READINESS FOR THE NETWORKED WORLD

ASSESSMENT: RUSSIA

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CONTENT

INTRODUCTION

Russia possesses a considerable potential for technological growth and has already started to attract domestic and foreign investment in ICT, an area that is currently one of the most rapidly growing in the country. This is due to the ever-increasing number of Internet users in Russia, recent improvements in telecommunication infrastructure, and a wealth of well-educated human resources.

According to the McKinsey Global Institute[1], the offshore software programming industry in Russia is growing at 60% annually. Brunswick-Warburg Company's[2] research revealed that in 1999 Russia produced $70 million of offshore programming services, and an annual turnover of $560-$580 million. Furthermore, the continuous growth in personal computer penetration - 26% per year[3] - indicates increasing interest of the general public towards ICTs. Combined with a high literacy rate of 98.6%[4], there is a strong potential for ICT development in Russia.

However, there is yet a long journey towards improvement of the economic situation, particularly in provinces located far from main cities such as Moscow, Saint Petersburg and Novosibirsk, where conditions are incomparably better than in the rest of the country. ICT-related improvements should expand to all areas of everyday life in order to provide sustainable growth of the economy. It should include the following areas of technological development:

[1] McKinsey Global Institute, Report on Russia's Economy
[2] Brunswick UBS Warburg, Russian Office
[3] U.S. Department of Commerce, BISNIS
[4] The World Bank Database

- ***Network Access***
- ***Networked Learning***
- ***Networked Society***
- ***Networked Economy***
- ***Network Policy***

The purpose of this research is to assess the readiness of Russia for the Networked World, thus helping interested institutions and policy-makers in every community to evaluate current conditions in order to set priorities and develop a plan for improvements. This research is provided on the basis of a methodology[5] designed by the Information Technology Group of the Center for International Development at Harvard University[6].

GENERAL COUNTRY INFORMATION

- *Economic and social conditions*

Russia is a country that has a rich industrial and technological heritage, a well-educated labor force and abundant natural resources. Such factors are key ingredients for long-term sustainable growth.

The economy appears to have recovered in 1999 after the financial crisis in 1998. Estimated industrial production increased by 7.9 %, compared with a decline of 5.2 % in 1998 and an average 9.2 % decline during the previous seven years. Real GDP grew by

[5] www.readinessguide.org
[6] www.cid.harvard.edu/ciditg

an estimated 1.9 %, compared with a decline of 4.6 % in 1998 and an average 6.8 % decline since 1991.

However, the country is still far behind in instituting an efficient legislative base. Russia's existing state structures with over-centralized regulations and complicated intergovernmental system provide weak support for an open and competitive market economy. In particular, an inadequate tax system and weak state administration have constrained private sector growth and encouraged the development of a vast, informal non-monetary economy.

The banking system, was severely damaged, if not destroyed by the August 1998 crisis, when the local currency lost 400% of its value, and the government could not been able to keep its obligation against GKO (treasury bonds) it had issued. Currently, the banking system functions only as a payment system. The intermediation function of banks, essential for the efficient accumulation of capital, is practically absent in the Russian financial sector.

Total area: 17,075,400 sq km stretching from the Far North to the Black Sea in the south and from the Far East to Kaliningrad in the West.

Population: 146.2 million (July 2000). Some 81,5% of the population is ethnic Russians. The remainder is composed of some 38 national minorities.

Administrative structure: Russian Federation consists of 89 states.

Main cities: Moscow – Capital; St. Petersburg, Nizhniy Novgorod, Novosibirsk, Yekaterinburg.

Religion: Religious adherence is varied, with many religious affiliations closely connected to particular ethnic groups. Christianity is the major religion, mostly adhered to by ethnic Russians and other Slavs. The Russian Orthodox Church is the largest denomination.

