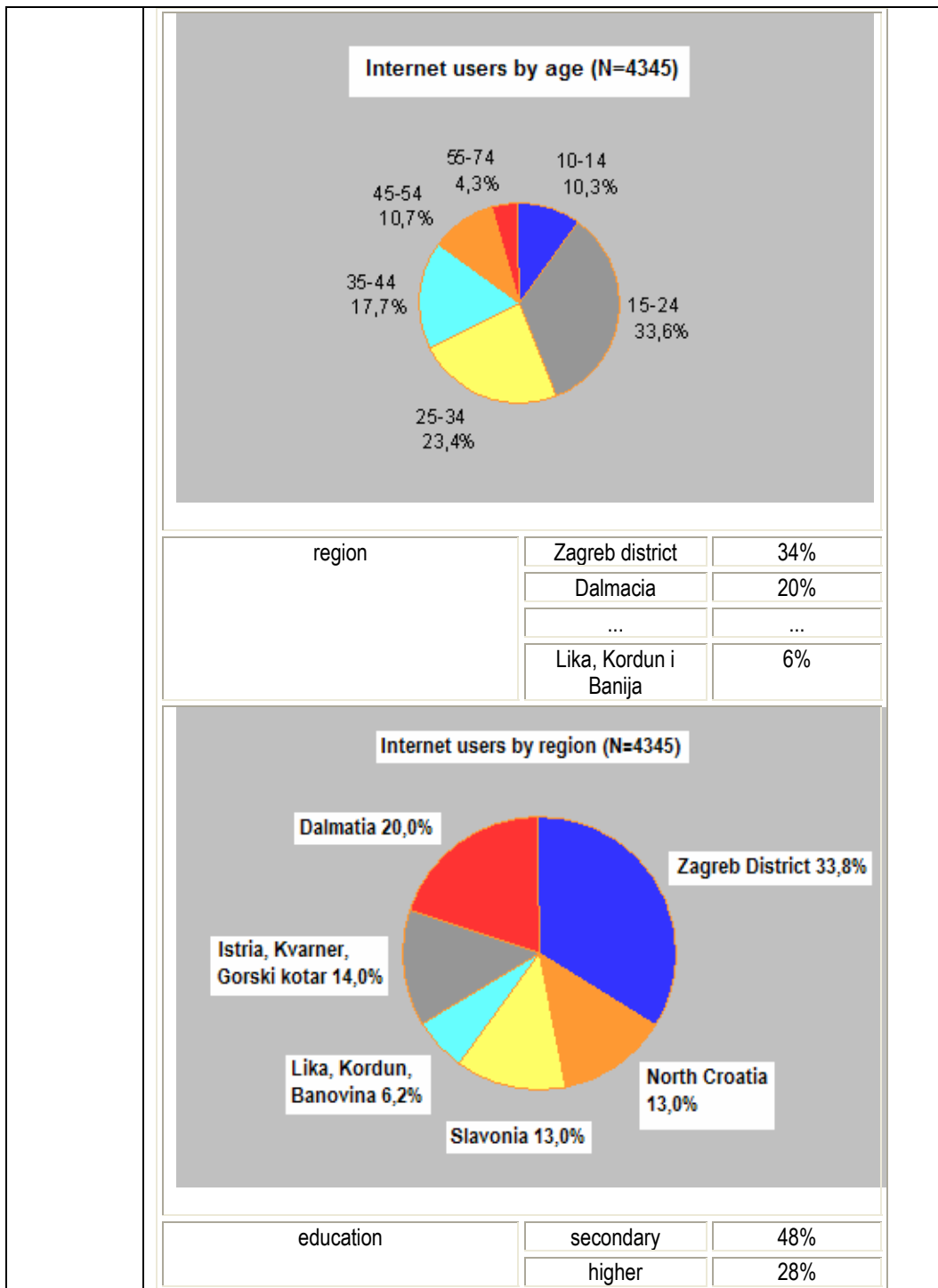
The B2B market is expected to witness stronger growth than in the overall market, with a CAGR of 71.5% through 2007. Growth will be driven mainly by large local companies' investment in connecting their business cycles. One of the large B2B initiatives is announced for 2003 includes deployment of B2B application connecting Podravka food industry and largest local retailer Agrokor. The B2C segment is forecasted to exhibit a CAGR of 70.1% in the mid-term. The greatest impact on this market segment is expected to come from online retailers selling their products to foreign customers. This primarily applies to online tourist agencies, offering accommodation arrangements to Eastern and Western European tourists, as well as Web shops selling books, souvenirs and other national content related products to large number of Croatian expatriates living in Western Europe and North America.

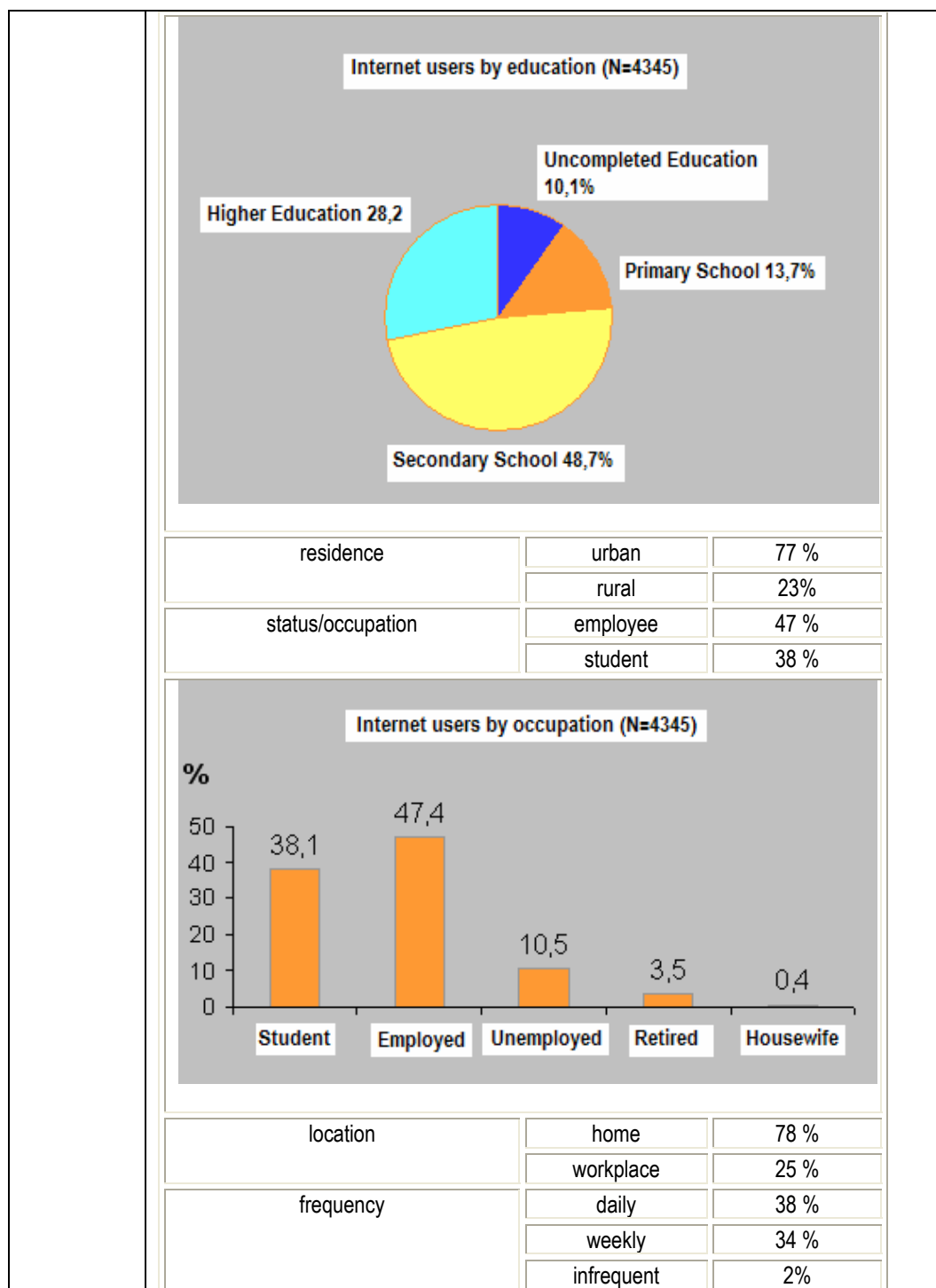
4.3. DIGITAL DIVIDES

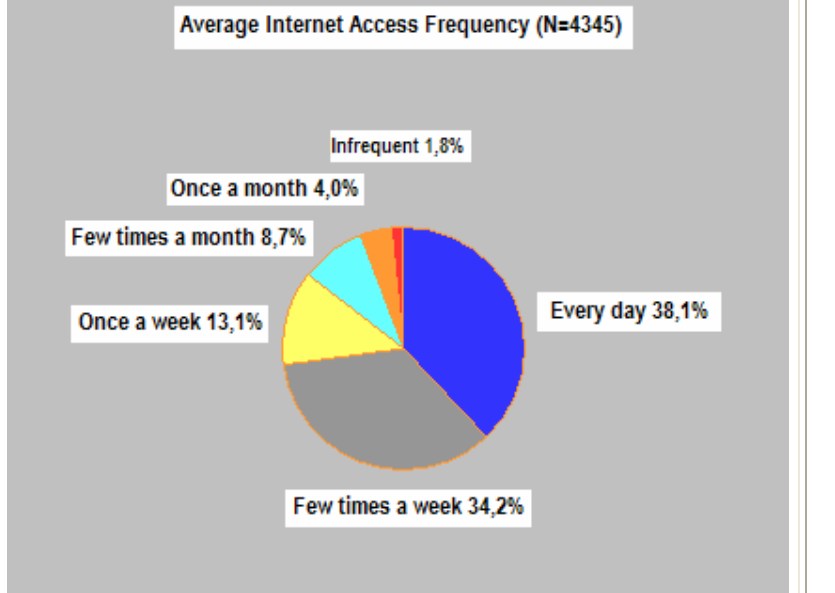
4.3.1. INTERNET ACCESS AND USAGE

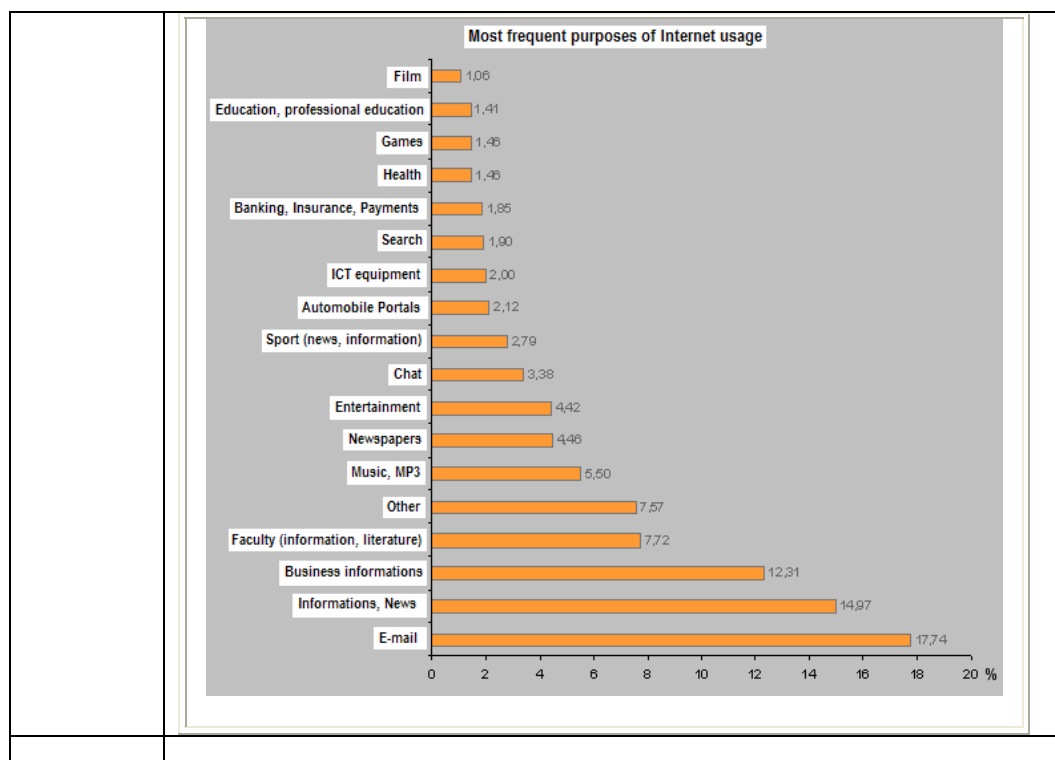
Internet Access and Internet usage (Source: GfK Croatia)	2002	2003
	Internet Access (Population 10-74 years)	1.050.000
Internet Users		935.000

2003)				
Internet Access and Usage by Households (Source: GfK Croatia 2003)		2002	2003	
	Access to Internet from Household	19%	27%	
	Connection to Internet from Households			
	Zagreb district		35%	
	Istria & Kvarner		32%	
	PC - in households	29%	37%	
	Zagreb district		48%	
	Istria & Kvarner		41%	
	Slavonia		29%	
	Lika, Kordun, Banovina		28%	
	PC owners by Household Income Category		Low – 7% Medium – 26%-40% High – 70%	
	Printers - in households	19%	25%	
	Households having Mobile Phone	69%	81%	
	Dalmatia		87%	
	Istria		86%	
	Zagreb		84%	
	Mobile Phone owners by Household Income Category		Medium – 90%-97% High – 100%	
	Distribution of Internet users (Source: GfK Croatia 2003)	Distribution by...	Category	Percentage
		sex	male	56 %
female			44 %	
age		15 - 24	34 %	
		25 - 34	23%	
		
		55 - 74	4%	





	<p style="text-align: center;">Average Internet Access Frequency (N=4345)</p>  <table border="1"> <caption>Average Internet Access Frequency Data</caption> <thead> <tr> <th>Frequency</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Every day</td> <td>38,1%</td> </tr> <tr> <td>Few times a week</td> <td>34,2%</td> </tr> <tr> <td>Once a week</td> <td>13,1%</td> </tr> <tr> <td>Few times a month</td> <td>8,7%</td> </tr> <tr> <td>Once a month</td> <td>4,0%</td> </tr> <tr> <td>Infrequent</td> <td>1,8%</td> </tr> </tbody> </table>	Frequency	Percentage	Every day	38,1%	Few times a week	34,2%	Once a week	13,1%	Few times a month	8,7%	Once a month	4,0%	Infrequent	1,8%
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<p>Average Internet Access Frequency</p>															
<p>Services and Purposes in Internet usage (Source: GfK Croatia 2003)</p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Main services of Internet usage :</p> <ul style="list-style-type: none"> e-mail Information/News Business Information Information for school, faculty, education Music, MP3 Journals/Magazines Entertainment Chat Sport – information / news </td> <td style="width: 50%; vertical-align: top;"> <p>First 5 most popular web pages:</p> <ul style="list-style-type: none"> www.iskon.hr www.google.com www.hinet.hr www.yahoo.com www.monitor.hr <p>First 5 ISPs by usage (Internet service Providers)</p> <ul style="list-style-type: none"> HTnet/Hinet Iskon Internet CARNet Vipnet Globalnet </td> </tr> </table>	<p>Main services of Internet usage :</p> <ul style="list-style-type: none"> e-mail Information/News Business Information Information for school, faculty, education Music, MP3 Journals/Magazines Entertainment Chat Sport – information / news 	<p>First 5 most popular web pages:</p> <ul style="list-style-type: none"> www.iskon.hr www.google.com www.hinet.hr www.yahoo.com www.monitor.hr <p>First 5 ISPs by usage (Internet service Providers)</p> <ul style="list-style-type: none"> HTnet/Hinet Iskon Internet CARNet Vipnet Globalnet 												
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<i>Internet users by technology and type</i>	Individual users	2002	2003
	Dial-up		233,601
Increase			26.33%
Broadband		105	642
Increase			511.69%
Total		233,706	295,761
Increase			26.55%
Business users	2002	2003	
Dial-up	62,488	77,964	
Increase		24.77%	
Leased lines	994	1,249	
Increase		25.62%	
Broadband	1,435	3,741	
Increase		160.64%	
Total	64,917	82,954	
Increase		27.78%	
Individual and Business	2002	2003	
Dial-up	296,089	373,083	
Increase		26.00%	
Leased lines	994	1,249	
Increase		25.62%	
Broadband	1,540	4,383	
Increase		184.57%	
Total	298,624	378,715	
Increase		26.82%	

Source: IDC, 2003

Internet users in Croatia

Quarterly report by user type	2002.	2003.
Home	585,509	707,617
Increase		20.86%
Home only	240,059	318,428
Increase		32.65%
Business	234,590	313,855
Increase		33.79%
Academic	314,692	381,982
Increase		21.38%
Internet users Total	789,341	1,014,264
Increase		28.50%
Quarterly report by user type (%)	2002	2003
Home	74.2%	69.8%
Business	29.7%	30.9%
Academic	39.9%	37.7%

Source: IDC, 2003

4.4. E-GOVERNANCE

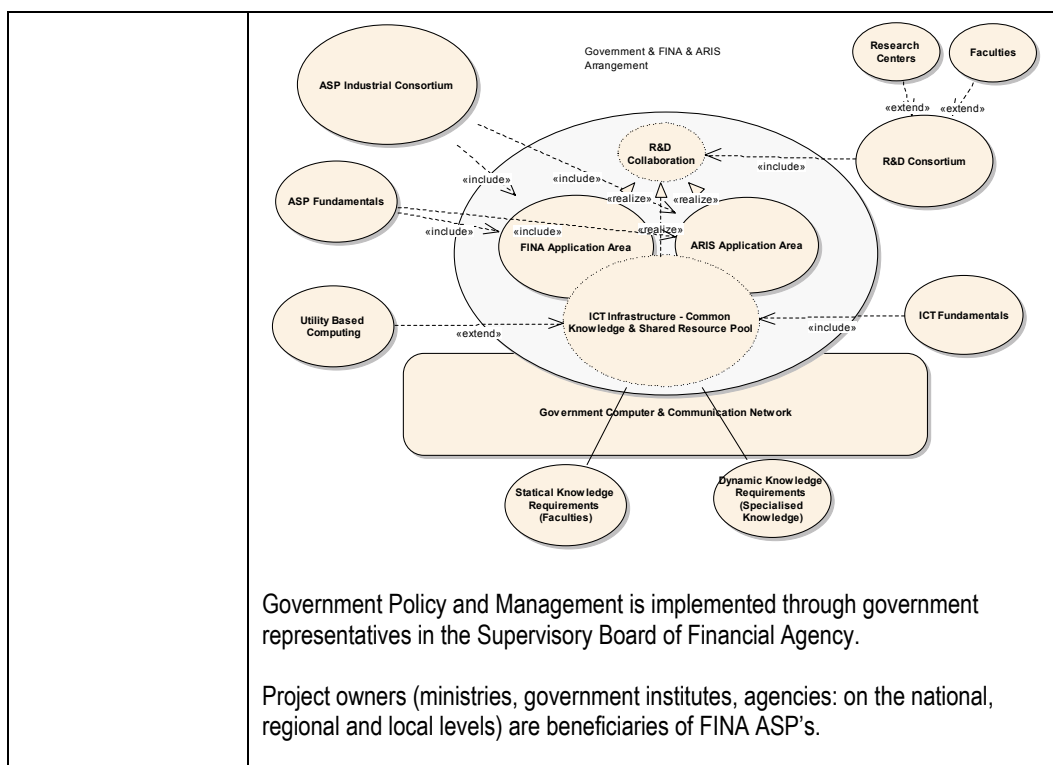
4.4.1. ICT INFRASTRUCTURE FOR E-GOVERNMENT

The main pillars of ICT infrastructure for e-Government are: Government Computer and Communication Network, National Smart Card Infrastructure, and Institutional infrastructure for e-Government technologies.

<p>Government Computer and Communication Network</p>	<p>In the Request For Proposal, the following High-level CRO_GOV_NET functional requirements were specified:</p> <ul style="list-style-type: none"> • as a private Internet Protocol (IP) network shared by government agencies and other authorized users only CRO_GOV_NET will provide connectivity among users to a defined set of service delivery points. • to provide commercial-grade voice communications capabilities within the network among specified users using the data network components and protocols. Voice services to be supported will include, but not be limited to, conferencing and multicast/broadcast. • potential for video communications. Video services to be supported will include, but not be limited to, conferencing and multicast/broadcast. • to support critical government functions and to be immune from malicious service and/or functional disruptions to which the shared public networks are vulnerable (i.e., so-called cyber attacks). In particular, it shall be impossible for malicious or intentionally disruptive activities (e.g., denial of service attacks) to be perpetrated within CRO_GOV_NET from any network external to CRO_GOV_NET. Similarly, it shall be impossible for malicious code (e.g., computer viruses) to penetrate CRO_GOV_NET from any network external to CRO_GOV_NET. • to provide the highest levels of reliability and availability including trunk and access diversity, and rapid response times for customer outages. • traffic will be secure (i.e., encrypted by the network using approved encryption techniques), and suitable for carrying classified information. • it will be a turnkey solution offered and priced as a service to participating users. • it will offer bandwidth-on-demand services at user locations and will be scalable to meet growth in overall network demand and/or peak requirements. • all components and links must be located in the Republic of Croatia.
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	<ul style="list-style-type: none"> • evolve to maintain Internet technologies⁵ with state of the art commercial services to the maximum extent practical. • CRO_GOV_NET to be operated on a 24/7 basis by the contractor. • CRO_GOV_NET to provide initial operational capabilities (IOC) within six months from contract award. IOC is defined as full CRO_GOV_NET IP connectivity to all locations. <p>Negotiating process throughout 2002/2003 resulted with the final proposal. Government of Croatia did not make its final decision on HT submitted proposal in the year 2003.</p>
<p>National Smart Card Initiative</p>	<p>Based on the individual requirements of: State and Public Finance Information System (budget beneficiaries, tax payers), National Healthcare Information System (Health Insurance Card), Advanced Digital Signature Infrastructure, New Personal Identity Card, Social Security Card, and almost all e-government services, as well as EU and International Standards for Interoperability of Smart Cards, Government initiative to implement National Multifunctional Smart Card as the infrastructure for e-Government has been taken in 2003.</p>
<p>Institutional Infrastructure for e-Government</p>	<p>Considering high-level functional requirements, emerging Internet service technologies and service models, basic and advanced requirements for e-Government, Sectorial Government Implementation Projects and Project Interoperability Requirements; Considering Human Professional ICT Resources, given and required Intellectual Potential and Knowledge Management Requirements; Considering Strategic, Tactical, Operational ICT Management Requirements, Considering Constrained ICT Financial Resources; Based on Multilevel Institutional Interoperability Model, Institutional Implementation framework has been designed.</p> <p>FINA is contracted to act as the Application Service Provider (ASP) for e-Government Web and emerging Government GRID services, in the following areas:</p> <ul style="list-style-type: none"> • ASP in Application Management • ASP in Data Management • ASP in Infrastructure Management • ASP in Security Management • ASP in Service Management • ASP in Storage Management <p>Institutional Interoperability Model is presented in the following illustration:</p>

⁵ Universal Access, Semantic Web, Trust, Interoperability, Evolvability, Decentralization, Cooler Multimedia, www.w3.org



4.4.2. COMMON E-GOVERNMENT POLICY AND PROJECTS

Government Interoperability Framework (e-GIF), standard based syndicated procurement of ICT equipment and software licensing, Government's "leading by usage" portal implementation, parliament portal developed, and list of ICT project implementations are presented in this section.

<p>e-GIF</p>	<p>Having stated the requirements for alignment of ICT by International Standards, Government Steering Committee for Internet Infrastructure Development has decided to relay and implement Electronic Government Interoperability Framework (e-GIF) of Great Britain's Office of eEnvoy.</p> <p>Government Office for the Internet Infrastructure Development imposed the implementation of international ICT standards as a condition in any ICT related tender documentation.</p>				
<p>e-Procurement, Software Licensing</p> <p>Government procurements of ICT</p>	<p>Office for the Internet infrastructure development has started syndicated public procurements of ICT for all ministries and government institutes/agencies. Office has implemented e-Procurement Portal, technology to obtain to all government stakeholders to interact through the procurement processes.</p> <p>Due to volume of scale, transparency and open market competition, significant savings through price drops were obtained.</p> <p>Strong political commitment of the Government followed by evident increase in budget for ICT procurement for the years 2001-2003, is presented in following data:</p> <p>Government procurement of ICT Equipment (kn):</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>2001</td> <td>2002</td> <td>2003</td> <td>Sum:</td> </tr> </table>	2001	2002	2003	Sum:
2001	2002	2003	Sum:		

equipment	<table border="1"> <tr> <td>ICT Equipment</td> <td>92.040.167</td> <td>206.660.022</td> <td>251.836.810</td> <td>550.536.999</td> </tr> <tr> <td>Software products and services</td> <td>58.020.650</td> <td>187.334.014</td> <td>361.570.888</td> <td>606.925.552</td> </tr> <tr> <td>Telecommunication equipment and services</td> <td>17.522.459</td> <td>21.321.031</td> <td>181.550.546</td> <td>220.394.036</td> </tr> <tr> <td>Total</td> <td>167.583.276</td> <td>415.315.067</td> <td>794.958.244</td> <td>1.377.856.587</td> </tr> </table> <table border="1"> <caption>Line Graph Data</caption> <thead> <tr> <th>Period</th> <th>ICT Equipment</th> <th>Software products and services</th> <th>Telecommunication equipment and services</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>92,040,167</td> <td>58,020,650</td> <td>17,522,459</td> <td>167,583,276</td> </tr> <tr> <td>2</td> <td>206,660,022</td> <td>187,334,014</td> <td>21,321,031</td> <td>415,315,067</td> </tr> <tr> <td>3</td> <td>251,836,810</td> <td>361,570,888</td> <td>181,550,546</td> <td>794,958,244</td> </tr> </tbody> </table>	ICT Equipment	92.040.167	206.660.022	251.836.810	550.536.999	Software products and services	58.020.650	187.334.014	361.570.888	606.925.552	Telecommunication equipment and services	17.522.459	21.321.031	181.550.546	220.394.036	Total	167.583.276	415.315.067	794.958.244	1.377.856.587	Period	ICT Equipment	Software products and services	Telecommunication equipment and services	Total	1	92,040,167	58,020,650	17,522,459	167,583,276	2	206,660,022	187,334,014	21,321,031	415,315,067	3	251,836,810	361,570,888	181,550,546	794,958,244
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VPN based e-Government Portal	<p>The VPN based e-government portal (ePortal) required the migration from a paper-based to a digital administrative infrastructure. For that to happen, a regulation was introduced to provide equal validity for both digital and standard signatures. The VPN data network was built to connect all government organizations to provide support for the exchange of electronic data and documents, and ePortal was implemented in December 2001.</p> <p>The e-government portal establishes communications at the G2G level, increasing efficiency and productivity for government members and support staff within the executive and the ministries, and other governmental bodies. Politicians and employees can find, share and publish information, effectively use existing information and understand data according to individual needs.</p> <p>More functionality to the portal has been added, starting from contextual search on discussions from past sessions, consulting articles of specific laws and the constitution, ending by navigation through budgetary performance over time. Interoperability of Government Office Management System (Document Management System, Workflow Management System, Knowledge Management System), based on Ordinance for Office Administration in the Government, and ePortal is implemented by Web Services support.</p> <p>ASP implementation of ePortal, projected to serve national, regional and local government requirements, is planned for implementation over e-Government ICT infrastructure (4.4.1.).</p>																																								
VPN based e-Parliament Portal	Developed and improved on the experience of government's ePortal, tested and prepared for the full implementation in 2003.																																								
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Ministry of Finance	Customs Administration System Reform and Modernization
	Tax Administration System Reform and Modernization
	Distributed Treasury Management System
	IBRD Regional Commerce and Transportation Modernization
	IBRD: Integrated Border Crossing System
	Public Debt Management System
	Capital ICT Investments in Institutional Transformations (GZAOP)
Ministry of Defense	Internet Interoperability Alignment
	Workflow and Document Management System (IBM/Lotus)
Ministry of the Interior	New Personal Identity Card
	Visualization in real time
	Border Passing Control System (Schengen-CARDS)
	Police Information System Modernization
	Workflow and Document Management System
Ministry of Foreign Affairs	Ministerial Information System
	Diplomatic Network Information System (IKOS)
Ministry of the Economy	Underground/Underwater Mineral Cadastre Registers
	Nuclear Emergency and Evacuation Plan
	Ministerial Information System
Ministry of Patriotic Defense War Veterans	Ministerial Information System
Ministry of Agriculture and Forestry	Interoperability to scientific and research portals in agriculture and forestry
	Main Study of the Geographical Information System for the Forest Fire Management
	Agriculture Producers Register
Ministry of Culture	Culture Development Program
	Culture NET
	Research and Investigation in Culture
	Croatian Diaspora
	Culture Croatia (Matica Hrvatska)
	Ministerial Information System
Ministry of Maritime Affairs, Transport and Communications	Maritime Transportation Information System
	Inland Water Transportation Information System
	Transportation Measurement and Control Network
	Ministerial Information System
Ministry of Environment Protection and Zoning	Ministerial Information System
	Land Use Information System
	Information and Documentation System of Environment protection
	National Environment Information System (IST project)
	Environment Pollution Register
Ministry of Education and Sport	Interoperability of Information Systems of Education Entities
	National Education Computer and Communication Network
	National Grid for Learning
	Teach the e-Teacher Project
Ministry of Labor and Social Welfare	Ministerial Information System
	Labor Information System

	Social Welfare Information System
Ministry of Trades, Small and Medium-Sized Enterprises	Ministry Information System
	SME Registers
	Trade Register
Ministry of Justice, Public Administration, and Local Self-government	Croatian Judiciary Modernization Project
	Municipal Court Improvement Project
	Court and Bankruptcy Administration Project
	Real Property Registration and Cadastre Project
	Court and Justice Information System
	Court and Case Management System
	Court Decisions Portal
Ministry of Health	Reform of National Health System Project (IBRD)
	National Health Information System
	Primary Healthcare Team Network and Information System
	National license for Hospital Information System
Ministry of Science and Technology	Croatian Academic and Research Network - CARNet (10 Years, GEANT Node)
	Information System for Higher Education
	Computerization of Science and Education Entities
	Nation Library Modernization – National Library Networking
	University Computing Center
	Technology Infrastructure Centers
Ministry of European Integration	Euro-Info Point Networking
	Euro Internet Kiosk Project
	Stabilization and Association Process Management Technology
	Multilingual Translation Project
State Geodetic Directorate	National Geo Information System Restructuring and Re-programming Project
	Map and Topology Information System
State Directorate for Water Management	Water Resource Management System
	Water Resource Cadastre and Land Register
State Institute for the Protection of Family, Maternity and Youth	Internet Information System Alignment
State Weather Bureau	Internet Information System Alignment
State Intellectual Property Office	Internet Information System Alignment
State Bureau of Standards and Metrology	Internet Information System Alignment
Central Bureau of Statistics	Internet Information System Alignment
State Inspector's Office	Internet Information System Alignment

4.4.3. E-GOVERNMENT SERVICES

Two base components are presented: government services to citizens and business (G2C, G2B) and organizational transformations of the government (G2G).

<p>G2G</p>	<p>Implemented G2G Services: TRANSACTIONAL</p> <ul style="list-style-type: none"> • Treasury (SAP R/3 Treasury Functionality) • Government owned Properties <p>COLABORATIVE OFFICE SYSTEMS</p> <ul style="list-style-type: none"> • ePortal <p>Implemented Pilot Projects:</p> <ul style="list-style-type: none"> • Intranet Payroll System (transactional, dimensional reporting (OLAP))
<p>G2C</p> <p>eMuniS</p> <p>«Rijeka Online»</p> <p>“You Are Rijeka”</p>	<p>The first-generation government Internet presence, characterised by a proliferation of individual departmental web sites each with a separate URL, offering its own department information and on-line services, has ended. The re-engineering of Information Services (Internet Web Pages and Content Management) – mainly started in the years 2002-2003.</p> <p>ICT infrastructure for e-Government (4.4.1.) is pre-condition for Context related Information Services implementations.</p> <p>Government Transaction Services – ongoing internal developments and implementation as a prerequisite for citizen centric implementations for the target year 2005.</p> <p>eCitizen</p> <ul style="list-style-type: none"> • Comprehensive eCitizen developments were planned to start in 2004. <p>One of E-MuniS main objective is the enhancement of the quality of life of the citizens through better and more accessible services provided by local administrations.</p> <p>Internet portal with information about the City, the City Administration and some services. Portal is build using «iSite» dynamic Web content management system, where Municipality administrative clerks are publishing content without intervention of professional IT staff, solving problem of «webmaster bottleneck».</p> <p>Second phase, includes implementation of «eBoard» solution of preparing and executing City government and City council session based on electronic documents and Internet technologies, which will allow «paperless» sessions and integration into a Document Management System supporting document preparation from all Municipality Departments.</p> <p>Portal of communal services, performed by communal companies owned by City, has been developed, providing common invoicing for all services except electricity.</p>
<p>G2B</p>	<p>TRANSACTIONAL</p> <ul style="list-style-type: none"> • Custom administration • Commercial Court Register • Set of Financial Registers (FINA) <p>Information Services (Internet Web Pages and Content Management) - mainly implemented in the years 2001-2003.</p>

	Government Transaction Services – ongoing internal developments and implementation as a prerequisite for citizen centric implementations for the target year 2005.
G2E	Payroll – pilot implementation in 2003 Human Resource Management (HRM) – Internet Enabled Employee Administration component - pilot implementation for the Government in 2002. Knowledge Management System (KMS) – partially implemented in 2003 within the ePortal solution.

4.5. ICT FOR BUSINESS AND E-BUSINESS

THE OVERALL ENVIRONMENT FOR ICT FOR BUSINESS AND E-BUSINESS

Economy and competition, financial industry, telecommunications, agriculture, environment and space, science and research, court, justice, home affairs, education, health, are among the main facets applying the dual role – implementers of ICT and accelerators for ICT implementations.

4.5.1. ECONOMY AND COMPETITION

Increasing labour market flexibility	In order to enable monitoring of the effects of adjustment on dismissed workers, labour market information system has been developed and implemented. The Government will expand the scope of labour market monitoring process by introducing continuous surveys on economic conditions and labour market conditions.																																																																																										
Sectorised economic structure change	Information systems for small and medium entrepreneurship (SME). Due to GDP growth contribution (Table 1), and the microeconomic structure of the economy (Table 2), the importance of the information system on the national as well as interoperability with European Union SME systems is obvious. Table 1.: Average rates of GDP growth: <table border="1"> <thead> <tr> <th></th> <th>1996</th> <th>1997</th> <th>1998</th> <th>1999</th> <th>2000</th> <th>2001</th> <th>2002</th> <th>Average growth rate</th> </tr> </thead> <tbody> <tr> <td>A + B</td> <td>1.4</td> <td>2.3</td> <td>5.6</td> <td>-2.6</td> <td>1.2</td> <td>0.7</td> <td>2.0</td> <td>1.5</td> </tr> <tr> <td>C + D + E</td> <td>4.4</td> <td>6.9</td> <td>5.8</td> <td>3.0</td> <td>3.4</td> <td>4.8</td> <td>4.0</td> <td>4.6</td> </tr> <tr> <td>F</td> <td>18.8</td> <td>13</td> <td>0.5</td> <td>-10</td> <td>-7.1</td> <td>2.3</td> <td>13.9</td> <td>4.0</td> </tr> <tr> <td>G</td> <td>15.6</td> <td>13.7</td> <td>-0.8</td> <td>-11.2</td> <td>4.0</td> <td>10.6</td> <td>12.7</td> <td>6.0</td> </tr> <tr> <td>H</td> <td>21.8</td> <td>18.1</td> <td>0.7</td> <td>0.0</td> <td>15.7</td> <td>5.7</td> <td>7.5</td> <td>9.6</td> </tr> <tr> <td>I</td> <td>7.0</td> <td>3.5</td> <td>4.3</td> <td>-5.1</td> <td>4.5</td> <td>6.9</td> <td>6.8</td> <td>3.9</td> </tr> <tr> <td>J + K</td> <td>2.1</td> <td>5.5</td> <td>4.0</td> <td>3.8</td> <td>0.4</td> <td>4.0</td> <td>6.4</td> <td>3.7</td> </tr> <tr> <td>L, M, N, O, P</td> <td>1.9</td> <td>3.0</td> <td>2.6</td> <td>3</td> <td>1.7</td> <td>0.2</td> <td>0.2</td> <td>1.8</td> </tr> <tr> <td></td> <td>5.9</td> <td>6.8</td> <td>2.5</td> <td>-0.9</td> <td>2.9</td> <td>3.8</td> <td>5.2</td> <td>3.7</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">Source: Croatian Bureau of Statistics</p> As a result of the economic growth in the period from 1997 to 2002, most new jobs were created in the following sectors: construction, business services (Financial intermediation, hotels and restaurants and trade). Other sectors,		1996	1997	1998	1999	2000	2001	2002	Average growth rate	A + B	1.4	2.3	5.6	-2.6	1.2	0.7	2.0	1.5	C + D + E	4.4	6.9	5.8	3.0	3.4	4.8	4.0	4.6	F	18.8	13	0.5	-10	-7.1	2.3	13.9	4.0	G	15.6	13.7	-0.8	-11.2	4.0	10.6	12.7	6.0	H	21.8	18.1	0.7	0.0	15.7	5.7	7.5	9.6	I	7.0	3.5	4.3	-5.1	4.5	6.9	6.8	3.9	J + K	2.1	5.5	4.0	3.8	0.4	4.0	6.4	3.7	L, M, N, O, P	1.9	3.0	2.6	3	1.7	0.2	0.2	1.8		5.9	6.8	2.5	-0.9	2.9	3.8	5.2	3.7
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	<p>however, while they did record growth in the period under review, experienced a decline in employment as a result of technological restructuring (increased productivity).</p> <p>Table 2.:</p> <table border="1"> <thead> <tr> <th>SME</th> <th>number</th> <th>% in no. of companies</th> <th>no. of employees</th> <th>share in employment</th> </tr> </thead> <tbody> <tr> <td>crafts</td> <td>100,532</td> <td>61.8</td> <td>241,714</td> <td>23.7</td> </tr> <tr> <td>co-operatives</td> <td>795</td> <td>0.5</td> <td>4,293</td> <td>0.4</td> </tr> <tr> <td>microcompanies</td> <td>49,534</td> <td>30.4</td> <td>116,431</td> <td>11.4</td> </tr> <tr> <td>small companies</td> <td>9,561</td> <td>5.8</td> <td>140,602</td> <td>13.8</td> </tr> <tr> <td>medium-sized c.</td> <td>1,845</td> <td>1.1</td> <td>167,336</td> <td>16.4</td> </tr> <tr> <td>total SMEs</td> <td>162,267</td> <td>99.6</td> <td>670,376</td> <td>65.7</td> </tr> <tr> <td>large companies</td> <td>720</td> <td>0.4</td> <td>350,617</td> <td>34.3</td> </tr> <tr> <td>overall economy</td> <td>162,987</td> <td>100.0</td> <td>1,020,993</td> <td>100.0</td> </tr> </tbody> </table> <p>SMEs account for 99.6% of all companies and provide employment to 61.1% of all employed persons in the Croatian economy. Their share in GDP is estimated at 55%, and they contribute about 25% to total exports.</p> <p>The above data refer to 30 June 2003 (sources: Croatian Bureau of Statistics, Financial Agency FINA, Croatian Chamber of Commerce, Croatian Institute of Health Insurance, Crafts Register with the Ministry of Small and Medium Enterprises).</p>	SME	number	% in no. of companies	no. of employees	share in employment	crafts	100,532	61.8	241,714	23.7	co-operatives	795	0.5	4,293	0.4	microcompanies	49,534	30.4	116,431	11.4	small companies	9,561	5.8	140,602	13.8	medium-sized c.	1,845	1.1	167,336	16.4	total SMEs	162,267	99.6	670,376	65.7	large companies	720	0.4	350,617	34.3	overall economy	162,987	100.0	1,020,993	100.0
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<p>Initiatives taken to enhance the business environment</p>	<ul style="list-style-type: none"> • Investment Promotion Act adopted in July 2000. • Trade and Investment Promotion Agency established by regulation in August 2002. Recently at the start up phase. • FIAS - in May 2000, Government of the Republic of Croatia has started with project of eliminating administrative barriers to investments in the Republic of Croatia with assistance of Foreign Investment Advisory Service (FIAS), a Joint Service of International Finance Corporation (IFC) and The World Bank (IBRD). The investigation breaks the investment process into four generic areas: entry procedures (immigration procedures, work permits, and related procedures for foreign investors and expatriate workers); business establishment (company registration and various licensing procedures for all investors, both foreign and domestic); locating procedures (land acquisition, land registration and construction); and operating (paying taxes, import/export procedures, inspections, and other routine interactions between business and government agencies during normal business operations). • Trade integration with the EU (Certain positive indicators that announce the increased share of products with a higher percentage of added value or capital or technologically intensive industry have been observed in the past three years, but still not in terms of the value of exports and not in such a way as to cause a significantly influence the structure of exports. These positive developments i.e. the increase of the share of technologically better processed products can be noted in the following groups of products: electrical machines and tools, medical products and the like, gauging instruments and devices, office machines. A more significant change in the structure of Croatia's export to the European Union is to be expected after the changes in the structure of Croatia's processing industry will have taken place. These changes will result in an increased share of capital and technologically intensive industry i.e. products with an increased share of added value). 																																													
<p>Economic environment for long lasting sustained economic growth</p>	<p>Croatia supports a long lasting sustained economic growth by means of intensive investments in infrastructure (roads, motorways, gas and oil pipelines, railroads and housing construction), as well as through special programs stimulating employment and tourism industry. Revenues of the state budget derived from privatization are not intended for current expenditures, but are directed into infrastructure investments and entrepreneurship support programs. Moreover,</p>																																													