Brief History: The Republic was established in Russia after the 1917 Revolution that resulted in the overthrow of the monarchy. Subsequently, following the revolution, the Russian Soviet Federative Socialist Republic (RSFSR) was formed at the Third All-Russian Congress of Soviets in January 1918. In 1922, the RSFSR, together with the Ukrainian and Belorussian Republics and the Transcaucasian Federation, formed the Union of Soviet Socialist Republics (USSR) until the USSR's disintegration in December 1991.

On June 12, 1990, the Declaration of the State Sovereignty of the Russian Soviet Federative Socialist Republic was adopted and in 1991 the post of President of the RSFSR was created to which. Boris Yeltsin was elected for a five-year term. Following the dissolution of the USSR on December 25, 1991, the State was renamed the Russian Federation, Russia

Politics and Administration: Under the new Constitution, which was approved on December 12, 1993, the Russian Federation is considered a democratic presidential republic with an Executive (The President and Cabinet), Legislature (a bicameral Federal Assembly) and Judiciary.

Head of State - President Vladimir Putin (elected 26 March 2000)

Parliament - Federal Assembly. It is a bicameral legislature, composed of the Federation Council (upper house) and State Duma (lower house).

Educational Facilities: The educational system consists of state-sponsored middle schooling (all in all 10 years), followed by state-sponsored vocational institutions (2 years), university or technical education. In the past three years, a number of private schools and independent universities have also begun operations. Upon passing tests to enter the university system, students will take 5 more years to receive their Diploma on Graduation in a specialization, after which they can continue their education in pursuit of Ph.D.-equivalent degrees.

Russia: Country Data Profile

Indicators	***1998***	***1999***
Population, million	146.8	146.2
Population density, people per sq. km	8.7	8.7
Population growth, annual	-0.3	-0.4
Life expectancy at birth (years)	67.0	65.8
Urban population (% of total)	77	77.3
Illiteracy rate, %	1	0.9
GDP at market prices ($ billion)	277.8	401.4
Exports of Goods & Services (% of GDP)	31.4	46.0
Imports of Goods & Services (% of GDP)	26.6	28.5
Overall budget deficit (% of GDP)	-5.3	-0.5
Poverty (% of population below poverty line)	-	30

Source: World Bank, World Development Indicators, July 2000

1. NETWORK ACCESS

The prerequisite for ICT-related readiness is adequate and appropriate access to the network infrastructure. This can be determined by a combination of factors, such as availability and affordability of the network, as well as accessibility of the support structure for this network.

1.1 Information Infrastructure

For most communities in the developing world, the lack of access to voice and data services remains a significant impediment to prevalence of ICTs in developing nations. Although conditions are relatively better in Russian urban areas (digitalization rate of 29%), especially in the Central and North-Western regions, rural areas still suffering from outdated communication infrastructure, where 100% of telephone lines are analogue[7]. There are 19.7 telephone-mainlines per 100 people in Russia and 6 million people on the waiting list for telephone service[8]. 54,000 rural settlement places out of 244,541[9] in Russia do not have phone access.[10]

Regarding mobile telephony, the number of subscribers has reached 1.7 million[11] that is 1.16% of the total population in Russia. This number is growing at 40% annually. Most users of mobile telephony are located in urban areas, predominantly in Moscow and St.

[7] The World Bank Database
[8] The World Bank Database
[9] State Statistical Committe
[10] Russian Ministry of Communications
[11] U.S. Department of Commerce, BISNIS

Petersburg. According to the estimates of the Vimpelcom Co. [12], one of the largest mobile phone service providers, the population of the latter two cities amounts to 75% of the Russian market.

92 traditional and 2,700 new small operators provide local phone service. Although market share of new entrants in terms of number of subscribers averages 15% throughout the country, but much it is higher in more developed Central and Western regions.[13] Long-distance and international telecommunications is 70% controlled by the state-owned company - Rostelecom, but its share is decreasing as new entrants appear in the market.

There are 8-10 million PCs available in Russia that is only 5.5% – 6.5% out of total population according to the Department of Government Information[14]. This number is really low, taking into account that most of those PCs are available in the two main cities and other central regions.