	<p>Croatia is aiming at providing a convenient environment for attracting foreign and stimulates domestic investments by means of reform of the judiciary system, changes of tax legislation and removing administrative barriers. The simplification and acceleration of registration of small and medium enterprises, more agreeable financing (loans, government guarantees, subsidizing interest payments), as well as tax relief for self-employment and establishing small enterprises stimulate the development of small and medium enterprises.</p> <p>Since the beginning of 2002 the Stabilization and Association Agreement is applied, and since 2003 Croatia is a full member of CEFTA. Along with the membership in the World Trade Organization (WTO), Croatia has signed a number of Free Trade Agreements, which will enable the Croatian export companies to considerably increase the market for the sales of their goods. The process of harmonization of Croatian acts and regulations with the European Union standards.</p> <p>Croatia's GDP, after the decrease of 0,9% in 1999 is now on the increase for the fourth year in a row; in 2000 the growth rate amounted to 2,9%, in 2001 GDP increased by 3,8%, in 2002 5,2 %, whereas in 2003 an increase of 4,5% is expected.</p> <p>The economic growth is realized through maintaining the inflation rate at a very low level (2,3% in 2002 and approximately 3,0% in 2003).</p> <p>Considerable tax and tariff reductions on investments, as well as technological modernization of manufacturing facilities in the last two years have contributed to an increase in the rate of capital goods import (machinery and equipment), opposed to the increase of the export of consumption goods, which was predominant before.</p> <p>The growth of the GDP has started to show its effects on the labor market through changes in the employment trend. In 2002, for the first time since the mid-90ies, a reduced unemployment rate has been registered on the annual basis. Since April 2002 the unemployment rate has been decreasing constantly. By the end of July 2003 it amounted to 18,5 % (the lowest unemployment rate since December 1998). In sense of the EU directives, the Republic of Croatia is planning to devise annual employment programs and at the same time continue to implement an active employment policy, especially in relation to young people, women and people living in Areas of Special State Concern. Changes accomplished in the labor legislation will contribute to the increased flexibility of the labor market which will, in turn, result in an increased mobility and fluctuation of labor force. The reforms of education and science are expected to increase the value of human capital in the long run.</p> <p>The government of the Republic of Croatia has determined the basic strategic challenges and answers to the economic policy in the next ten or so years in the Development Strategy of the Republic of Croatia «Croatia in the 21st century»- «Macroeconomics», a document that has been deliberated in the Croatian parliament as well (Official Gazette, 145/2002). According to the Strategy, GDP per capita in the following decade should be doubled in relation to the figures from 2001, and unemployment reduced to half along with maintaining a stable macroeconomic framework. In keeping with the Strategy, the government of the Republic of Croatia has outlined tasks, guidelines and measures of the economic policy which form part of the Memorandum of Economic and Fiscal Policy signed between the government of the Republic of Croatia and the International Monetary Fund in December 2002, as well as of the Fiscal projections for the period 2003- 2005 adopted by the Croatian Parliament on the occasion of the budget adoption of the Republic of Croatia for the year 2003.</p>
Competition environment	Competition Act adopted by the Croatian Parliament on June 15th 2003, and in implementation from October 1st 2003, (Official gazette No 122/03), has not been limited only to the practices within the territory of the Republic of Croatia but

	<p>it also includes practices, which although they are performed outside its territory, have an effect in the territory of the Republic of Croatia. In accordance with Article 2 of the Competition Act, it shall apply to all forms of prevention, restriction or distortion of competition within the territory of the Republic of Croatia or outside its territory, if such practices have an effect in the territory of the Republic of Croatia. According to Article 3 paragraph (3) the Competition Act shall apply to legal and natural persons that have their seat and permanent residence abroad, provided that their participation in the trade of goods and/or services affects the home market. For the Competition Act, as well as the Table of Concordance of the Provisions of EU Legislation with the Competition Act.</p> <p>Exceptions regulated by separate laws relate to sectors of the economy partially excluded from the application of the Competition Act. In these sectors separate laws regulate the establishment of separate regulatory bodies competent, <i>inter alia</i>, for competition issues. These are, for instance, the Telecommunications Act (Official Gazette 122/03); the Banking Act (Official Gazette 84/02); the Securities Market Act (Official Gazette 84/02); and separate regulations in the energy sector (the Energy Act, the Electricity Market Act, the Act on Petroleum and Petroleum Products Market, the Gas Market Act, the Act on Regulating Energy-Related Activities, all published in the Official Gazette 68/01). However, the above regulations do not cover comprehensive competition in these sectors, they supply certain provisions and particularly or additionally regulate definite competition issues. The Competition Act is, on the grounds of the above mentioned, <i>lex generalis</i> and the main source of competition law for the activities laid down by these regulations.</p>
State owned companies	<p>Following public undertakings became exclusive property of the state, specifically: "Narodne novine" d.d. (<i>Official Gazette Company</i>), "Hrvatske šume" (<i>Croatian Forests</i>), "Jadrolinija", "Hrvatska vodoprivreda" (<i>Croatian Water Supply Company</i>), "Hrvatske ceste" (<i>Croatian Roads</i>), "Hrvatska elektroprivreda" (<i>Croatian Electric Company</i>), "Hrvatska radio televizija" (<i>Croatian Radio and Television</i>), "INA" (<i>The Oil Industry</i>) and "Hrvatske željeznice" d.o.o. (<i>Croatian Railways</i>).</p> <p>Modernization and reconstruction of ICT as the enabler for the business reengineering focused to business interoperability is strong ongoing process.</p>
State monopolies	<p>By the end of 2003 Hrvatska pošta ("Croatian Post Office") had the monopoly in the postal sector. Postal Act anticipates the abolition of the monopoly of Hrvatska pošta, except for certain services. By this legal act, the normative solutions in the field of postal services and postal transport will be adjusted to the requirements of the European Union.</p> <p>Although there are no legal limitations to access to the market of fixed telephone networks, Hrvatske telekomunikacije d.d. ("Croatian Telecommunications, Inc.") still preserve the monopoly over the unbundled local loop that will cease on 1 January 2005. After that date, Hrvatske telekomunikacije will be obliged to enable access under market conditions to other interested providers of telecommunications services and provide the service of transferability of numbers and preliminary selection of operator.</p> <p>The only company in the railway transport system is "HŽ - Hrvatske željeznice d.o.o." is state owned company.</p>

4.5.2. FINANCIAL INDUSTRY

Financial markets	<p>General characteristics:</p> <ul style="list-style-type: none"> • interest rates are generally market-determined • state and private sectors have access to the international financial markets
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<p>The banking sector</p>	<p>on market terms</p> <ul style="list-style-type: none"> • Timely inefficient implementation of Bankruptcy Act <p>The Croatian banking sector was consolidated in the period from 2000 to 2002. During the consolidation process, foreign banking groups (mainly Italian, Austrian and German) acquired majority stakes in the share capital of major, as well as some minor Croatian banks. The Croatian banking sector includes 42 banks, some of which belong to the six (6) banking groups.</p> <p>Competition in the banking system is well developed.</p> <p>By the end of 2002, the market leader was Zagrebačka banka with a share of 26.5% in total bank assets (Zagrebačka banka d.d. Group share amounts to 28.9%), a member of the UniCredito Italiano Group, followed by Privredna banka Zagreb with a share of 17.6% in total bank assets (Privredna banka Zagreb Group share amounts to 20%), a member of Intesa BCI Group.</p>
<p>Regulatory environment</p>	<p>The Securities Market Act came into force on 25 July 2002. Act regulates the establishment, scope and responsibilities of the Securities Exchange Commission of the Republic of Croatia, the procedure for issuing securities, securities transactions and persons authorized to conduct securities transactions, the conditions for securities trading in regulated public markets, the protection of the investor and the holder of rights derived from a security, dematerialized securities and the organization and powers of the central depository agency, stock exchanges and regulated public markets.</p> <p>Act on the Takeover of Joint Stock Companies came into force on 25 July 2002. The Act lays down the conditions for making take-over bids for joint stock companies, issuers, and the takeover procedure, and regulates the rights and obligations of participants in the takeover procedure and supervision of a joint stock company takeover procedure.</p> <p>The Investment Funds Act came into force on 4 January 1996 and as amended on 2 December 2001. The Act lays down the conditions for establishing investment funds and investment fund management companies and regulates their business operations.</p>
<p>Equity, bond, money markets</p>	<p>The equity market is underdeveloped for several reasons. The model of privatisation as used in the country did not promote the development of the capital market and the tendency to increase capital on the basis of debts and bank loans is still a part of business mentality. Bad experiences in early 90's in connection with pyramid schemes and various types of financial engineering have contributed considerably to strong resistance on the part of investors, to investment in financial instruments. Finally, the lack of domestic savings and limited free reserves hardly contributed to vitality and liquidity of the country's capital market.</p> <p>The domestic corporate bond market is also undeveloped, yet some positive trends are discernible. Bonds are usually traded between institutional investors, including funds, pension funds, banks, insurance companies and legal persons authorised by the Commission. Trading takes place on the markets and on the inter-bank market.</p> <p>The HRK deposits market mainly comprises interbank trading in deposits with very short maturities, partly conducted in the Zagreb Money Market, the institution combining supply and demand, and partly in the direct interbank market.</p>
<p>Non bank financial institutions</p>	<p>Legal framework governing insurance, insurance mediation and representation is provided by the Insurance Act, Act on Mediation and Representation in</p>

<p>The role of the Financial Agency (FINA)</p>	<p>Insurance, the Obligations Act in the part that relates to insurance issues, Maritime Code in the part that relates to marine insurance and implementing regulations issued on the basis of these Acts.</p> <p>The amendments planned to the legislative framework in 2004 regulating insurance, pursuant to the Stabilization and Association Agreement, are in line with the measures laid down by EU Directives governing insurance.</p> <p>The role of the Financial Agency (FINA) is defined by the Financial Agency Act (Official Gazette, No. 117/2001), which revokes FINA's previous powers within the payment system and authorises it to perform payment system operations only as a third party, in the name and for the account of banks.</p> <p>Act authorises FINA to perform the activities related to the operational management of the National Clearing System (NCS), distribution and handling of cash in the name of the Central National Bank (CNB), to maintain the national system of digital keys issuance – Register of Digital Certificates, and other public and commercial registers. FINA also provides the IT-support to the State Treasury system and the Central Register of Insured Persons (REGOS), and collects and processes certain statistical data for the purposes of the Government.</p>
<p>State/public finance and budgeting</p> <p>Program based Budget planning, preparation and monitoring</p> <p>Revenue Services Information System</p> <p>Custom Administration Information System</p>	<p>Basic characteristics of state and public finance and budgeting implemented or prepared to implement by end 2003 and on are presented as follows:</p> <p>Programs are determined by long-term development strategies, special laws, and regulations enacted on the basis of law. A financial plan proposal by programs has to show revenues and receipts from which the proposed programs will be financed, by types, and expenditures and outlays foreseen for a three-year period, in accordance with budgetary classifications (organizational, economic, functional, program, and location).</p> <p>The implementation of the SAP system within the State Treasury, on the one hand, and the establishment of a Single Treasury Account with the Croatian National Bank, on the other, have simplified for the central State Treasury the execution of the government budget and have led to improvements in government revenue collection, payment execution, supervision and control of monies of budget beneficiaries.</p> <p>Strong pressure of state finance system reform, and Government stated ICT standards and corresponding alignments have forced the reengineering requirements of Revenue Information System.</p> <p>The Information system of the Croatian Customs Administration (CA) has been created as an integral system providing support to all the segments of the CA operations. It encompasses tools, i.e. services, for carrying out customs procedures and other accompanying activities within the CA's scope.</p> <p>Customs operations, acceptance of data in electronic format, the need for their availability in various processes in very short time spans and at geographically widely scattered locations, have resulted in the organization of the CA information system that has been currently applied.</p> <p>The logical controls that are used for processing customs declarations contain the installed provisions of the Customs Act, the Regulation on the Implementation of the Customs Act, the Ordinance on the Forms for the Implementation of the Customs Act, the Customs Tariff Act, the Regulation on Customs Tariffs, the Trade Act, the Value Added Tax Act, the Excise Duties Act, the Stabilization and Association Agreement, the Free Trade Agreements that the Republic of Croatia has signed with other countries, and other regulations.</p>

	Smart Card driven usage of CA Information System is under preparation.
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4.5.3. TELECOMMUNICATIONS AND INFORMATION SOCIETY

<p>Liberalisation plan of the telecommunications market</p>	<p>The telecommunications market opened for new operators and service providers in the fixed network after the expiration of HT (Domestic FT operator Croatian Telecommunications) rights on 1 January 2003.</p> <p>Deutsche Telekom AG owns 51% of the HT-Hrvatske telekomunikacije d.d. and the remaining 49% is owned by the Republic of Croatia.</p> <p>As of the beginning of 2005, HT-Hrvatske telekomunikacije d.d. will be obliged to provide access to its unbundled local loop, as well as the services of number portability and pre-selection of operators.</p> <p>By 2005 the telecommunications sector will be completely privatized, and the new Telecommunications Act (Official Gazette No. 122/03) does not provide for any limitations to the share of foreign ownership in the telecommunications sector, nor any limitations to the entry of new investors (domestic or foreign) to the telecommunications market.</p>
<p>Infrastructure</p> <p>Basic optical infrastructure</p> <p>Use of cable television for telecommunications</p> <p>Satellite radio communications</p>	<p>The basic optical infrastructure (backbone) of the Republic of Croatia is the ownership of the national telecommunications operator HT- Hrvatske telekomunikacije d.d, and it includes more than 14,000 km of underground cables laid in plastic tubes with the total average of installed capacity of app. 300 000 km of optic cables. The backbone infrastructure is well built in the whole of territory of the Republic of Croatia.</p> <p>For «alternative» infrastructure, the project for utilization of optical infrastructure near the roads, railways, electrical lines, owned by several companies (Hrvatske autoceste/Croatian Highways, HEP-Hrvatska elektroprivreda/Croatian Electric Company, JANAF/Adriatic Oil Pipeline, HŽ-Hrvatske željeznice/Croatian Railways) is currently in the initial phase.</p> <p>There are 25 concessions allocated for cable television until August 2003, and two of them are on the state level. The cable television sector is completely liberalised. Cable distribution service providers may provide other telecommunications services (Internet, telephony etc.) based on the license obtained from the Agency.</p> <p>INTELSAT, INMARSAT, EUTELSAT etc. as well as new Business Entities and competition are emerging in the national telecom market.</p>
<p>Operators</p>	<p>Public voice telephony (PSTN, alternative infrastructures, e.g. utilities)</p> <p>Concession holder for telecommunication services in the fixed telephony in the Republic of Croatia is HT – Hrvatske telekomunikacije d.d.</p> <p>Public land mobile communications (analog and digital non-GSM, GSM, DCS 1800, UMTS, paging)</p> <p>Concessions for providing mobile telecommunication services in the Republic of Croatia belong to:</p> <p>HT mobilne komunikacije d.o.o. (HT mobile) which comprise two networks of mobile telephony: analogue mobile network NMT 450i (brand HT mobitel), digital mobile GSM 900 network.</p> <p>VIPnet d.o.o. – has concession for digital mobile GSM 900 network.</p>

	<p>The publication of a public tender for concessions DCS 1800 and UMTS is soon expected.</p> <p>Private land mobile telecommunications (e.g. taxis, transport, emergency services)</p> <p>There are two PMR trunking networks and several smaller TETRA networks (Hrvatska elektroprivreda/Croatian Electric Company, police, emergency medical help).</p> <p>Satellite communication</p> <p>Odašiljači i veze d.o.o. have two BSS land stations for connections with EBU and for broadcasting the Croatian program via satellites HB-3 and HB-5.</p> <p>There are more than one VSAT networks.</p> <p>There are several INMARSAT maritime and land mobile terminals.</p> <p>Data communication</p> <p>Hrvatske telekomunikacije d.d. (VPN data) offer the users private networks for data transfer based on MPLS (Multiprotocol Label Switching) technology, which encompasses the best features of classical private networks (privacy and quality of service), and of IP protocols (flexibility and stability).</p> <p>Hrvatska elektroprivreda/ Croatian Electric Company, Hrvatske željeznice/Croatian Railways, and Hrvatske vode/Croatian Waters have networks for data communication.</p> <p>Cable television</p> <p>By August 2003, 25 concessions for cable television were allocated, out of which two concessionaires have concessions on the national level, and 23 of them on a local level.</p> <p>Significant contribution to acceleration in Gigabit CARNet implementation (dark fiber).</p>
<p>Manufacturers and manufacturing activities for network equipment and terminals</p>	<p>Ericsson Nikola Tesla d.d. – research, development and design of integral communicational solutions and services in the area of multi-service and mobile networks of the newest generation, including also mobile internet.</p> <p>Siemens d.d. – intelligent information and telecommunication solutions (mobile phones, wireless phones, computers, implementation of IT solutions)</p> <p>Elka d.d., Eurocable Group d.o.o., Volex d.o.o. – manufacture of cables, including optical cables</p> <p>RIZ-Odašiljači d.d.- production of radio and TV transmitters, antennas, manufacture of network installation equipment</p>
<p>Strategic telecommunications alliances</p>	<p>The main strategic partner of HT-Hrvatske telekomunikacije d.d. is Deutsche Telekom AG with a 51% interest, whereas the remaining 49% are the ownership of the Republic of Croatia.</p> <p>The owner and a main strategic partner of VIPnet d.o.o. is Mobilkom Austria (99 %) and Večernji list (1 %); VIPnet also has a business contract with Vodafon.</p>

4.5.4. AGRICULTURE

<p>Institutional Framework for reforms in Agriculture</p>	<p>The Act on State Aid in Agriculture, Forestry and Fisheries was adopted in 2002 (Official Gazette, 87/02, 117/03), and it has been implemented since 1st January 2003. The new Act differentiates between commercial and non-commercial farms which will enable the application of adequate agricultural policy measures to</p>
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	<p>different target groups.</p> <p>The Act simplifies the agricultural aid system, equalizes the incentives per sown area and expands the scope of areas to be covered by incentives. In addition to the already existing production incentives (1), income aids (2), capital investment model (3) and (4) rural development model have been introduced.</p> <p>The reform also includes a gradual approximation of agricultural policy measures to the policy that is being or that will be implemented in the EU.</p>
<p>ICT implementation in Agriculture and Forestry</p>	<p>Having recognized the role of ICT in modern agricultural production technology significant shift to ICT implementations has been taken.</p>
<p>Farm Register</p>	<p>The advantages of the new aid scheme are simplified management of agricultural aids, establishment of database necessary for the formulation and analysis of agricultural policy (Farm Register), decreased possibility of system abuse and facilitated inspection control.</p> <p>The establishment of the Farm Register is closely related to the aid scheme reform in agriculture, fisheries and forestry. The basis of the Register is the Internet application (launched in the beginning of 2003) which serves for entering, processing and saving data in the central database with the Ministry of Agriculture and Forestry. The information from the database is also used for the calculation of incentives.</p> <p>The registration is obligatory for farms or family farms and for companies, cooperative farms and small entrepreneur in agriculture (selling their own products on the market; they file the application for funds and other forms of agricultural aid and should be registered with the institutions authorized by the Ministry). In 2003, 139,561 farms with their production resources (land, livestock, plantations, etc.) were registered.</p> <p>One of the priorities of the Ministry of Agriculture and Forestry is to upgrade the Farm Register and adapt it to the Integrated Administrative and Control System (IACS) used by the EU countries in the implementation of the Common Agricultural Policy (CAP).</p>
<p>Register of all agricultural producers</p>	<p>In 2003, a register of all agricultural producers was set up, providing the basis for reliable statistical data on individual production volumes as well as for the provision of financial support.</p>
<p>centralized database of prices of agricultural products</p>	<p>Since 1997, the Advisory Services in Agriculture has actively participated in the development of a centralized database of prices of agricultural products – International Market Data Exchange (IMDE) organized by Zentrale Markt- und Preisberichtsstelle (ZMP), Germany, and from that time on has continuously submitted information about prices of agricultural products in the Croatian market, just like 16 Central- and East-European countries for their national markets. The information has been submitted in respect of 16 agricultural products. Since 2002, the data have been exchanged via Internet application “Extranet AGRIMISNet” developed by ZMP and German Technical Cooperation (GTZ).</p> <p>79 products have been included in the new database and it is also possible to enter comments on the situation on national markets and to create reports (overview of prices by product, year, country).</p> <p>In future the Advisory Services in Agriculture plans to extend its activities onto reporting on the situation on the milk- and milk products market, as well as poultry- and eggs market. In order to increase efficiency, it also plans to introduce payments for external associates who collect the information on prices of agricultural products.</p>

<p>Agricultural Bookkeeping Data System</p>	<p>The decision to establish the Agricultural Bookkeeping Data System in accordance with FADN (Farm Accounting Data Network) methodology of the EU, for the purpose of recording changes and the level of the farm income, assessing economic efficiency of agricultural production and analyzing agricultural policy measures has been taken.</p> <p>The Ministry of Agriculture and Forestry is responsible for the organization and technical implementation of the System. If necessary, agricultural education, scientific and technical institutions, administrative bodies or other organizations or institutions may be included.</p> <p>The Minister shall determine the type, the scope and the method of accounting data collection.</p>
<p>Promotion of ecological production</p>	<p>Start of development of web pages for cooperatives, catalogues, promotional and media presentations as well as promotional materials for cooperatives.</p>
<p>Co-operative ICT Implementations in Agriculture</p>	<p>There are ongoing preparations to build up the interoperability of:</p> <ul style="list-style-type: none"> • Cadastre register and land register for the Agriculture and Forestry, • Water resources management for agricultural purposes, • Integrated Border Management (Border Veterinary Inspection) - CARDS program implementation • Crisis Management (for the Situations in which PPPs (classified as poisons) could cause a crisis, more specifically environmental accidents or emergencies that severely endanger the environment, human lives and health)
<p>Knowledge transfer from scientific institutions to farms</p>	<p>The main purpose of the Council for Agricultural Research is to encourage the process of knowledge transfer from scientific institutions to farms, through Advisory Services in Agriculture, for the purposes and on the initiative of the farmers themselves.</p> <p>Such mechanism of transfer of knowledge will indirectly strengthen the research policy and the procedure for setting the priorities in the area of applied research, and will at the same time bring together researchers and food producers.</p> <p>At the beginning of 2001, a new method of monitoring the work of advising experts was adopted through the introduction of a computerized monitoring system in which the advisors on a daily basis enter information about the performed duties and activities (percentage of working hours spent on individual activities, mileage done, work on projects etc.). Apart from monitoring the activities of the advisors, the system enables the creation of a database on family farms, the beneficiaries of the services of the Bureau.</p>
<p>Marketing</p>	<p>The Market Information System in Agriculture is a system of centralized, regular collection and processing of information on the agriculture and food-products' markets, as well as the distribution of the received, relevant information about the market to the market participants. The emphasis is placed on the information about prices of agricultural products in order to ensure a continuous overview of the situation in the market.</p> <p>The main tasks of the Market Information System in Agriculture are: monitoring of the market and its products at the national, regional and international level, preparation of reports on prices, price movements and the overall situation in the agricultural and food products' market. As the rate of price changes, supply and demand of agricultural products, as well as the volume of information vary depending on a group of products, so does the schedule of preparation and publication of reports including relevant market analyses and additional information separately for each group of products.</p> <p>Collected information on the prices and situation in the market is a basis for</p>

	<p>preparation of textual reports and analyses, which are distributed to the users by post and via the web site. The information is also available in daily newspapers, specialized magazines and on the radio. In addition to reports, prices and other information, the web site also enables a free input of information about supply and demand of agricultural and food products.</p> <p>Apart from topical reports, the Advisory Services in Agriculture also issues the Annual Report with a complete overview in a certain year, in textual or CD form, which is also intended for sale. The reports are sent by post free of charge to the associates who submit the information about prices, to special-interest groups, the Advisory Services in Agriculture, the Croatian Chamber of Economy and the media, whereas other interested users may subscribe to the reports which are sent by post.</p>
<p>Food Safety and Plant Protection</p> <p>Food Safety, Food Agency</p> <p>Plant Protection</p>	<p>The Food Act, adopted by the Croatian Parliament in July 2003, establishes the integrated approach to food safety regulation throughout the food supply chain, including animal food, too. This created the legal framework for the future approximation of rules to those of the EU. The Act will also enable a better regulation of the quality of food products.</p> <p>The establishment of the Food Agency, as the central institution responsible for food safety, is anticipated within six months of the adoption of this Act. The Agency will be responsible for scientifically based risk analyses and food control throughout the distribution chain, supported by the internationally interoperable ICT. Consumer protection will be ensured by regulations on product declaration, presentation and advertising.</p> <p>ICT support to taking care and informing the public about the activities from the field of plant protection of public interest and issuance of publications, taking care about the implementation of uniform procedures in accordance with the regulations and international requirements; the establishment and keeping of the information system in the field of plant protection; preparing reports, development and maintenance of the PPPs information system;</p>
<p>Veterinary</p> <p>Integrated Border Management</p> <p>Databases and AMINO network</p> <p>Central bovine data base</p> <p>Reproduction and Artificial insemination</p>	<p>Computers and network connections for the veterinary protection system support has been started.</p> <p>Functional and technological Integration into CARDS 2001 programme - "Integrated Border Management" - Enhancing Inter-Agency Co-operation Veterinary sub-project (Veterinary checks of live animals and animal products entering the European Union from third countries, including Border Inspection Posts (BIPs)).</p> <p>Implementation of: listing EU MS BIPs, BIP approval rules, minimum data, rejected consignments, VBI inspector for fish ports, Animo codification, listing of Animo units, Animo message model. All implementations are based on appropriate EU recommendations.</p> <p>Registration and monitoring support system of bovine animals.</p> <p>Computerised processing and analysing of the data in the field of animal reproduction.</p>
<p>Agricultural statistics</p>	<p>Agricultural statistics in Croatia are derived from various sources. The Croatian Bureau of Statistics (CBS) provides annual estimates of production, areas etc. based partly on surveys and partly on estimates. This data do not always agree with those obtained by MAF in the administration of the agricultural payments.</p> <p>The first census of agricultural production in Croatia is being undertaken in the year (2003).</p>

<p>project (WIS)</p> <p>Waste Management Information System</p> <p>Bio-diversity</p>	<p>jointly started in 2001 the Water Information System project (WIS), based on the standards for collecting, processing and reporting water data, as a basis for ensuring public access to information on water management, as well as full interoperability with corresponding EU resources.</p> <p>Standardization and monitoring, as important components of the WIS project (standards for procedures, protocols and the information structure in accordance with EU and other international standards), were accepted. Project is funded within the CARDS 2002 programme. The project is due to be completed by 2007.</p> <p>Among the measures proposed by the Waste Management Strategy: amendments to regulations in accordance with the EU, adoption of by-laws for specific types of waste (such as, construction waste, e-waste), development of education and awareness raising activities, development of programmes for the construction of infrastructure facilities and their inclusion into physical plans; setting up regional landfills and regional waste management centres, construction of incineration facility, setting up hazardous waste disposal sites, implementation of cleaner production projects, establishment of a system for separate collection and municipal waste recycling, rehabilitation and shutdown of unarranged landfills, reduction of waste load on the Adriatic islands, establishment of a system for managing the waste of animal origin; development of the waste management information system is strongly recognised.</p> <p>The creation of habitat maps for the entire territory of the Republic of Croatia (map 1:100.000) as a basis for the elaboration of all types of spatial plans, natural resources management plans, and plans for the management of protected areas, with the GIS technology involved.</p> <p>ICT implementation for systematic inventoring and monitoring of biological and landscape diversity and the creation of National Ecological Network has been started.</p>
<p>Systems, networks and databases</p> <p>Air pollution database</p>	<p>The Air Protection Act (OG 48/95) regulates the air quality monitoring. Republic of Croatia cooperates with three air quality-monitoring stations in urban environments within the international project GEMS (Global Environmental Monitoring System), with two tropospheric ozone-monitoring stations within the international project of Air Quality Monitoring Network – EUROTRAC and with two background or long-range trans-boundary air pollution monitoring stations within the EMEP Programme.</p> <p>Croatia is included in the European project of air pollutants database CORINAIR. The calculation is done pursuant to the obligations under the Convention on Long Range Trans-boundary Air Pollution (LRTAP) of the United Nations Economic Commission for Europe (UNECE).</p> <p>For the year 2000 the road traffic emission calculation has been done by using the new programme package COPERT III.</p> <p>Croatia submits annual reports on emission calculation of major pollutants to the Secretariat of the Convention, on a regular basis, pursuant to the international CORINAIR methodology. It also participates in the interdisciplinary project called « Calculation and Mapping of Critical Load in Soil for the territory of the Republic of Croatia». Within the framework of this project, calculations of critical load of acidifying substances in the atmosphere in respect to forest ecosystems were performed until 2003 for the following regions: Gorski Kotar, north-</p>

<p>Environmental Emission Inventory</p> <p>Poison Register</p> <p>Integrated System for Emission Monitoring</p> <p>Environmental Information System</p>	<p>western Croatia and eastern Croatia. The main initial data for the emission calculation are energy balances and data of the Central Bureau for Statistics (CBS).</p> <p>For larger emission sources the data are obtained from the Environmental Emission Inventory (EEI) and directly from questionnaires and/or measurements.</p> <p>Environment Emission Register contains data on: general data on pollutants and technological units, general data on air pollution, data on water consumption, water use and pollution, data on production, collection and treatment of hazardous and non-hazardous waste, and data on the collection and treatment of municipal waste</p> <p>Ongoing implementation projects are: The LIFE00/TCY/CRO/00086 "Upgrading of the National Emission Inventory System and Enforcement of its Implementation" for the air sector is being developed, and will harmonize the existing methods and standards of collection, transfer and publishing of data and information with EU standards and other international standards; LIFE III – Third countries: the Project "Upgrading of the national emission inventory system and enforcement of its implementation", whose aim is to improve the existing Environmental Emission Inventory (KEO), and GEF Project: "Capacity Building for Improving the Quality of Greenhouse Gas Inventories (Europe/CIS region)".</p> <p>The Croatian National Institute of Toxicology (CNIT) is authorised for the collection of data and drafting of the official poison database. The register of toxic substances and preparations will be completed in the spring of 2004.</p> <p>Several projects are underway, by which capacities are being improved and an integrated system for emission monitoring on a national level is being established.</p> <p>Implementation of environmental information system is planned, which will integrate existing information systems, and involve the new ICT functionalities for: Nature protection system, Industrial Pollution Control and Risk Management, Genetically Modified Organisms and Chemicals, Protection from noise, Radiation protection.</p>
<p>Geo-related Information Systems</p> <p>Establishment of homogenous GPS-point-network</p> <p>Geographical/Tophographical Information System</p> <p>Geodetic and Cadastral System</p>	<p>The Project of establishment of homogenous GPS-point-network 10x10 km started in 1997 and continued in 2002 was completed in the year 2003.</p> <p>New digital Tophographic and Cartographic Information System has been started by 2000 and is planned to end by 2005.</p> <p>Program of the State Survey and Real Estate Cadastre for the Period 2001-2005 is in development.</p>

4.5.6. SCIENCE AND RESEARCH

<p>Croatian Programme for Innovative</p>	<p>Croatian Programme for Innovative Technological Development (HITRA), Guidelines for the Implementation of the HITRA Program: Involving the Potential for National Scientific Research, adopted by the Government of the Republic of</p>
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<p>Technological Development</p>	<p>Croatia on April 5, 2001, Regulation on the Procedure for the Implementation of the Program for Development of Knowledge-Based Companies, (OG 33/2001), and the Foundation of the Interdisciplinary Control Group for the Implementation of the Croatian Program for Innovative Technological Development (HITRA) (OG 108/2001).</p> <p>Institutional framework for technology development includes following institutions defined by the HITRA program: Research and Development Technology Institute, Research and Development Centers, Technology Innovation Centers, Business and Innovation Centre of Croatia (BICRO).</p> <p>The Business and Innovation Centre of Croatia (BICRO) was established in 1998, as a state agency to assume a role of an umbrella institution in the creation of the overall technology infrastructure. After launching the HITRA Program, BICRO has been entrusted with the implementation and coordination of the Program for supporting knowledge-based companies in cooperation with the technology centers. Due to the maturing and developing of the whole system, BICRO is currently under reconstruction towards an institution investing into technology-based companies (introduction and development of new technologies) technology capabilities of companies (productivity/quality) and risk capital, in case that the legal conditions have been fulfilled.</p>
<p>The Information and Communication Support of Science</p>	<p>The Ministry of Science and Technology has been procuring computer equipment and setting up local area networks for institutions of higher education and scientific institutes, and has financed the connection between the Croatian Academic and Research Network (CARNet) and GEANT, bringing its node to Zagreb in spring 2002. By connecting to GEANT, CARNet has resolved an old problem with small international bandwidth capacity. Technical infrastructure for start-up of Gigabit CARNet is finalized by the end of 2003. CARNet network is a data network intended first of all for the transfer of data by using the TCP/IP protocol (Transport Control Protocol/Internet protocol). This protocol is an agreed standard for the widest computer network of today - the Internet. The currently supported version of the TCP/IP protocol on the greater part of the Internet network as well as in the CARNet network as integral part of the global network is version 4 (IPv4). CARNet network has established this link through the GEANT network, at a current link speed of 1,2 Gbps. The GEANT network is a result of the European Union initiative and the society of European academic networks to establish the technologically most advanced computer network that would connect all the European academic and research national networks and at the same time to establish also the link to the commercial Internet.</p> <p>CARNet and SRCE provide the Croatian scientific community with hardware and software resources for advanced computer and information use.</p> <p>The Ministry has financed the Scientific Information System (SZI) which tends to facilitate the networking of scientific libraries in Croatia, particularly of sibling libraries regardless of their organizational and physical setup. The system will have a uniform user interface for all libraries. SZI includes a Centre with on-line access to international databases with science literature and ejournal collections. Croatian scientific literature is available through the Croatian Scientific Bibliography (CROSBI). This database includes all scientific publications by Croatian authors since the early 1990s. It provides the basis for a follow-up and evaluation of results of scientific projects.</p>
<p>Science in Information and Communication Technology</p>	<p>The Ministry of Science and Technology has financially supported scientific projects which include junior researchers. Their number has increased several times since 1999, and now it is 2,200. A junior researcher is offered a limited duration appointment to work on a project and obtain a master's or doctoral degree.</p> <p>Since the autumn 2002, the Ministry of Science and Technology has been financing a new generation of scientific projects (including ICT projects). These projects have been divided in four science fields: natural sciences (computing</p>

	branch of mathematics), technical sciences (computing, telecommunications and information science), social sciences (information science) and liberal arts (information science). The Ministry is seeking to overcome the gaps between these projects through collaboration between them.
Projects applying information technology	<p>The Ministry of Science and Technology has allocated funds to finance iProjekti (iProjects) – projects applying information technology. These projects have been financed for four years in a row. The proposals are usually evaluated, selected, financed and monitored on a one-year basis, much like scientific projects. Unlike scientific projects whose aim is to obtain and publish relevant scientific findings, iProjekti are intended to produce operational software products (digital textbooks, web portals, knowledge bases, computer systems, and software packages).</p> <p>Over 120 projects have been financed and about 80 have been completed. Their authors usually come from scientific and higher education institutions. The Ministry of Science and Technology has obtained ISO 9001:2000 Quality Management System Certifications for the management of iProjekti.</p>
Technology Innovation Centres	<p>Infrastructural institutions founded by academic institutions and supported by the local government and economic entities. They are aimed at materializing ideas, innovations and research results arising from scientific research projects funded from public or private sources. In terms of organization, Technology Innovation Centres are incubators for knowledge-based small and medium-sized enterprises, and not for traditional entrepreneurial undertakings. There are four technology centres:</p> <ul style="list-style-type: none"> • Centre for Technology Transfer (CTT), Zagreb, founded in 1996 • Technology Centre Split (TCS) founded in 1996 • Centre for Innovative Technology Rijeka (TIC) founded in 1997 • Technology and Innovation Centre, Osijek, founded in 2003.
CRO GRID projects (eScience Infrastructure)	<p>GRID Infrastructure (5 interconnected GRID Testbeds: 2 Computing Clusters in Zagreb, 1 Computing Cluster in Osijek, Rijeka and Split. Cro GRID Infrastructure implementation is headed by University Computing Centre Zagreb).</p> <p>GRID Middleware Project (Faculty of Electrical Engineering and Computing and Ericsson Nikola Tesla: Code name - MidArc) has been started. First results have attracted CERN GRID developers.</p> <p>First started projects in GRID Applications are in Chemistry, Physics, Geology, Transportation, and Medicine.</p>
Other ICT implementations	<p>Croatian Island ICT Infrastructure and Network.</p> <p>CARNet:</p>