1.2 Internet Availability

There were 350 Internet Service Providers (ISP) in Russia in 2000, with over 100 operating in the greater Moscow region with its 9,000,000 population (around 2.4 ISPs per one million people). However, outside of Moscow, the number of ISPs is much smaller, with a penetration rate of 1.82 per 1,000,000 people.

[12] Vimpelcom Co., www.vimpelcom.ru
[13] Russian Ministry of Communications

There were 6.1 million public pay telephones in 1998, according to the Russian State Statistics Committee.

Typically, individuals and small and medium enterprises dial up to the Internet. Larger companies can afford ADSL (Asymmetrical Digital Subscriber Lines), which allows for data and voice calls to be received in parallel. Asymmetric Digital Subscriber Line converts existing twisted-pair telephone lines into access paths for multimedia and high-speed data communications. ADSL can transmit up to 6 Mbps to a subscriber, and as much as 832 kbps or more in both directions. Such rates expand existing access capacity by a factor of 50 or more without new cabling.

This service still remains costly. The best-known project in Moscow launched in 2000 by MGTS (Moscow City Telephone Network) and PTT Teleport provides such access, where the installation fee is $750 and monthly payments are $150 for up to 800 megabytes of incoming data[15].

ISDN (Integrated Service Digital Network) is not very common on a retail level and is mostly used to provide Internet access to ISPs and large corporate users. Internet Service Providers then distribute Internet access to the end-users charging them on average $15 monthly fee. The rates vary from $0.01 per minute at night to $0.024 during daytime. The price of getting an ISDN line in Moscow is $750 a month, and $400 in St. Petersburg that is affordable only for large corporate subscribers.

[14] Russia Department of Government Information, www.e-government.ru
[15] MGTS – www.tochka.ru

Detailed description of structure, services, speed and rates of the primary and a typical large Russian telecommunication company are provided in the Appendix.

1.3 Network Speed and Quality

There are several ways of accessing the Net, the most common being dial-up. This type of access is more reliable where there are digital telephone lines (like in Moscow or St. Petersburg and other relatively big cities), and worse in the areas where old analogue system does not allow for well-maintained connections.

However, many large corporate users have already started to use ADSL. Such a service provides 24.4 – 128 kbps Internet access, though it still remains a privilege of larger private companies. Access through ADSL is much more reliable than dial-up.

ISDN is mostly used to provide Internet connection to Internet Service Providers (ISP), which redistribute this bandwidth to end-users. Recently, a 2,000-kilometer fiber-optic broadband network linked Moscow with its neighboring regions. This service also provides videoconferencing and cable TV over coaxial cable through cable modems.

Telephone services are mostly reliable in Moscow, St. Petersburg, and other large cities of the country, but in rural areas connection drops and phones faults are very common.[16]

[16] Although no special research is available in regard with the number of connection drops, but simple survey shows that they are not rare.

1.4 Hardware and Software

The hardware industry is relatively well developed in Russia. Most components for ICT products are imported from abroad and locally assembled into an end product. Local PC manufacturers cover 80% of the demand with remaining 20% covered by international companies[17]. Availability of a low-paid skilled labor force facilitates the provision of customized solutions for hardware products.

The software industry, which includes packaged software, and project services, such as consulting and training, employs 8,000 people, 25% of which is engaged in offshore programming[18]. The main barrier to the growth of packaged software industry in Russia is piracy, which inhibits software development. The indicator for software piracy has reached one of the highest in the world – 90% in comparison with 60% in Poland, 40% in Western Europe and 30% in the US[19]. The government is trying to cope with the problem of high level of piracy in the country. Just recently, it closed the biggest market of piracy software and media located in Moscow, but it is definitely not enough to fight with copyright infringement, and much work should be done in that direction.