4.5.7. COURT, JUSTICE AND HOME AFFAIRS

Court and Justice	
Integrated Court Management Information System	<p>Component of National Strategy for Legal and Court Reform, strengthened by:</p> <ul style="list-style-type: none"> • Recommendation Rec(2001)2 of the Committee of Ministers to member states concerning the design and re-design of court systems and legal information systems in a cost-effective manner, and • Recommendation Rec(2001)3 of the Committee of Ministers to member states on the delivery of court and other legal services to the citizen through the use of new technologies, <p>Requirements Specification, Conceptual Design and Elaborated Feasibility Study</p>

<p>Real Property Registration and Cadastre Project</p>	<p>for eCourt Implementation, as well as Implementation Scenario have been finished by the end of 2003.</p> <p>The project involves the following four components: Component A - Real Property Registration System Development; Component B - Cadastre System Development; Component C – Inter-institutional Operations and Information Technology; Component D - Project Management, Legal and Policy Development.</p> <p>The objective of the proposed project is to build an efficient land administration system with the purpose of contributing to the development of efficient real property markets. This will be achieved by addressing aspects of the supporting infrastructure, especially the real property registration system in the municipal courts, the cadastre system that is operated by the State Geodetic Administration (SGA) at the regional and branch office levels, the academic institutions and the private sector support professionals.</p>
<p>Municipal Court Improvement Project</p>	<p>The Municipal Court Improvement Project is designed to set up a model and to assist in the reform of courts and justice system in Croatia. The project will focus initially on the Zagreb Municipal Court. The objectives of the Project are:</p> <ul style="list-style-type: none"> • increase efficiency in the administration and disposition of civil and criminal cases; • improve the quality and timelines of judicial decision-making by strengthening the capabilities of judges, in particular municipal court judges, to better manage the process of adjudicating cases; • assist in formulating and implementing reforms in the structure or operations of the court system.
<p>Digital Company Register</p>	<p>Commercial Court's Digital Company Register in place.</p>
<p>Court and Bankruptcy Administration Project</p>	<p>Court and Bankruptcy Administration Project is designed to assist advancing insolvency proceedings by modernization of selected commercial courts and increasing professionalism and competence of judges and bankruptcy trustees.</p>
<p>Judiciary and Law Faculties</p>	<p>The main objective of the project is to reinforce the Rule of Law and democracy in Croatia by means of the introduction of transparent and integral diffusion of the rulings of the Supreme Court of the Croatia to the legal community and the general public. Immediate objectives are:</p> <ul style="list-style-type: none"> • to make available to all actors of the legal community the rulings of the Supreme Court and to publish gradually also its judgments of the last years; • to facilitate the communication among the members of the legal community by means of Internet connections; • to introduce a systematic knowledge about the rulings of the European Court of Human Rights in Strasbourg and the Court of Justice of the European Communities in Luxembourg.
<p>Education and training system for judges and other judiciary personnel</p>	<p>The purpose of the project is to support development of an education and training system for judges and other judiciary personnel. The project purpose is the establishment of a quality infrastructure within the Republic of Croatia, which is capable on the one hand to support the implementation of the provisions under the SAA and on the other hand to create an environment for the Croatian industry and manufacturers for improved trade and industrial relations with the EU and international market.</p> <p>The specific objectives of the project are:</p> <ul style="list-style-type: none"> • To strengthen the existing training and education system, with respect to its legal and institutional set up, operation and human resources, as well as

	<p>formulating needs for training infrastructure.</p> <ul style="list-style-type: none"> To develop the training delivery system for judges, other judicial and auxiliary court staff.
HOME AFFAIRS	
Information system for electronic data processing in the Ministry of the Interior	<p>Improvement and technological innovations of the Croatian Ministry of the Interior information system was in place.</p> <p>Information system consists of the following sub-systems:</p> <ul style="list-style-type: none"> the subsystem of the service of search includes the register of wanted lists and proclamations for persons, the register of stolen and missing objects and the daily operative bulletin of events; the subsystem of crime includes the register that refers to criminal acts and their perpetrators; for example: an alphabetic register, the register of nicknames, the register of former names and false personal names, the register of personal description, the register of perpetrators of criminal acts, a collection of fingerprints, etc.; the subsystem of foreigners affairs includes the register of foreigners whose prolonged stay has been granted, the register of refugees, the register of foreigners' reported temporary residence, the register of issued identity cards for foreigners, the register of travel documents and visas issued to foreigners, the register of lost travel and other documents issued to foreigners, etc.; the subsystem of traffic includes the register of motor vehicles and caravan vehicles, as well as their owners, the register of traffic accidents, the register of penalties and measures undertaken in traffic; the subsystem of weapons affairs includes the register relating to supply, keeping and carrying weapons and ammunition; the subsystem of fire fighting includes the register on fires and explosions; the subsystem of administrative affairs includes the register of citizens' assigned personal identification numbers, the register of reported temporary and permanent residence in the Republic of Croatia, the register of identity cards, dismissals and refutations of nationality, the register of travel documents, the register of territorial units, the register of persons accepted as Croatian nationals, the register of corporate entities, etc.; the subsystem of human resources; the subsystem of the material and financial affairs defines material and financial affairs of the Ministry of the Interior of the Republic of Croatia; the subsystem of operative-statistic reporting enables the beneficiaries of the subsystem to direct the work of the service on the basis of gathered information; the subsystem of the border-related affairs produces information on numerical indicators of passenger and vehicle traffic, documents, daily operative border bulletin, operative-statistic data, etc.; the subsystem of other activities includes registers that are of unique nature and essential for the functioning of the above- mentioned subsystems (for example, over 400 unique nomenclatures).
Border Management Strategy – ICT infrastructure	<p>"Integrated Border Management" of the CARDS 2001 programme has been started.</p> <p>The aim of project is to draw up an overall strategy of integrated border management with a view to achieve the quality standard, that is the security</p>

<p>Databases and Registers in place</p>	<p>standard which has been imposed by the European Union in the framework of protecting the existing and the future external borders of the EU within the meaning of the Treaty of Amsterdam and taken over from the Schengen regulations.</p> <p>The implementation of project started on 1 October 2002 in co-operation with the representatives of the Federal Border Police of the Federal Republic of Germany and the representatives of the Ministry of the Interior of the Republic of Slovenia.</p> <p>The Project comprises three major components regarding borders, these being: the harmonization of legislation, effective accomplishment of tasks (concept of organization and human resources, technical equipment, IT infrastructure, specific aspects of cross-border maritime, air and railway traffic), as well as professional and expert training of the border police officers. The Project will last for 14 months and its implementation will result in the drafting of guidelines and concepts for further development of the border police in the context of the alignment with European standards.</p> <p>The Border Directorate uses the following registers prescribed by law and kept by the police:</p> <ul style="list-style-type: none"> • the Register of the number of persons crossing the state border; • the Register of issued permits for carrying weapons and ammunition across the territory of the Republic of Croatia, issued certificates on temporary seizure of weapons and ammunition, on licenses for keeping and carrying of hunting weapons issued to the persons arriving to the Republic of Croatia for hunting, and to members of shooting clubs arriving to the Republic of Croatia for shooting competitions or preparations for such competitions; • the Register of issued permits for the movement and stay at the border crossing points and permits for the movement and stay out of the border crossing point locations for international traffic; • the Register of issued visas (i.e. the visas issued to persons at border crossing points); • the Register of issued border passes; • the Register of measures taken towards foreigners; • the Register of violations of the state border; • the Register of persons under reasonable doubt of having committed criminal acts, violations and offences; <p>Stated alignments with Government Interoperability Framework and the technological innovation will provide interoperability and Internet enabled portal integration solutions.</p>
<p>The Agency for the Protection of Personal Data</p>	<p>Agency exercises the following tasks as a public authority: supervises the implementation of personal data protection, points to reported abuses in personal data collection, drafts a list of states and international organizations that have adequately regulated personal data protection, decides on claims for determining the breach of rights guaranteed by the Act, and keeps the central register. The Agency may publish certain major decisions in the Official Gazette. The Agency supervises the implementation of personal data protection upon the request of a data subject, on proposal of a third party or ex officio. The Agency is obliged to consider all claims related to determining a breach of rights in the processing of personal data and inform the applicant on the measures undertaken.</p>
<p>On-line connections between visa issuing authorities</p>	<p>Online connections between diplomatic missions and consular offices and the Ministry of Foreign Affairs began in May 2002 with the implementation of the IKOS computer system (information-communication system). By July 2003, the system has been implemented in 21 diplomatic missions/consular offices in</p>

	<p>Europe.</p> <p>Further online connections between the remaining diplomatic missions and consular offices and the Ministry of Foreign Affairs have been planned and it is envisaged that by the end of 2004, the IKOS system will be in place in all the diplomatic missions and consular offices of the Republic of Croatia abroad.</p> <p>The "visa issuing" system represents a subsystem of IKOS. Diplomatic missions and consular offices in which the IKOS system has been implemented have been feeding all the visa applications into the system since 1 January 2003.</p> <p>The Ministry of the Interior is a co-user of the above-mentioned subsystem. Through IKOS, it receives all the visa applications for which a prior consent is required, as well as all the notifications of the intent to issue visas and all the information on issued visas.</p>
Europol co-operation	<p>A Working Group was established within the Ministry of the Interior with the aim of beginning preparations as soon as possible for negotiations on the conclusion of the Treaty on Co-operation with Europol.</p> <p>Within the framework of the activities directed towards the accession to Europol, on 14 December 2002, within the Ministry of the Interior of the Republic of Croatia a working group was established for the preparation of negotiations for the conclusion of an Agreement on co-operation between the Republic of Croatia and Europol.</p>
Terrestrial Trunked Radio (TETRA) - Technical requirements specification for Digital Advanced Wireless Service (DAWS)	<p>Functional and Technical Requirements for the new system for safety and security as a basis for governmental decisions regarding an agreement for a joint communications network for safety and security as well as corresponding Feasibility Study has been completed by end of 2003.</p> <p>ETSI DAWS standards were fully respected.</p>
National Intelligence Model	<p>The first component of the National Intelligence Model (NIM) has been recently implemented. The Implementation Program to support NIM by a suite of analytical tools to ensure even more effective and efficient use of information and resources has been designed. These tools, intelligence databases and warehouses will effectively store, analyse and manage information as well as provide XML-ed standpoint for Court Case Management System interoperability.</p>

4.6. E-EDUCATION

4.6.1. PRE-SCHOOL, BASIC, SECONDARY AND VOCATIONAL EDUCATION

Orientation of training towards the information society	<p>The main strategic goals of the integration of information and communication technologies (ICT) in the education system have been laid down in the Government Document Croatia in the 21st century – Information and Communication Technology (Official Gazette – 109/02):</p> <ul style="list-style-type: none"> • Young people being trained for life in a society of knowledge and lifelong learning; • The modernization of curricula related to ICT at all levels of education; • Training and in-service teacher training for the application of ICT in class; • The systematic equipping of all schools according to an established
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	<p>standard of computer and communication equipment;</p> <ul style="list-style-type: none"> The use of material and human resources in schools for the basic computer training of adults in the local community. <p>These goals are realized on the basis of implementing the documents and action plans of the Ministry of Education and Sports and the Ministry of Science and Technology.</p>
Mainstream Classes / Optional Classes	<p>Students of the higher grades of elementary school acquire ICT knowledge in their mainstream classes (subject: technical culture) and in optional classes (subject: computer science). In secondary schools (general education and vocational schools), computer science is a one-year mainstream subject (70 hours); in addition to this, it also exists as an optional subject. Most teacher-training faculties include subjects related to computer science and to the application of computers in class.</p>
New ICT curricula	<p>New curricula are currently being completed for elementary and secondary schools, which include more extensive content, knowledge and skills in the area of ICT.</p>
Net in the School	<p>In 2001 (Croatian Telecom donation to Ministry of Education and sport):</p> <ul style="list-style-type: none"> ISDN connection of all 1366 primary and secondary schools to Internet Donation of 1000 PCs. <p>In 2003 (Croatian Telecom donation to Ministry of Education and sport):</p> <ul style="list-style-type: none"> 100.000.000 minutes Internet sessions for each primary and secondary school, free of charge 10 hours of Internet usage for each primary and secondary school, free of charge. Donation of 700 PCs Teacher's Info Portal <p>Each student with the e-mail address. Standardized LAN configuration. Implementation of School Web Pages.</p>
Software Licensing	<p>Microsoft Subscription School Agreement, Antivirus Protection School Agreement.</p>
Syndicated e-procurement of ICT	<p>Syndicated e-Procurement of ICT equipment started in 2001 (through Office for the Internet Infrastructure Development), based on standardized equipment and resulting significant decrease of unit price (approximately 40% lower to street prices)</p>
Portables and LCD Projectors	<p>300 Portables and LCD Projector Completes for the Secondary schools.</p>
Regional ICT Education Centres	<p>6 Regional ICT Teacher Training Centres.</p>
Teach the Teacher Program	<p>By the end of 2003 there were 29.184 Elementary-school teachers.</p> <p>The training of computer science teachers includes seminars/workshops on the application of ICT in class.</p> <p>A large, national project has been initiated which in the next 3-4 years will involve most elementary-school teachers in courses (80 hours) where they will be trained to apply ICT in the teaching of different subjects.</p> <p>For this purpose, 6 regional teacher-training centers have been established for the training of elementary-school teachers and other employees in education.</p>
Digital Content	<p>Individual and/or group initiative of school professors realized predominantly in Web page technologies. Dominance of informatics and natural sciences.</p>

<p>LMS</p> <p>Distance Learning</p> <p>National Grid for Learning (VPN, Smart Card, Learning Repository, Administrative Management, Performance Management)</p> <p>Centralized ePayroll and administrative System – Pilot Project</p>	<p>Learning Management System is not applied in any school production system by the end of 2003. IT-Centar uses proprietary productional LMS implementation for professional ICT education.</p> <p>Examples of good practice in learning have been recorded in some small schools on islands, in the e-schools project of the Croatian Society of Natural Sciences, in adult education ("Birotehnika" Centre for Correspondence Education) and in the education programmes of the Serbian Cultural Society Prosvjeta for members of the Serb national minority.</p> <p>The elaboration of a project on distance learning by computer is underway, and is devoted to the learning – education of children living on medium- sized and small islands – in four Croatian regions (the Kvarner, Zadar, Šibenik and Dubrovnik regions), and in isolated mountain villages and hamlets.</p> <p>Implementation strategy for National Grid for Learning has been accepted by the Government Steering Committee for Internetization in 2002.</p> <p>There is ongoing activity on Functional Specification definitions for eSchool aligned with corresponding international standards and interoperability.</p> <p>Start of real implementation is heavily dependent with the start of implementations of Common eGovernment Infrastructure (Government Network, National Smart Card, Institutional Entities for ICT in Education), and has not been started by the end of 2003.</p> <p>Due to Agreement with Government and Financial Institute (FINA), Pilot implementation of centralized Internet based Payroll and Administrative System for schools in Karlovac County (Karlovačka županija) has been implemented.</p>
<p>Pre-school</p>	<p>1,067 kindergartens, of which 920 were public, 93 were private and 54 founded by certain religious congregation. 6 783 Pre-school teachers by the end of 2003. There were 89,107 attendants at pre-school institutions.</p> <p>Emergence of CDs with corresponding creative pre-school leveled games as a result of private initiatives and entrepreneurships.</p>
<p>Basic Compulsory</p>	<p>In the school year 2001/2002, there were 828 elementary schools (central schools) and 1,260 branch schools. There were 395,709 elementary school pupils.</p> <p>Each elementary school is connected to Internet. 224 PC networked classrooms installed. 11.500 PC installed, 34,5 students/PC.</p>
<p>Secondary and Vocational Education</p>	<p>In the school year 2003 there were 650 secondary schools and 49 students' dormitories. 19.733 Secondary-school teachers by the end of 2003. Around 96% of students enter secondary education upon completing compulsory education. There were 196,147 secondary school students.</p> <p>Each secondary school is connected to Internet. 89 PC networked classroom installations. 9.500 PCs installed, 20 students/PC.</p>

4.6.2. HIGHER EDUCATION

<p>Networked higher education institutions</p> <p>CARNet</p>	<p>The higher education system comprises five universities (the University of Zagreb, the University of Rijeka, the University of Osijek, the University of Split, the University of Zadar) with some eighty faculties, art academies, four-year colleges, university departments and degree programmes, seven two-year colleges (Zagreb, Karlovac, Rijeka, Split, Dubrovnik, Požega), six independent four-year colleges, thirteen private accredited four-year colleges and one private accredited two-year college. Around 65-70% of those who complete Upper secondary education enrol at higher education institutions. In the school year 2002/2003 there was a total of 47.225 students enrolled in first semester of university education. There were 116,434 students at higher education students.</p> <p>There were 8 132 Higher-education teachers by the end of 2003.</p> <p>All higher education institutions are connected to the Internet through CARNet – Croatian Academic and Research Network. CARNet is fully funded from the budget of the Ministry of Science and Technology. The speed of connection ranges from 2 to 622 Mbps. The full cost of connection is covered through CARNet.</p> <p>In 2003 CARNet increased the throughput of the national backbone to 2Gbps. The procurement of the equipment is realized through public tenders and the Ministry of Science and Technology pays the supplier after the equipment has been delivered.</p> <p>The Ministry of Science and Technology provides funding for the procurement of software and on-line databases for university libraries within the project Scientific Information System. This project makes online databases available to both students and teachers in all research-teaching institutions. The project is being implemented by three ministries: the Ministry of Science and Technology, the Ministry of Education and Sports, and the Ministry of Culture. The aim of the project is to create a common network integrating all higher education institutions, primary schools, secondary schools and public libraries using standardized computer equipment and software. All university libraries are connected to the Internet through CARNet.</p>
<p>e-Learning</p> <p>Referral centres for eLearning programme</p> <p>Teleconference Rooms (TCRs)</p> <p>TEMPUS,</p>	<p>The Ministry of Science and Technology provides the information-communication infrastructure for distance learning through support to the development of guidelines and the organization of referral centers for eLearning programme support and methodology, by setting the standards of teleconference rooms (TCRs), and by purchasing the necessary computer and software equipment for universities. These activities are implemented by the Croatian Academic Research Network – CARNet.</p> <p>The contents covered by the referral centers include the selection of courseware tools, the production of educational material, the selection of computer and programme support for the application of IT in class, the reporting of distance learning projects, the production of multimedia elements and their adjustment to the worldwide web, methodic and communication in distance learning, and self-evaluation and knowledge assessment with the application of IT.</p> <p>Until now, six TCRs have been established in Osijek, Rijeka, Split, Šibenik and Zagreb. By the end of 2003, it is planned to build another nine TCRs in Dubrovnik, Osijek, Pula, Rijeka, Varaždin, Zadar and Zagreb. TCRs provide support to distance learning and teleconferencing, the transfer of video recordings on the Internet, and the production of educational digital video contents for later online access.</p> <p>Distance learning is also included in international projects, such as the TEMPUS</p>

<p>EURECA programmes</p>	<p>and EUREKA programmes. Several Tempus projects include modules to which distance-learning methodology is applied. These are mostly regional projects which involve more than one Western Balkan country, and which are coordinated by an institution of an EU member state. These are, for example:</p> <ul style="list-style-type: none"> • European study for Western Balkan countries coordinated by Salzburg University; • The establishment of the postgraduate study of tourism coordinated by the higher education and technology institute in Thessalonica; <p>The education of judges in Croatia, and Serbia and Montenegro, with the aim of creating a European Legal Area, a project coordinated by the University of Bologna.</p> <p>Regarding the EUREKA programme, Croatia was one of the co-founders of the EUROLEARN umbrella project within EUREKA. The project has gone through its pilot stage and is now in the phase of full implementation. Although e-learning culture is not well developed in Croatia, it is becoming increasingly accepted. In technological terms, as well as in terms of staff capacity, Croatia does not lag behind the European Union in the production of e-learning. The problem lies in introducing technology for general use, which, due to technical equipment requirements, demands additional investment. The pilot projects implemented so far have been successful.</p>
<p>Digital Content for Education</p>	<p>First implementations of Digital content for education on standalone electronic media (CDs) and/or as Web pages were based on individual activities and initiatives. Attractive implementations are coming from individuals in natural sciences.</p> <p>Programs and Incentives through Ministry of Science and Technology/CARNet have resulted in weak acceleration in digital content creation.</p>
<p>Distance Learning</p>	<p>Distance learning is not sufficiently represented in educational levels preceding higher education, although its significance is being increasingly recognized. Currently, there are only a few institutions and professional associations that offer these services.</p> <p>Distant Learning is organized and implemented in the Institute for Educational Development of the Ministry of Education and Sports in cooperation with the Ministry of Public Works, Reconstruction and Construction. The project is currently in the phase of the elaboration of a methodic-methodological model, after which the software for individual subjects and areas will be produced. It is expected that these projects will at least alleviate the emigration of the population from these areas. The programme will be posted on the web, so that all the geographical regions of Croatia will have access to it. A more significant expansion of this form of education is planned for the future, The Ministry of Education and Sports supervises the work of institutions within the education system by approving individual programmes, which must match the goals of the curriculum.</p> <p>Within the higher-education system, distance learning has just been introduced at some institutions of higher education, although this form of education has been envisaged by the higher-education reform, for which funds will be provided from the state budget.</p>
<p>Smart card / X-Card</p>	<p>Implemented for higher education students from 1999. Functionality improved in 2002/2003.</p>
<p>Information System for Higher Education (ISVU)</p>	<p>Full Functional Student Service Administration Information System for Higher Education, started as the Pilot project of the Ministry of Science and Technology, Developed at the Faculty of Electric Engineering and Computing and hosted by SRCE – University Computing Centre – Zagreb, it is now in deployment phase,</p>

	for more than hundred higher universities, 117.000 students, 5.500 teachers, 12.000 courses, 100.000 exams/year, 400.000 different issued documents, consolidated reporting.
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4.6.3. PROFESSIONAL ICT EDUCATION

ECDL in Croatia	Based on Croatia ICT Strategy Recommendation, CITS – Croatian Information Technology Society signed the Agreement for implementation of ECDL Program in Croatia with European Computer Driving Licence Foundation - Dublin in September 2003.
Licensed Training and Examination Centres	In the ongoing process 14 Training and Testing Centers were authorized in Croatia by the end of 2003. European Computer Skills Card (ECSC) is provided as the internationally recognised certification document.
Cisco Academia	Dedicated Educational Cisco Programs is realized through existing educational institutions (SRCE, CARNet, Faculties/Universities, some vocational schools), or independent ICT education centers.
XML Academia	Technical University Zagreb is finalizing curriculum for XML Academia. Implementation is expected in 2004.
Professional ICT Education Centres	
Software Vendors Education Centers	IBM Education Center, IBM Certified Education Centers, Oracle Education Center, Microsoft Education Centre, Microsoft Certified Centers
Independent ICT Education Centers	Institutional (SRCE, CARNet, etc.) and private centers (IT Center, Algebra, etc.) are giving services in professional ICT education and training. Some of them are certified partners for education and training with Software vendors.

4.6.4. INTRODUCING LITERACY TO ADULTS

Legal environment	Adults are entitled to enrol in a secondary school (with programmes of adult education) under equal conditions, the only difference being that they themselves or their sponsors must pay for tuition.
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4.7. E-HEALTH

4.7.1. NATIONAL HEALTHCARE ICT IMPLEMENTATION STRATEGY

National Healthcare ICT Implementation Strategy	The determinants for architecture of national healthcare information system has been based on:
National documents	National strategic documents: <ul style="list-style-type: none"> • Croatian strategy for health and health insurance reform (Ministry of Health,

<p>International documents</p> <p>Health Information System Conferences and Forums</p> <p>Pilot Projects</p>	<p>June 2000)</p> <ul style="list-style-type: none"> • Strategy of Information and Communication Technology Development – Croatia in 21st Century (Draft Version January 2001, Final Version January 2002) • National Health ICT Implementation Strategy (Government Steering Committee for Internetization, 2001) <p>International documents:</p> <ul style="list-style-type: none"> • eEurope Action Plans: 2000, 2002, 2005 • EU eHealth Strategy • The eEurope Smart Card (eESC) initiative • Selected National eHealth Strategies (GB, USA, Canada) <p>Health Information System Conferences and Forums:</p> <ul style="list-style-type: none"> • Conference on Health Information System and Telemedicine Developments, Zagreb, May 2001 • National Health Information System Implementation Conference, Zagreb, November 2002 • Cooperation on Sustainable Healthcare Strategies, 1st Central East and South East Europe Symposium, Zagreb, September 2003: <ul style="list-style-type: none"> ○ Implementation and Interoperability of Health Information Systems in Central and South East Europe: Major Issue of the Reform, ○ Sustainable Cardiovascular Healthcare and Technology Strategies for CE&SEEurope – Leading health and economy problem <p>Knowing the complexity of national healthcare information system and having experienced inefficiency and incompatibility of isolated legacy systems, competitive national pilot project approach has been started:</p> <ul style="list-style-type: none"> • Primary Healthcare Information System – Jun/August 2003 • Integrated Hospital Information System – Jun 2003
<p>National Requirements</p> <p>The strategic information requirements</p> <p>Specific targets</p>	<p>The strategic national requirement for the NHIS is to enable implementation of NHS Reform.</p> <p>The strategic information requirements are:</p> <ul style="list-style-type: none"> • to ensure patients can be confident that the National Health System (NHS) professionals caring for them have reliable and rapid access, 24 hours a day, to the relevant personal, medical and health information necessary to support their care • to eliminate unnecessary travel and delay for patients by providing remote on-line access to services, specialists and care, wherever practicable • to provide access for NHS patients to accredited, independent, multimedia background information and advice about their condition and to provide every NHS professional with on-line access to the latest local guidance and national evidence on treatment, and the information they need to evaluate the effectiveness of their work and to support their professional development • to ensure the availability of accurate information for managers and planners to support local Health Improvement Programmes and the National Framework for Assessing Performance • to provide fast, convenient access for the public to accredited multimedia advice on lifestyle and health, and information to support public involvement in, and understanding of, local and national health service policy development. <p>The specific targets are:</p> <ul style="list-style-type: none"> • reaching agreement with the professions on the security of electronic systems and networks carrying patient-identifiable clinical information • developing and implementing a first generation of person-based Electronic

<p>Integrated Management and Control</p>	<p>Health Records, providing the basis of lifelong core clinical information with electronic transfer of patient records between GPs</p> <ul style="list-style-type: none"> • implementing comprehensive integrated clinical systems to support the joint needs of GPs and the extended primary care team, either in GP practices or in wider consortia (e.g., Primary Care Groups) • ensuring that all acute hospitals have the ability to undertake patient administration, including booking for planned admissions, with an integrated patient index linked to departmental systems, and capable of supporting clinical orders, results reporting, prescribing and multi- professional care pathways • connecting all computerized GP practices to NHS Virtual Private Network (NHS VPN) • providing 24 hour emergency care access to relevant information from patient records • using NHS VPN for appointment booking, referrals, discharge information, radiology and laboratory requests and results in all parts of the country • the development and implementation of a clear policy on standards in areas such as information management, data structures and contents, and telecommunications, with the backing and participation of all key stakeholders • community prescribing with electronic links to GPs and the Prescription Pricing Authority • routinely considering telemedicine and telecare options in all Health Improvement Programmes • offering NHS Direct services to the whole population establishing local Health Informatics Services and producing hosted local implementation strategies • completing essential national infrastructure projects including the networking infrastructure, national applications etc • opening a National Electronic Library for Health with accredited clinical reference material on NHS VPN accessible by all authorized NHS organizations • planning and delivering education and training in informatics for clinicians and managers <p>Management and control in Health System: strategic and operational patient relationship management, drug prescription, referrals, therapeutical processes performance and drug efficiency assessments.</p> <p>GP: Authorized access to distributed EPR and related medical document resources (images, laboratory evidences, diagnostics, etc.), emergency and crisis management, professional and administrative messaging management, personal performance management, health and medical reporting system.</p> <p>Public health: Healthcare Intelligence, evidence based management in public health, public health dynamics based on Population register.</p> <p>Ministry of Health and Social Care: Healthcare Intelligence, Health Performance Management, Business Intelligence, Health resources management.</p> <p>Health Insurance Institute: Direct HL/7 communication on healthcare activities, ICPC-2 activity based costing, Evidence based Planning, Budgeting and Monitoring, Pharmacy management, drug consumption management.</p> <p>Patient: Direct control on Patient electronic record, Quality of service assessment and review, Patient Relationship Management, Privacy Audit and Reporting, Healthcare Service Ordering System, Public Related Health education, Discrete Selection/Change of GP.</p> <p>Public: Health condition of the population, transparency and benchmarking of public health services,</p>
<p>International Requirement</p>	<p>Functional and technological regional and international interoperability of National Health Systems, focused to meet EU eHealth goals by the end of 2005.</p>

	To serve, smoothly and cooperatively, any requirement for healthcare of any resident and/or non-resident during his/her stays in Croatia.
National Smart Card	Implementation of National Smart Card, as a common multifunctional smart card infrastructure, serving multiple government and public requirements.
Regional Initiative	
Multilateral	Interoperability of Smart Card based Health Services between Austria, Hungary, Italy, Slovenia and Croatia.
Bilateral	Slovenia, Croatia: Joint meetings of Health Insurance representatives, Health Card operators, Government representatives.

4.7.2. PRIMARY HEALTHCARE INFORMATION SYSTEM

Functional Specifications	Primary Healthcare Information System is composed of two basic components: one Central System and several Client Systems.
Central System (G1)	<p>Primary healthcare information system management: health insurance management, patient management, electronic health documentation management, extended communications management, health information system reporting management.</p> <p>Clinical Information System Management: service management, data access and protection management, clinical documentation management, health related registers management (state, local), HL/7 communication system, clinical data management, "virtual" electronic health and electronic medical record management.</p> <p>Administrative and business support: Global registration management, health insurance database management, personal ID-management, national MKB-10 classification system, ICPC-2 classification system, drug, pills, orthopedic supplement list management, list of services and procedures.</p> <p>Privacy and security management: Smart card technology driven privacy and security for patients and healthcare professionals, user authentication system, role based data access control.</p> <p>Additional functionalities: External database access (medical and health libraries, e-professional education, registers), intranet and internet communication.</p> <p>Technical and technological integration with the: Hospital information systems, Institute for public health information system, Institute for health insurance information system, Central state treasury system, Ministry of Health and social care information system.</p>
Client System (G2)	<p>Health Professional: Role based Health Profession Identification, Authentication and administration services, Patient care service workflow, Diagnostics, Referrals, Prescriptions, Medical Services, Autoimmunization of patient health and medical document generation, Professional navigation services, Visit Management, Laboratory services, Calendar and administrative Management, Comprehensive Reporting System.</p> <p>Health and Medical Supporting services: Health documentation management, Clinical documentation management, Decease Related Drugs Recommendations, Drug Retrieval</p> <p>Patient oriented services: Visit registration and waiting room management, Patient identification, Authentication and administration services, Patient related medical documentation (laboratory, images, other), task list, procedures and memos, Patient Relationship Management,</p>

	<p>Patient Management: General Patient Data, Health insurance related data, Patient Health Data (Anamnesis, Risk factors, Allergies, Medical treatments, Health Problems, Chronical deceases,), Patient Medical Data, Vaccinations, Administrative document issued, Illnesses.</p> <p>Interoperability with core primary healthcare system: XML/HL7 Client Agent communications services.</p>
Pilot project Implementations	<p>Primary Healthcare Teams (medical Doctors, Nurses) involved: 60 Pilot Population (Insured in care) involved: 100.000 Number of G1 Pilot implementers: 4 Number of G2 Pilot Implementers: 7</p> <p>After Pilot results: Contracted National Implementers: G1: Ericsson Nikola Tesla G2: 6 qualified implementers</p>

4.7.3. NATIONAL LICENCE FOR HOSPITAL INFORMATION SYSTEM

Functional Specifications	<p>List of 3052 detail functional specifications has been specified. Tender document specifies 1500 higher level requirement specifications.</p> <p>The very high level functional specification contains following areas:</p> <p>Management and control: Consolidated strategic, strategic, tactical and operational management, Investment management, Business intelligence, Performance management, Controlling.</p> <p>General services: Accounting (managerial and financial) and general ledger, Payroll, Inventory management.</p> <p>Patient Management: Patient administration, patient accounting and billing, patient scheduling, patient service management, marketing and health promotion.</p> <p>Diagnostics and therapy: Diagnostic support and ancillaries, clinical order management, medical and clinical documentation, treatment and operation, research and education.</p> <p>Care Management: Care planning, clinical care, care documentation, after care management.</p> <p>Hospital and health system communication: Internal communication, communication with providers, communication with payers, communication with patients, communication with suppliers.</p> <p>Support services: Medical technology, environmental health and safety, transportation, facility services, Health and Medical document management, Patient information center (help desk)</p> <p>Business support: Human resource management, procurement, treasury/corporate finance management, fixed asset management, real estate, equipment maintenance.</p> <p>Interoperability: medical equipment data communication, external professional and administrative communications.</p>
Pilot project Implementations	<p>Pilot Hospitals: Sveti Duh, Zagreb; Dubrava, Zagreb, Rijeka, Split</p> <p>Pilot implementers: B2B (SAP), IBM Croatia (Cerner), AME Consortium, Ericsson Nikola Tesla</p> <p>The winner of competition in Pilot implementations is planned to earn the National license for Hospital Information System.</p>

4.7.4. TELEMEDICINE

<p>Projects</p> <p>Telemedicine Services for Islands and Remote Areas</p>	<p>Firs initiatives dated by 1999 (Academy of Medical Sciences).</p> <p>Supported by Ministry of Health, the project of telemedicine for island started in 2000. The first step including four islands in the Krk-Cres-Losinj archipelago resulted by success.</p> <p>Virtual Polyclinic Network which started in 2001 involves: Islands Cres, Lošinj, Krk, Šolta, Brač, Vis, Lastovo, Mljet; connected to 5 consulting units in Rijeka and 5 consulting units in Zagreb.</p> <p>National teleradiology network including more then 30 CT stations is in production. National telepathology and teleradiology network is in function.</p>
<p>Conferences</p>	<p>Development of Telemedicine in South East European Region, Dubrovnik 2001</p> <p>1st Croatian Congress on Telemedicine with International Participation, Makarska, 2002</p>
<p>Institutions and postgraduate study</p>	<ul style="list-style-type: none"> • Academy of Medical Sciences – Island Telemedicine • Croatian Medical Association - Croatian Society for Telemedicine • Reference Centre for Computed Surgery and Telesurgery of the Ministry of Health of the Republic of Croatia • Telemedicine in the postgraduate studies at the Zagreb University School of Medicine

4.8. E-DEMOCRACY

e-Democracy is associated with the intent to broaden citizens' participation in societal decision making through online debate. The problem areas that cover e-democracy are:

- Access to on-line information on public affairs,
- Electronic voting,
- Web forums/consultations/on-line deliberation.

Status and achievements by 2003 are as follows:

<p>e-Democracy</p> <p>Individual citizen initiatives</p> <p>Political parties</p>	<p>Internet had a very important role in the democratization of the Croatian society from the end of the nineties up to 2003.</p> <p>Two first individual (NGO) pages started in May 1999: izbori.net (elections.net) and vlast.net (government.net). At the beginning only 92 visitors entered to pages. June was much better with 2000 visitors, but it was still an insignificant number. But the political scene was getting into full swing and these two pages made it possible for the citizens to speak their minds, learn about other people opinions, ask politicians directly about their attitudes. The number of visitors was rising 40% each month and on the day following the elections there were record 100,000 visitors. Comparing this number to the circulation of largest dailies (200,000) it was an enviable score.</p> <p>There is no one political party in 2003 (parlamentary or not) without its Internet</p>
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ISP Portals	presence. Groups and individuals are using Internet portals to communicate, unofficially vote, or simply consume and comment related informations.
Government	The Parliament, the President, The Government and almost all government institutions (central, regional, local) are maintaining Internet portals, providing comprehensive but focused digital content to the public.
ICT support of elections	2003 elections have been heavily supported by ICT in the: <ul style="list-style-type: none"> • preparation phase - collaborative extranet portal (register of political parties, candidates, voting areas and voting places, voters; collaboration of all elections stakeholders) • counting phase (distributed voting data entry and control, results of elections, administrative support) • information phase public portal Implementation of e-Voting technology has been considered.