Customized solutions of project services are immune from piracy; but the development of this sector is limited by low purchasing power of consumers. Currently, the Russian software industry contributes only 0.1% to the country's GDP[20], but this indicator could

[17] BISNIS
[18] International Data Corporation (IDC), www.idc.com
[19] Business Software Alliance (BSA), www.bsa.org
[20] McKinsey Global Institute

definitely grow up along with further development of the economy. Software project services are mainly targeting banking sector by providing customized solutions for internal and external banking communications, as well as anti-virus and acounting solutions.

1.5 Service and Support

The industry of telecommunications services, which include both telephony and Internet in Russia, is partly privatized. There are over 92 large telephone companies operating on the Russian market, but mainly either monopolistic in certain region or state-owned.

The main barrier to rapid development of this sector of Russian economy is the low purchasing power of consumers, especially in the regions that are located far from the Moscow and St. Petersburg regions, where salaries are relatively lower. Many state-owned telecommunication systems are still continuing to receive subsidies from the government and do not cover costs affiliated with delivering their services. The government is currently planning to privatize its state-owned telecommunication enterprises.

New private telecommunications enterprises offer their customers higher speed with higher price. However, there is a trend of decline in prices since more users prefer to have high-speed broadband access to the Internet, and communication technologies like ISDN, ADSL and WAP (Wireless Access Protocol) are becoming more affordable.

Traditionally, Russia possessed significant number of technical specialists, many of whom worked previously on technologically advanced defense-related projects. Since the number of such projects has reduced significantly, many professionals have diverted their research towards the rapidly developing market of information and communication technologies in Russia.

2. NETWORKED LEARNING

Education plays a significant role in community's development. The networked learning allows being in touch with most recent achievements in sciences by using information and communication technologies. Familiarity with modern technologies allow people to get knowledge in much more efficient way, and use it more effectively.

2.1 Schools' Access to ICTs

The incorporation of information and communication technologies into the learning process has been slow paced in Russia due to the slow down of the economy and lack of necessary financial resources to provide ICTs in schools. However, in larger cities, where more financial resources are concentrated, ICTs are much more integrated into the learning process.

In these cities computers can be found at the university level as well as in middle schools[21]. Usually, in the middle schools the computer labs consist of around ten PCs that

[21] See description of education system in Russia on page 7.

are accessible by students studying computer technology, but these labs are usually not available after-hours. Typically, those computers are connected to Local Area Networks (LAN) and to the Internet through dial up connections. University level students have better facilities and access to the Internet is mainly provided through broadband cables.

The conditions are significantly worse in smaller towns, especially in rural areas. Computers are primarily available at the university levels, but there are generally fewer than ten computers available for students at school. Usually these computers are not even networked and have no access to the Internet. There is no data available about the actual number of computers at schools, but surveys shows that many regions, especially those located far from central cities, still lack access to ICTs.

2.2 Enhancing Education with ICTs

Generally, computer literacy courses in middle schools mostly provide basic skills and do not include sophisticated techniques for deep integration of technologies into everyday life. In university levels, the degree of enhancing the education by ICTs depends on the area of study. Technology oriented educational institutions heavily use computers and the Internet in the learning process while others limit usage to typing and e-mail exchanges (where facilities for that are available). On average, only 18% of educational institutions have access to the Internet in Russia.[22]

To support information and communication technologies in rural areas, the Russian Ministry of Education devised a special program for middle schools. It is planned to

allocate about $35 million through federal budget in the period from 2001 to 2006 and an additional $35 million through local budgets, for computers and access to the Internet for middle schools in rural areas[23].

The government also approved a program for the development of the Unified Educational Information System in order to improve the quality of education and management of educational institutions through integration of ICTs into the learning process. This system is projected to interconnect all local educational authorities and schools in the single high-speed network, in order to provide more efficient sharing of documents and allocation of resources of the centralized educational system. The Ministry of Education is also plan to retrain 80% of teaching staff of the country during the period of 2001-2006, and to provide educational institutions with modern computers and access to the Internet[24].