4.9. E-CULTURE

With the goal of uncovering and combining the national cultural inheritance and economic and societal activities for international share, adjusting the cultural institutions to new digital environment, making it more accessible and enjoyable to all, following achievements by the end of 2003 are obtained:

Web-site on cultural projects and activities	The Ministry of Culture has been implementing universal access and participation in the information society by making available on its web-site all information about ongoing cultural projects, about digitizing cultural heritage under the Ministry's authority (monuments, archives, libraries, museums, immaterial heritage) and especially about digitizing church heritage according to the contractual obligations signed between the Government of Croatia and the Vatican, within the framework of a number of international projects (Alps-Danube-Adriatic, Danubian Cultural Itinerary). Web-pages CulturenetCroatia dedicated to cultural events which have been posted on the Ministry's web-site are a project realised in co-operation with the Open Society Institute.
Information technology for the public libraries on the island and special state concern areas	In the framework of national projects for the revitalisation of islands and areas of special state concern, the Ministry of Culture has particularly focused on introducing information technology to public libraries and on stimulating projects for public Internet access to users of all ages. The Ministry of Culture provides public libraries on the islands and in the areas of special state concern with financial support for book acquisition, computerisation and investments through public competitions announced every year in the press and on the web-pages of the Ministry.
"Teuta" - cultural heritage information system	A cultural heritage information system built on Central Inventory of Cultural Heritage, including collections of documents (photo library, photo collection on CDs, map library and microfilm), Registry of Cultural Goods, War Damages to Immovable Cultural Heritage, Project Proposals for the Preservation of Cultural donuments and a number of accompanying files necessary for such preservation service to operate. System conforms to the European standards (Council of Europe

	<p>recommendations and directives, ISO standards) in terms of information content and structure, as well as in terms of the platform on which the system has been built. These warrant smooth connection and data exchange with other similar systems on the national, regional or international level. Moreover, the system is open for upgrade and adjustment and may prove useful in those countries which have not started to develop their own information systems or may serve as the basis for a larger, regional project to digitise cultural heritage.</p> <p>In its next phase of development, Teuta will be upgraded to web technology which allows input of and access to data from many locations at the same time as well as the connection with similar systems in the country and abroad.</p>
CultureNet	<p>CultureNet.hr is a project of the Ministry of Culture realised in co-operation with the Open Society Institute Croatia whose aim is to put together all available cultural data resources (organisations, associations, institutions, projects, etc.), encourage their use and improvement, and make relevant information (such as that on potential partners) available to all culture workers.</p> <p>The idea of CultureNet is to improve cultural co-operation in Croatia and abroad, as well as to improve the interaction between Croatian cultural institutions, between institutions and artists, and between these two and general public. The intention of this portal is to bring together all cultural resources in Croatia, public and private, profit and non-profit, mainstream and underground.</p>
Culturelink	<p>Culturelink, a project by UNESCO, Council of Europe, Ministry of Science and Technology, and Ministry of Culture is a world network of international co-operation in cultural development and data exchange related to culture and cultural policy.</p>
Culture incentives and ICT related activities	<p>The Ministry of Culture has in many ways encouraged and financed online projects related to publishing and publications, especially to online bookstores, e-book development, and online ticket reservations for performances. It has also organised a number of conferences and seminars dedicated to the development of the information society and encouragement of ICT use in civil society.</p>

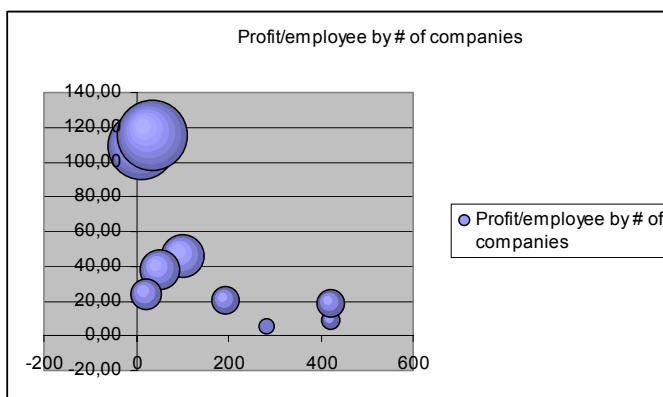
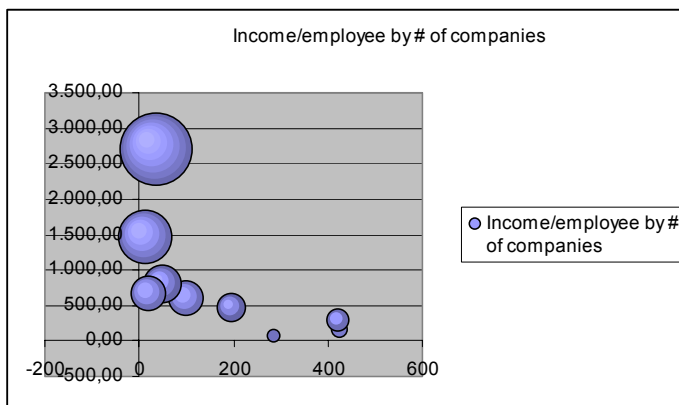
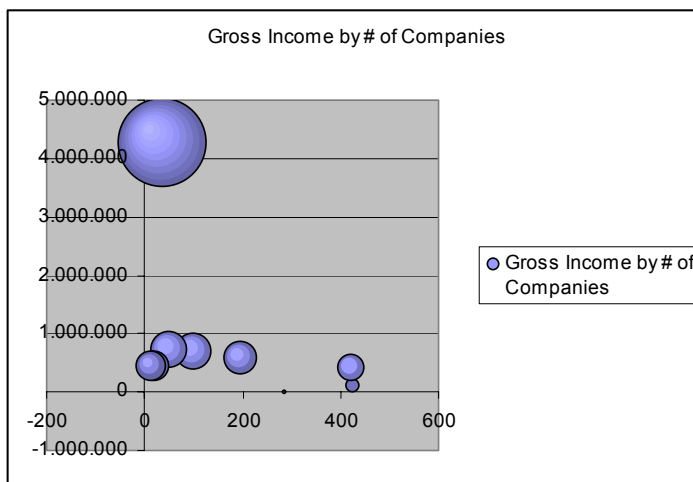
4.10. ICT INDUSTRY

ICT industry in Croatia is characterized by relatively large number of small-sized companies and small number of large-sized companies. Leading ICT industrial capacities are accommodated at the local branches of Ericsson and Siemens multinational companies – Ericsson Nikola Tesla d.d. and Siemens d.d.. World leaders like IBM, Microsoft, Oracle, SAP, as well as many others, have its local representatives. Small satellite-like companies are building partnering networks around the foreign principals. There is a new positive tendency of ICT consortium and cluster establishments initiated by large national projects like National Health Information System (Ericsson Nikola Tesla Health Consortium – potentially new Croatian ICT export product). Respecting the requirements of Information Society and respective Information Society Technologies, there is significant potential for the new players on the emerging market.

ICT as a new industry sector is evident in rank of ICT companies in Croatia's 400 largest companies (one company is in the first 100). ICT has a branch within the Croatian Entrepreneurs Association.

10000				
10001-20000	50	909	724.003	34.384
20001-30000	20	691	464.652	16.470
30001-50000	12	317	464.804	34.652
50001-595247	35	1.587	4.287.172	182.499
		8.180	7.783.519	381.948

Source: Infortrend 10/2003



Telecommunications		No of ICT companies	No of employees	Gross Income (000.000 kn)			
	2001	30	12.302	8.995,23			
	2002	43	12.312	10.475,42			
	<i>Sourca: FINA, 2002</i>						
	Employee range	No of ICT companies		No of employees		Gross Income (000.000 kn)	
		2001	2002	2001	2002	2001	2002
	0	5	11	0	0	0,69	0,34
	1-10	20	24	70	87	35,17	12,46
	11-50	3	5	45	76	38,96	16,46
	51-500	0	1	0	381	0,00	8,42
	501-1000	1	1	943	992	1.766,99	2.310,43
	<1000	1	1	11.244	10.776	7.153,42	7.931,32
	<i>Sourca: FINA, 2002</i>						
ICT professionals in business entities	Approximately 61.000 business entities in Croatia have established some organizational form for ICT support (unit, department, etc.).						

5. FUTURE DEVELOPMENT





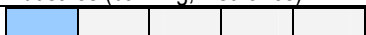








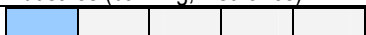








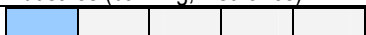




5.1. NEW DEVELOPMENTS




Decision making process in Knowledge Economy is based on systematic measurement and information delivery for sustainable economic and social development.

Product Lifecycle Management, Intelligent Enterprise, Intelligent Production System, Supplier Relationship Management, Collaborative Value Chain Management, to mention few, are vital ICT system components for participation in geographically unconstrained Global Virtual Companies.

Here are the first signs of readiness for implementations.

Product Lifecycle Management (PLM)	PLM solutions address the business imperatives that rise out of today's digital economy to challenge the way to manage federated inter-corporate product lifecycle and to establish creation value chain competitive effectiveness.
Centres of Excellence	Centers of Excellence for PLM Education and Training are established at the

<p>for PLM Implementations</p>	<p>Faculty of Mechanical Engineering and Naval Architecture in Zagreb and Faculty of Mechanical Engineering in Slavonski Brod.</p> <p>New generation of Mechanical Engineering Engineers are trained to spread and implement PLM technologies in their professional assignments.</p>																														
<p>Implementations of Business Management Technologies</p>	<p>There are some partial implementations of Business Management Technologies. Implementation is correlated by economic potential of companies and established level of international cooperation/relation.</p> <p>Implementations are not significantly followed by improvements of human and technological capacities in managerial schools.</p> <p>Implementation Readiness scale for ICT supported Business Management is as follows:</p> <table border="1" data-bbox="596 680 962 748"> <tr> <td style="background-color: #ADD8E6;">1</td> <td style="background-color: #FFDAB9;">2</td> <td style="background-color: #FFA500;">3</td> <td style="background-color: #FF4500;">4</td> <td style="background-color: #FF0000;">5</td> </tr> <tr> <td colspan="2">Low</td> <td colspan="3">High</td> </tr> </table> <table border="1" data-bbox="596 779 1382 2022"> <thead> <tr> <th data-bbox="596 779 991 842">Generic Management Technologies</th> <th data-bbox="991 779 1382 842">Estimation of Implementation Readiness</th> </tr> </thead> <tbody> <tr> <td data-bbox="596 842 991 994"> Intelligent Enterprise Enterprise intelligence strategies Supplier intelligence strategies Organizational intelligence strategies Customer intelligence strategies </td> <td data-bbox="991 842 1382 994">  Existence of vendor representatives and corresponding marketing activities. </td> </tr> <tr> <td data-bbox="596 994 991 1146"> Enterprise Risk Management Risk adjusted return on capital (RAROC) Performance measurement and incentives </td> <td data-bbox="991 994 1382 1146">  Partially implemented in Financial industries (banking, insurance) </td> </tr> <tr> <td data-bbox="596 1146 991 1299"> Enterprise Performance Management EPM Strategy mapping Balanced Scorecard </td> <td data-bbox="991 1146 1382 1299">  Existence of vendor representatives and corresponding marketing activities. </td> </tr> <tr> <td data-bbox="596 1299 991 1397"> Financial Management Solutions Financial Planning, Budgeting, Analysis, Forecasting </td> <td data-bbox="991 1299 1382 1397">  Partially implemented in Financial industries (banking, insurance) </td> </tr> <tr> <td data-bbox="596 1397 991 1585"> Human Capital Management Support organizational goals by providing the information to acquire, maintain, develop and retain human capital Human Capital Scorecard </td> <td data-bbox="991 1397 1382 1585">  Existence of vendor representatives and corresponding marketing activities. </td> </tr> <tr> <td data-bbox="596 1585 991 1684"> Integrated Business Intelligence IBI </td> <td data-bbox="991 1585 1382 1684">  Partially implemented in Financial industries (banking, insurance) </td> </tr> <tr> <td data-bbox="596 1684 991 1827"> Intelligent Production - Manufacturing System Process Intelligence for Manufacturing The Collaborative Space </td> <td data-bbox="991 1684 1382 1827">  </td> </tr> <tr> <td data-bbox="596 1827 991 1980"> Total Quality Management TQM </td> <td data-bbox="991 1827 1382 1980">  Partially implemented in constructing/manufacturing industries. </td> </tr> <tr> <td data-bbox="596 1980 991 2022"> Activity Based Cost Management </td> <td data-bbox="991 1980 1382 2022">  </td> </tr> </tbody> </table>	1	2	3	4	5	Low		High			Generic Management Technologies	Estimation of Implementation Readiness	Intelligent Enterprise Enterprise intelligence strategies Supplier intelligence strategies Organizational intelligence strategies Customer intelligence strategies	 Existence of vendor representatives and corresponding marketing activities.	Enterprise Risk Management Risk adjusted return on capital (RAROC) Performance measurement and incentives	 Partially implemented in Financial industries (banking, insurance)	Enterprise Performance Management EPM Strategy mapping Balanced Scorecard	 Existence of vendor representatives and corresponding marketing activities.	Financial Management Solutions Financial Planning, Budgeting, Analysis, Forecasting	 Partially implemented in Financial industries (banking, insurance)	Human Capital Management Support organizational goals by providing the information to acquire, maintain, develop and retain human capital Human Capital Scorecard	 Existence of vendor representatives and corresponding marketing activities.	Integrated Business Intelligence IBI	 Partially implemented in Financial industries (banking, insurance)	Intelligent Production - Manufacturing System Process Intelligence for Manufacturing The Collaborative Space		Total Quality Management TQM	 Partially implemented in constructing/manufacturing industries.	Activity Based Cost Management	
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	ABC/M	Existence of vendor representatives and corresponding marketing activities.
	Customer Relationship Management Strategic CRM Operational CRM	 Partially implemented in Financial industries (banking, insurance)
	Supplier Relationship Management	
	Collaborative Value Chain Management Value chain analytics (VCA) Multiple trading partners across the value chain Profit Opportunities Across the Value Chain Value Chain Analysis Across the Enterprises Cost Analysis and Cost Drivers	

5.2. IMPORTANT EVENTS IN NEAR FUTURE

Country Developments	National programme for the integration of the Republic of Croatia into the European Union – 2004. European Commission's opinion (avis) on Croatia's application.
Conferences	Information Technology Interfaces - ITI 2004 CASE 2004 Mipro 2004 Business Process Reengineering 2004
International ICT Fair	International INFO 2004 Fair (with the Promotion of e-Government Services Involved).

5.3. BENCHMARKING

5.3.1. BENCHMARKING

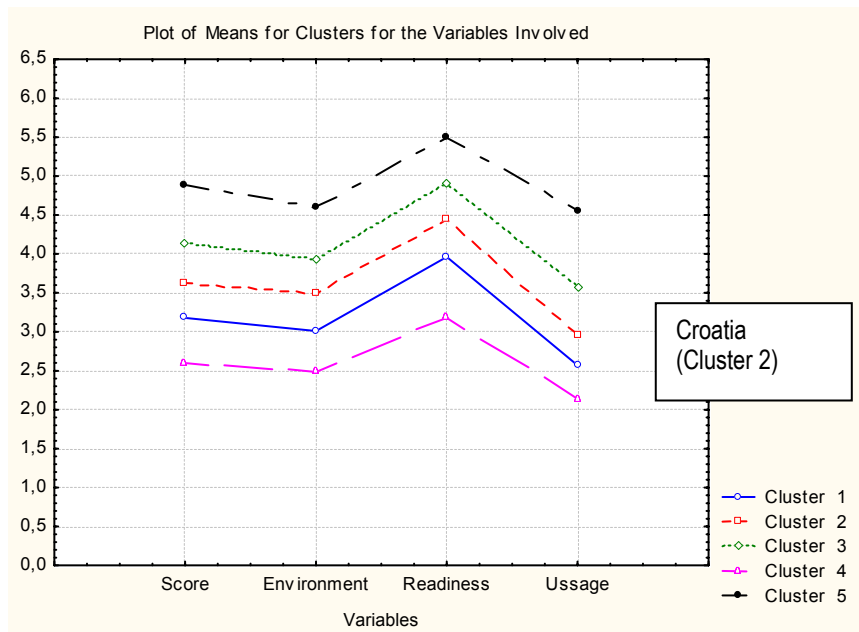
The Country Tables section, presents the rankings of the 102 countries analyzed in the *Global Information Technology Report 2003-2004*⁶. Overall rank for Croatia is 48. Here is the composition of the rank and the indicators.

⁶ The International Bank for Reconstruction and Development / The World Bank, World Economic Forum, and INSEAD, 2004.

Network Readiness Index Rank 2003-2004	Croatia	
	Rank/102	
		48
	Environment Component Index	55
	Market Environment	59
	Political and Regulatory Environment	80
	Infrastructure Environment	39
	State of cluster development, 2003	78
	Venture capital availability, 2003	65
	Subsidies for firm-level R&D, 2003	52
	Quality of scientific research institutions, 2003	42
	Availability of scientists and engineers, 2003	43
	Brain drain, 2003	71
	Utility patents granted (per 1,000,000 inhabitants), 2002	32
	ICT manufactured exports (per capita), 2001	39
	ICT service exports (per capita), 2001	31
	Overall administrative burden, 2003	85
	Quality of legal system, 2003	79
	Laws relating to ICT, 2003	61
	Competition in the ISP sector, 2003	83
	Foreign ownership restrictions	92
	Efficiency of the tax system, 2003	38
	Freedom of the press, 2003	74
	Overall infrastructure quality, 2003	81
	Waiting time for telephone lines (years), 2000	56
	Telephone mainlines (per 1000 inhabitants), 2001	33
	Public pay telephones (per 1000 inhabitants), 2001	13
	Internet servers (per 1,000,000 inhabitants), 2001	34
	Readiness Component Index	44
	Individual Readiness	43
	Business Readiness	53
	Government Readiness	41
	Public expenditure on education (per capita), 2000	43
	Adult illiteracy (%), 2001	28
	Tertiary enrollment (gross %), 2001 or more recent available	46
	Radios (per 1,000 inhabitants), 2001 or more recent available	61
	Television sets (per 1,000 inhabitants), 2001	50
	Households online (as % of households with computer), 2002	37
	Quality of math and science education, 2003	34
	Affordability of local fixed line calls (as % of per capita GDP), 2001	45
	Affordability of Internet telephone access (as % of per capita GDP), 2001	16
	Affordability of Internet service provider fees (as % of per capita GDP), 2001	41
	Ease of obtaining telephone lines, 2003	42
	Cost of business telephone monthly subscription (as % of per capita GDP), 2002	45
	Extent of staff training, 2003	74

Quality of business schools, 2003	79
Scientists and engineers in R&D (per 1,000 inhabitants), 2000	39
Government prioritization of ICT, 2003	49
Government online presence, 2003	25
Government procurement of ICT, 2003	74
Usage Component Index	51
Individual Usage	48
Business Usage	37
Government Usage	64
Personal computers (per 1,000 inhabitants), 2001	41
ISDN subscribers (per 1,000 inhabitants),2001	32
Cable television subscribers (per 1,000 inhabitants),2001	54
Internet users (per 1,000 inhabitants), 2001	49
Computers installed in business (per 1,000 inhabitants),2002	40
Firm-level technology absorption, 2003	35
Prevalence of foreign technology licensing, 2003	21
Government success in ICT promotion, 2003	64
Government online services, 2003	63

Relative rank position for Croatia based on the results of Cluster Analysis for all of 102 countries involved



Variable	Cluster Means (ICT Readiness)				
	Cluster No. 1	Cluster No. 2	Cluster No. 3	Cluster No. 4	Cluster No. 5
Score	3,180000	3,626111	4,145000	2,598696	4,886364
Environment	3,009655	3,481111	3,939000	2,483913	4,610000
Readiness	3,961035	4,444445	4,918000	3,178261	5,490455
Usage	2,569310	2,952778	3,583000	2,138261	4,559546