In addition, the Ministry of Education provided technical documentation on implementation of ICTs for the Unified System[25], using free software (like Linux) for PC routers, bridges and servers that is available for free – all on its website.

2.3 Developing the ICT Workforce

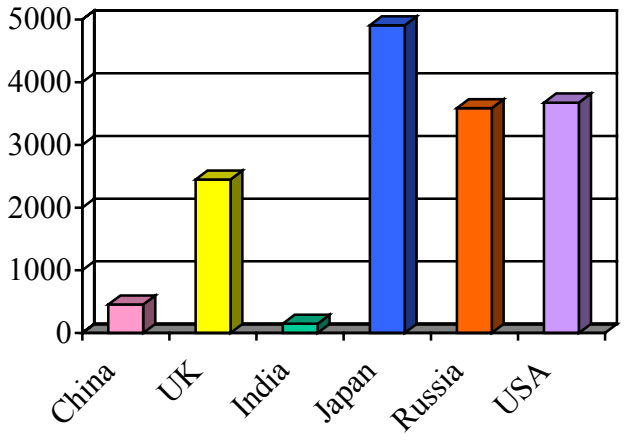
Technology oriented universities with specialized courses related to information and communication technologies are widely available in the country. There are also many

[22] US Department of Commerce, BISNIS
[23] Ministry of Education of Russian Federation
[24] Ministry of Education of Russian Federation
[25] The State Institute of Information Technologies and Telecommunications, www.informica.ru

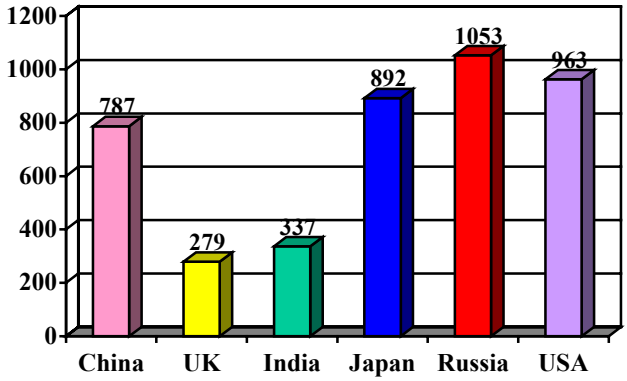
seminars and training courses organized by technical universities, which manifest an increasing demand for jobs that require specific ICT skills. Also, certification programs from major hardware and software manufacturers, as well as training courses are available in the country.

Many highly qualified engineers who have been previously working on space and nuclear programs have evolved into well-trained programmers who are able to apply their analytical skills this field. Despite difficult times, Russian universities and institutes still produce well-qualified graduates, especially in of mathematics, physics, chemistry, etc. Many employers in the main cities initiated training programs for employees to build their ICT skills.

Currently, the availability of workforce with necessary technical skills is not an issue in the country due to traditional orientation of government policy towards building technical human resource capacity.



Scientists & Engineers (per 1 million inhabitants). *Source: World Bank, UNESCO*



Total R & D Personnel (thousands). *Source: World Bank, UNESCO*[26]

The illiteracy rate for the Russian Federation is steady at about 1%[27]. In 1994, the government census revealed that the percentage of university graduates in Math and Computer Science was 15.1%, and in 1996 there were 1,388 Ph.D. holders in math and Computer Science.[28]

Many experts and IT companies' executives indicate that the main problem with ICT workforce in the country is not the technical capacity but rather lack of management skills of people working in an IT related field[29].

[26] Tables are adopted from the American Chamber of Commerce in Russia, 2001
[27] The World Development Indicators, World Bank
[28] U.S. Congressional Information Service, 2000

3. NETWORKED SOCIETY

The community's successful adoption of ICTs is a positive sign of Readiness. Easier access to information coupled with efficient means of communication serve as powerful tools for societal development.

3.1 People and Organizations On-Line

As more people access the Internet regularly and networks of users grow, there is greater demand and opportunity for online interaction. One of the most important drivers of online growth is awareness – people must first know and understand what the Internet is in order to benefit from using it including groups such as women, older people and people with disabilities.

According to the results of a survey conducted by the Russian National Institute for Social and Psychological Research, the number of people who ever used the Internet amounts to 10 million, which is 8 % of the adult population of the country.

However, according to the Russian Center for Public Opinion Studies (VCIOM)[30] only about 4% of Russians have a computer at home and 1% has Internet access from there. In the capital of the country those indices are significantly higher; 16 % of Moscow residents have a computer at home and 3% can access the Internet. In the workplace, the

[29] 'Expert' Weekly Magazine, Russia, February 2001
[30] VCIOM, The Russian Center for Public Opinion Survey

figures are significantly lower. Around 2 % of Russians have access to the web from their workplaces, while in Moscow 6% have such opportunity. Some 10% of Russian Internet users are students and 50 % of all Russian Internet users work in Moscow.

Most Internet users are between the ages of 10 and 35, both male and female. The older population is still far from being connected to the world-wide-web. According to the VCIOM survey, 21% of Russians have never heard about the Internet.

Advertising through the Internet is widely available in Russia due to relatively large number of Internet users, especially in large cities.

3.2 Locally Relevant Content

The development of the Internet in a particular community heavily depends on the content that is relevant to the community's local concerns and issues. It is very important that provided content is in a language that is used and understood by the local community. The Russian language is the most common language used in Russia, regardless of about 128 other minority languages spoken in the country.

Around 95% of local web sites are in Russian. Many of these sites provide content relevant to a particular city or area - especially in urban regions. Usenet groups and newsletters are widely available and cover different areas of interest[31].

Nowadays, web presence considered by many of Russian private and public organizations as an important factor. The number of Russian language web sites reached up to 35,000 in the year 2000.[32] 80% of domestic companies, which have their own Internet site developed in-home, although the outsourcing of web-site development and web hosting are widely available throughout the country.

According to recent research provided by the Monitoring Group in Russia, 80% of Internet shoppers buy from Russian-language web sites.[33]

3.3 ICTs in Everyday Life

Communities' direct participation in the Networked World is getting deeper when such information devices as faxes, televisions, computers, cellular phones, etc. are widely used. Important role play public places, such as cyber cafés and community information centers, where lower income people can afford to be involved into the Networked World.

Currently, public telephones may be found in most parts of Russia. There are 19.6 telephone mainlines per 100 people in Russia.[34]

The Monitoring Group recently released results of its market research about Internet users in Russia. The number of people who used the Internet at least once last year is about 10 million, and 6 million excluding those used it just once. There are 900,000 people who spent at least 3 hours a week on the Internet.

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[31] Author's own observation
[32] U.S. Department of Commerce, BISNIS
[33] The Monitoring Group, www.monitoring.ru
[34] World Development Indicators, The World Bank

There are only about 1,000 Internet cafes in Russia, which are mostly located in Moscow and St. Petersburg[35]. The largest cyber café - Time Online - recently opened in Moscow. It has 200 computers connected to the Internet,[36] charges $1 per hour, and provides its customers with a free e-mail address. The regular users of such Internet cafes are mostly teenagers who do not have access to the Internet at home, but there are also some occasional customers of higher age who use the Internet on time-to-time basis.

Generally, people who do not have access to the Internet either at home or at the workplace more often use their friends' or relatives' points of access. Thus, actual number of people who directly and indirectly are able to receive information through the Internet is 27 million that is 25% of total Russian population[37].

3.4 ICTs in the Workplace

Today, the number of people using information and communication technologies in everyday life is growing in Russia. Most small and medium size enterprises in urban areas, especially in Moscow, St. Petersburg and a dozen of other large cities have at least one computer in the workplace. However, where there are less than ten computers in a single enterprise, they are rarely networked, although one is usually connected to the Internet. Employees in such small enterprises may have e-mail accounts, which they use for internal communications of files and documents. These accounts are usually not

[35] Gos-Svyaz-Nadzor, State Telecom Regulatory Agency
[36] TimeOnline, www.timeonline.ru
[37] The Monitoring Group, 2001, www.monitoring.ru

obtaining through their corporate network, but rather from websites that provide such service for free.