Countries in Cluster 2:			
All Cluster 2 countries		Transition Cluster 2 countries	
Czech Republic	3,80	Czech Republic	3,80
Greece	3,76	Latvia	3,74
Latvia	3,74	Hungary	3,74
Hungary	3,74	Slovak Republic	3,66
South Africa	3,72	Lithuania	3,63
Thailand	3,72	Poland	3,51
Brazil	3,67	Croatia	3,48
Tunisia	3,67		
Slovak Republic	3,66		
Lithuania	3,63		
Mauritius	3,62		
Mexico	3,57		
India	3,54		
Jordan	3,53		
Poland	3,51		
Croatia	3,48		
Costa Rica	3,46		
Argentina	3,45		
Relative distance with selected (goal) countries:			
Country	Score	CLUSTER	CLUSTER DISTANC
Finland	5,23	5	0,39
Denmark	5,19	5	0,37
Austria	4,56	5	0,34
Ireland	4,55	5	0,34
Estonia	4,25	3	0,12
Slovenia	3,99	3	0,19
Croatia	3,48	2	0,17

5.3.2. ESTIMATION OF IMPROVEMENTS

Main improvements up to the end of 2003 have been achieved on the following indicators:

Estimation of Improvements done by the	Network Readiness Index Rank 2003-2004
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<i>end of 2003</i>	Rank/102	Croatia	Estimated end of 2003 Improvements
		48	33
Environment Component Index		55	
Market Environment		59	
Political and Regulatory Environment		80	
Infrastructure Environment		39	
State of cluster development, 2003		78	60
Venture capital availability, 2003		65	60
Subsidies for firm-level R&D, 2003		52	48
Quality of scientific research institutions, 2003		42	40
Availability of scientists and engineers, 2003		43	40
Brain drain, 2003		71	50
Utility patents granted (per 1,000,000 inhabitants), 2002		32	
ICT manufactured exports (per capita), 2001		39	
ICT service exports (per capita), 2001		31	
Overall administrative burden, 2003		85	65
Quality of legal system, 2003		79	69
Laws relating to ICT, 2003		61	30
Competition in the ISP sector, 2003		83	70
Foreign ownership restrictions		92	
Efficiency of the tax system, 2003		38	
Freedom of the press, 2003		74	
Overall infrastructure quality, 2003		81	65
Waiting time for telephone lines (years), 2000		56	
Telephone mainlines (per 1000 inhabitants), 2001		33	
Public pay telephones (per 1000 inhabitants), 2001		13	
Internet servers (per 1,000,000 inhabitants), 2001		34	
Readiness Component Index		44	
Individual Readiness		43	
Business Readiness		53	
Government Readiness		41	
Public expenditure on education (per capita), 2000		43	
Adult illiteracy (%), 2001		28	
Tertiary enrollment (gross %), 2001 or more recent available		46	
Radios (per 1,000 inhabitants), 2001 or more recent available		61	
Television sets (per 1,000 inhabitants), 2001		50	
Households online (as % of households with computer), 2002		37	
Quality of math and science education, 2003		34	
Affordability of local fixed line calls (as % of per capita GDP), 2001		45	
Affordability of Internet telephone access (as % of per capita GDP), 2001		16	
Affordability of Internet service provider fees (as % of per capita GDP), 2001		41	
Ease of obtaining telephone lines, 2003		42	

Cost of business telephone monthly subscription (as & of per capita GDP), 2002	45	
Extent of staff training, 2003	74	50
Quality of business schools, 2003	79	55
Scientists and engineers in R&D (per 1,000 inhabitants), 2000	39	
Government prioritization of ICT, 2003	49	
Government online presence, 2003	25	
Government procurement of ICT, 2003	74	40
Usage Component Index	51	
Individual Usage	48	
Business Usage	37	
Government Usage	64	
Personal computers (per 1,000 inhabitants), 2001	41	
ISDN subscribers (per 1,000 inhabitants),2001	32	
Cable television subscribers (per 1,000 inhabitants),2001	54	
Internet users (per 1,000 inhabitants), 2001	49	
Computers installed in business (per 1,000 inhabitants),2002	40	
Firm-level technology absorption, 2003	35	
Prevalence of foreign technology licensing, 2003	21	
Government success in ICT promotion, 2003	64	50
Government online services, 2003	63	

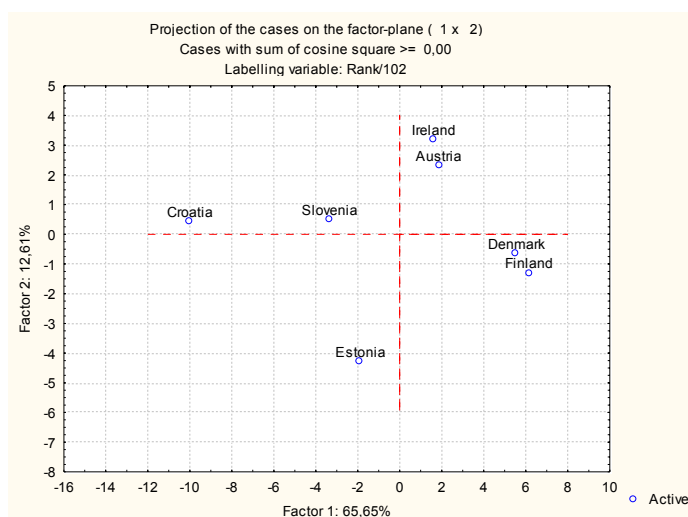
Benchmarking indicators with the selected countries is presented as follows:

Network Readiness Index Rank 2003-20044	Goal Country Rank						Trading countries			
	Croatia	Ireland	Slovenia	Finland	Estonia	Denmark	Austria	Italy	Germany	France
Key Indicators	48	22	30	3	25	5	21	28	11	19
Population 2002	4.844.000	3.931.000	1.996.000	5.207.000	1.355.000	5.374.255	8.159.000	56.464.000	82.600.000	59.637.000
Main telephone lines in operation, 2002	1.879.000	1.975.000	811.435	2.850.000	475.000	3.739.247	3.988.000	27.451.950	53.720.000	33.928.740
growth% 1999-2002	15%	14%	7%	0%	-8%	3%	3%	4%	11%	0%
Main telephone lines/Population	0,387903	0,502417	0,406531	0,54734	0,350554	0,69577	0,488785	0,486185	0,6503632	0,568921
Cellular mobile telephone subscribers, 2002	2.278.000	2.969.000	1.667.000	4.400.000	881.000	4.478.145	6.415.000	52.316.000	59.200.000	38585300
growth% 1999-2002	672%	77%	164%	34%	128%	70%	51%	73%	152%	80%
Cellular mobile telephone/Population	0,470273	0,755279	0,83517	0,845016	0,650185	0,833259	0,786248	0,9265373	0,716707	0,6470027
Personal computers, 2002	760.000	1.500.000	600.000	2.300.000	285.000	3.100.000	3.013.000	13.025.000	35.920.940	20.700.000
growth% 1999-2002	153%	27%	20%	24%	46%	29%	43%	45%	47%	32%
Personal computers/Population	0,156895	0,381582	0,300601	0,441713	0,210332	0,576824	0,369285	0,230678	0,4348782	0,3471

Internet users (estimated), 2002	789.000	1.065.000	800.000	2.650.000	560.000	2.500.000	3.340.000	17.000.000	35.000.000	18.716.000
growth% 1999-2002	295%	160%	220%	59%	180%	54%	82%	107%	105%	249%
Internet users/Population	0,162882	0,270923	0,400802	0,50893	0,413284	0,465181	0,409364	0,3010768	0,4237288	0,313832

Source: World Economic Forum 2004 (Data from ITU)

Improved indicators for Croatia are showing dynamics of improvements in ranking (transiting the mid position in Cluster 2 countries and approaching targeted cluster 3 position).



GRM Analysis of Indicators contributing to rank for selected countries gives the following results:

Intercept	2,174158	Croatia (48)	Improved Croatia (33)
Cluster Developm	0,036830	78	60
Venture Capital	-0,242900	65	60
Subsidies for firm-level R&D	-0,598785	52	48
Quality of Scientific Research Institutions	0,688672	42	40
Availability of scientists and engineers	0,193877	43	40
Brain Drain	0,741091	71	50

All regression indicators relates to Market Environment indicators.

Regression indicators almost fully comply with presented National Competitiveness Council recommendation below.

<p>Cluster Development</p> <p>Croatia Competitive-ness Recommendation</p>	<p>An improving business environment gives rise to the formation of clusters. <i>Clusters</i> are geographically proximate groups of interconnected companies, suppliers, service providers, and associated institutions in a particular field, linked by commonalities and complementarities.</p> <p>Clusters affect competitiveness in three broad ways. First, they increase the productivity of constituent firms or industries. Firms with a cluster have more efficient access to specialized suppliers, employees, information, and training than isolated firms. The presence of a full range of inputs, machinery, skills, and knowledge promotes greater efficiency and flexibility than vertical integration or relationships with distant suppliers. Second, clusters increase the capacity for innovation and productivity growth. Opportunities for innovation can often be perceived more easily within clusters, and the assets, skills, and capital are more available to pursue them. Third, clusters stimulate and enable new business formation that supports innovation and expands the cluster. The local presence of experienced workers and access to all the needed inputs and specialized services, for example, reduces the barriers to entry.</p> <p>First internationally recognised cluster (Croatia Wood Cluster) is the reality.</p> <p>Development of Innovativeness and Technology: Rec. 29., Organize „Enterprise Croatia“ Strengthening Small and Medium-size enterprises: Rec 41., Diminish regional development inequalities by employing clusters Regional Development and Cluster Development: Rec. 46., Develop clusters</p>
<p>Venture Capital</p> <p>Croatia Competitive-ness Recommendation</p>	<p>Venture Capital, money or capital provided for new business ventures by investors other than the original proprietor. Venture Capital Developments in Croatia results in increasing of rank from 65 to 60.</p> <p>Strengthening Small and Medium-size enterprises: Rec. 37., Stimulate the development of the capital market to finance new business undertakings and small and medium-size companies with growth potential.</p>
<p>Subsidies for firm-level R&D</p> <p>Croatia Competitive-ness Recommendation</p>	<p>Subsidy, government payment intended to support a desirable enterprise or policy, usually one that is not viable or competitive under existing economic conditions.</p> <p>Development of Innovativeness and Technology: Rec. 30., Improve subsidies for company technological activities; Rec. 31., Enhance support for technology transfers and expand it with an assistance plan entitled “Learning Companies”</p>
<p>Quality of scientific research institutions</p>	<p>Results of improvements towards e-Science is contributing to increase in quality of scientific research institutions. Thus, increase in corresponding rank from 42 to 40 shows the beginning of increasing future trend.</p>
<p>Availability of scientist and engineers</p>	<p>Proactive measures taken are showing positive attitude.</p> <p>Education for Growth and Development: Rec. 6., Increase the number of students in natural and technical sciences; Rec.10., Increase public expenditure for education</p>
<p>Brain Drain</p>	<p>In today's globalized world which has been characterized by a brain drain, or exodus of talented people, from continents but from Croatia too, to countries Europe and North America. Decreasing slope and signs of return have resulted by better rank – 71 to 50.</p> <p>Brain drain in regression function for the selected countries has the most significant</p>

	contribution in re-ranking.
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6. BACKGROUND DOCUMENTS

Policy Recommendations for Raising Croatia's Competitiveness, National Competitiveness Council, Croatia, 2004
Study of Telecommunication and Internet Development in the period 2003 – 2005, Faculty of Electrical Engineering and Computing, Croatia, 2003, in Croatian
The Internet Market in Croatia 2002 – 2007, IDC, July 2003
National Programme for the Integration of the Republic of Croatia into the European Union – 2004, Ministry of European Integrations, Croatia
Croatian Government Answers to the European Commission Questionnaire prepared as a basis for the Commission's opinion (avis) on Croatia's application
Global Information Technology Report 2003-2004, The International Bank for Reconstruction and Development / The World Bank, World Economic Forum, and INSEAD, 2004
National Report on Strategy Implementation – Information and Communication Technology – Croatia in the 21 st Century, Ministry of science and technology, Croatia, 2003
Information and Communication Technology in the Strategy of Development of the Republic of Croatia, Executive Summary and Recommendations, Croatia, 2002

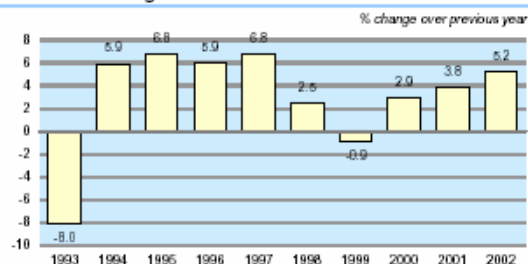
7. ADDITIONAL SOURCES

Government Office for Internet Infrastructure Development, Internal documents, 2003
Croatian Chamber of Commerce, 2003
Ministry of European Integrations, 2003
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Ministry of Education and Sport, 2003
Ministry of Maritime Affairs, Transportation and Communications, 2003
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ISKON Internet, 2003
VIDI, 2003
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8. APPENDIX:

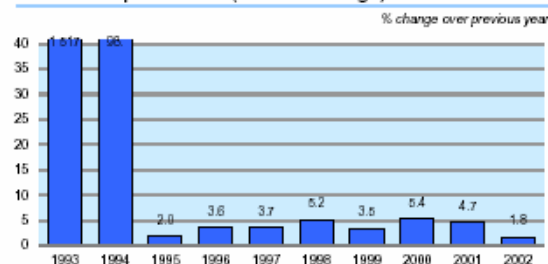
8.1. CROATIA AT GLANCE

Real GDP change



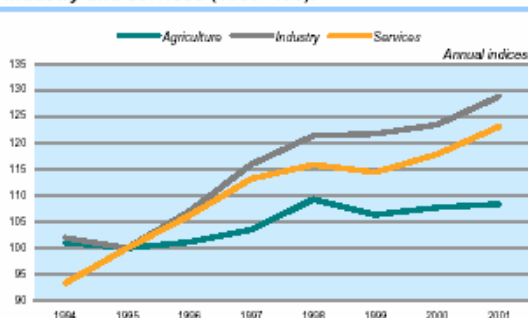
GDP per capita, PPP USD:	8 118
kunas:	36 716
Gross capital formation per capita (USD):	1 778
Private consumption expenditure:	
per capita (USD):	4 967

Consumer price index (annual average)



GDP at current prices, bill. PPP USD:	36.0
bill. kunas:	162.9
GDP as % of total GDP of UNECE:	0.15
Purchasing Power Parities (PPP):	4.52
Exchange rate (kunas per \$US, annual average):	8.34

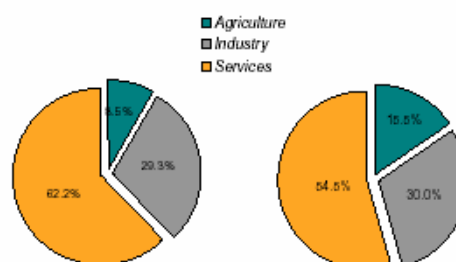
GDP (value added) in agriculture, industry and services (1995=100):



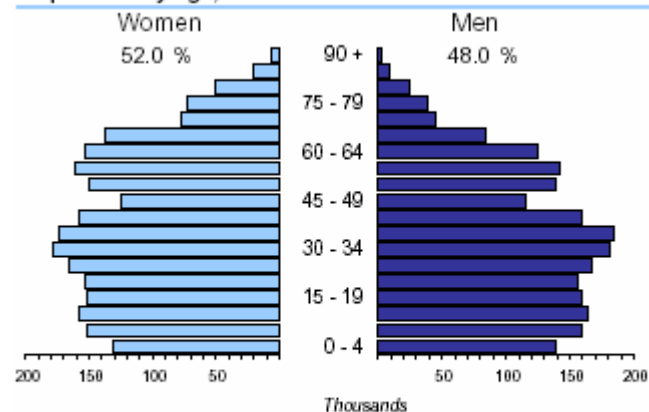
GDP (value added) by major economic sectors:

Employment by major economic sectors:

2000



Population by age, 2000:



Percentage of women in the labour force:	44
Percentage of female students:	52
Percentage of parliament seats held by women:	21

Time: GMT +1h



8.2. POLICY RECOMMENDATIONS FOR RAISING CROATIA'S COMPETITIVENESS

55 Policy Recommendations for Raising Croatia's Competitiveness	
National Competitiveness Council, Croatia, 2004	
	Education for Growth and Development
1	Increase participation in adult education
2	Estimate the labor market's future skills needs
3	Adjust educational programs to the development of knowledge and skills needed in the future
4	Increase both horizontal and vertical mobility in post-compulsory education
5	Improve the system of higher education
6	Increase the number of students in natural and technical sciences
7	Modernize teacher education ("teach the teachers")
8	Implement external and international evaluation, and increase the involvement of society
9	Increase the role of the private sector in the provision of educational services
10	Increase public expenditure for education
11	Increase the number of children in pre-school care and education
	Rule of Law in Compliance with EU Standards
12	Enhance free market competition
13	Increase the transparency of public company operations and privatize certain public services
14	Modernize laws and regulations governing public procurement
15	Reduce the instance of special property management rights
16	Create reliable land records and enhance operations of land registries, copyrights and similar rights and industrial property
17	Reorganize judicial bodies and agencies
18	Increase the speed and efficiency of the judiciary
19	Encourage amicable and alternative methods for dispute settlements

20	Bolster the principle of rational organization in public administration
21	Reinforce the institutional capacity of public administration
22	Raise the level of professionalism and ethical standards, and depoliticize administrative agencies
23	De-bureaucratize public administration to make it results-oriented, transparent and open
24	Decentralize government
	Cost and Price Competitiveness
25	Ensure that labor productivity grows faster than labor costs
26	Intensify domestic market competition and reinforce regulation of monopolies and quasi-monopolies
27	Reduce the tax burden
	Development of Innovativeness and Technology
28	Initiate a standard quality system and raise productivity in companies
29	Organize "Enterprise Croatia"
30	Improve subsidies for company technological activities
31	Enhance support for technology transfers and expand it with an assistance plan entitled "Learning Companies"
32	Introduce and modernize the knowledge-based economy's statistical system
33	Establish a national individual award for innovation by individuals and companies
	Strengthening Small and Medium-size enterprises
34	Develop an open entrepreneurial culture
35	Formulate consistent government policies and instruments to encourage entrepreneurial activity
36	Eliminate administrative barriers in all phases of the entrepreneurial life cycle, from establishment, through development, to transfer of ownership
37	Stimulate the development of the capital market to finance new business undertakings and small and medium-size companies with growth potential
38	Set up an institutional infrastructure to provide professional services to small and medium-size companies
39	Establish productivity benchmarks for the small and medium-size enterprise sector based on the corresponding industries in the EU
40	Encourage the "export mentality" among small and medium-size companies
41	Diminish regional development inequalities by employing clusters
	Regional Development and Cluster Development
42	Apply the basic principles of modern regional policy
43	Establish a legal and institutional framework for efficient regional policy management
44	Encourage local developmental initiatives and development instruments
45	Devise financial incentives for regional development at all levels
46	Develop clusters
47	Enhance the economic component of spatial planning and management
48	Enlarge the territorial units involved in regional development
	Creation of Positive Mindset and Leadership
49	Present an objective assessment of Croatia's economic status to the public, and based on that assessment create a sense of urgency for radical change
50	Croatia's political leadership must set up a team of people capable of initiating and managing changes
51	Create a development vision, gather the leading experts around it and secure their support

52	Top Government officials must continually, accurately and unambiguously keep the public abreast of changes and the purposes underlying the comprehensive reform package
53	Make use of foreign experiences and verified methods to find specific solutions
54	Define, communicate and achieve short-term and medium-term objectives based on dialogue between the principal actors in society. This Council and other non-governmental organizations can make significant contributions to this process.
55	Invest in education of the political elite so that they gain best modern leadership skills and knowledge.