The level of deployment of ICTs is still relatively low, particularly in rural areas. This can be explained by the lack of affordability of such companies and state institutions along with the lack of understanding of the potential of ICT and the Internet.

4. NETWORKED ECONOMY

The development of information technologies in the recent decade created the new economy, which require from started involving more and more people engaged in this market. It requires them to receive new skills necessary for work in the networked economy.

Growing usage of ICTs helps form the critical mass of electronic transactions, which supports the networked economy, both in terms of the network size and the demand for associated goods, services, labor and policy reform.

4.1 ICT Employment Opportunities

A thriving job market provides an incentive for growth of ICT training programs and general use of information and communication technologies within the economy. A good indicator of the development of new ICT employment opportunities in Russia is an ever-

increasing competition among applicants to technical educational institutions observed in the past five years[38], which followed a period in the beginning of 90's when there was a temporary shortage of people willing to study IT. This can be considered as a gauge of current demand for technical skills in Russia. At present, the current workforce of 8,000 people is employed in the software industry, of which 6,000 are working on customized software projects with the rest on packaged software industry[39].

Offshore programming business is currently developing very rapidly in Russia - employing about 1,600 IT professionals out of those 8,000 professionals[40]. Many IT giants like IBM (www.ibm.ru), Nortel Networks (www.diona.ru , www.belam.com), Sun Microsystems (www.redcenter.ru), and Intel recently outsourced some of their development to Russia. In June 2000, Intel opened its offshore programming center in Nizhny Novgorod to develop and support software for the next generation microprocessors, and new series of Itanium 64-bit processor. The company is planning to hire up to 500 programmers who will become full-fledged staff in Nizhny Novgorod[41].

Average Monthly Salaries in Russia

	Experience		
	< 2 years	> 2 years	Management
Gross Pay	$300 - $500	$600 - $1500	$1500 - $3000

Source: Kelly Services Moscow.

[38] Source: Survey of Russian mass media
[39] McKinsey Global Institute
[40] International Data Corporation, IDC
[41] US Department of Commerce, BISNIS Database

4.2 B2C Electronic Commerce

The development of electronic commerce in Russia is limited by relatively weak infrastructure, especially in terms of widespread availability of banking services for on-line transactions. Although credit cards are available in the country, cash payments for individuals and bank transfers still remain predominant methods for purchases. These factors, as well as the low level of trust, towards banking institutions evolved from several banking crises in the past, is significantly restraining the development of B2C e-commerce.

There are 500 on-line stores available in Russia with an overall retail turnover of $700,000 per month, with approximately 25,000-27,000 purchases on-line[42]. The following table shows distribution of B2C e-commerce based on types of products sold in Russia:

Products	***Monthly Turnover***	***Percentage of total sold products***	***Number of deals***	***Percentage of total deals***
Books, periodicals, video-cassettes, CD, DVD, software	$200,000	29%	20,000	78%
Computers, components, peripherals	$400,000	54%	2,000	7%
Food, beverages, household, toys & the rest	$120,000	17%	4,000	15%

Source: 'Expert' weekly magazine's survey, June 2000

According to estimates from the same source, there are 20,000-22,000 on-line shoppers (excluding those who shop more than once). This is about 1% of regular Internet users of the Russian Internet (up to 2 millions)[43], but 30% use the Internet to find information about goods and services, as well as for research purposes[44]. Payments are usually made by cash-on-delivery, since credit cards are still not widely used in the country. B2C e-commerce is mostly concentrated in Moscow and St. Petersburg, and almost unavailable in the rest of the country, except in half a dozen large cities.

4.3 B2B Electronic Commerce

Russian companies are currently actively exploring web opportunities in B2B e-commerce. B2B sales totaled $90 million in 1999, and are expected to grow due to an additional $50 million investment in start-up companies[45]. Although foreign venture companies still remain the largest investors in new business projects, there is a significant part of Russian players in the B2B market. Large banking institutions share 20%-30% of money invested in Russian Internet market[46]. The number of Internet trading systems grew from a single online brokerage in 1999 to 40 in June 2000.

Software programming is another developing area of B2B applications, but the size of software consumption is relatively small. This is mostly due to the relatively low purchasing power of Russian businesses.

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[42] 'Expert' weekly magazine, Russian Internet survey, June 2000 www.expert.ru
[43] 'Expert', www.expert.ru
[44] Russia Department of Government Information, www.e-government.ru
[45] US Department of Commerce, BISNIS

Currently the main players in Russia's B2B market are companies engaged in Internet trading and advertising.

Online trading includes not only securities exchange, but also virtual markets for steel exchange, online oil exchange, and energy trading system.

Internet advertising is also widely available in Russia. The biggest players in this market are portals like Rambler, Yandex, and Aport. According to the information provided by those portals to the Vedomosti business newspaper they generate about $100,000 a month, and 35-40% of this advertising is coming from Internet companies.[47]

4.4 E-Government

Most government agencies, like federal ministries and State Committees are operating their own web sites, in addition to the central portal that links them all. Usually, these government spaces post information about the structure of their institutions, hours of operation, public announcements, documents and orders. They actually do not provide on-line transactions. Most government agencies, contractors and suppliers still interact with each other by phone, fax or in person.

[46] Yandex portal, www.yandex.ru
[47] Vedomosti daily business newspaper, www.vedomosti.ru

According to the Department of Government Information, out of 24 Ministries 23 have their own web sites (only Ministry of Nationalities' Affairs does not), but only 12 of them have adequate design and navigation features.[48]

The major problem with e-government solutions in Russia is the low level of updated information posted on official web sites. Five government web sites do not have the 'News' feature at all; only 11 web sites update their information once a month; and only 4 update information once or several times per day. Many state web sites do not have cross-links to other information resources of the government, and 14 of them do not have even link to the main web portal of the government www.gov.ru, which assembles all links to the web site of federal state institutions.

The lack of feedback is another deficiency of e-government in Russia. Three web sites do not have even provided contactable e-mail addresses, and only six official sites have 'guest books' for users. The situation is worse on the local level. Only 20%-25% of local state institutions have web presence[49].

There are 800,000 computers available in federal and local state institutions, and only 25,000 (3.12%) are connected to the Internet.[50]

[48] Russia Department of Government Information, www.e-government.ru
[49] Department of Government Information
[50] Russia Ministry of Communications

5. NETWORK POLICY

Proper public policy is one of the key issues that can either hinder the development of information and communication technologies or encourage local communities, especially businesses, to invest heavily in this area. There are many issues that should concern policy makers. Public-private partnership, facilitating the development of private sector, helping small and medium enterprises are the areas in which the government should concentrate its attention. One of the aspects that should also concern policy-makers are legal certainty, security and consumer protection for online transactions that include among others electronic contract enforceability and the authentication of individuals and documents.

5.1 ICT Regulation and Trade Policy

Regulation and trade policy play critical role in the process of development of ICTs. Properly established rules help the 'new economy'. Encouraging business environment established by policy makers accelerate the process of adapting the ICT technologies by organizations and individuals.

Tax policies, intellectual property right law and its enforcement, and legal recognition of electronic signature are key aspects that should concern policy makers.

Proper tax policy should encourage online trade and help provide growth of electronic commerce as a source for increase the efficiency of enterprises, and economy, in general.

Intellectual property right is another issue that should be addressed by policy-makers in order to catalyze the innovation process in the country. Although the Law on intellectual property right protection is approved by the parliament, but its enforcement is still questionable in the country due to the lack of expertise in this area as it started to matter only about 10 years ago after starting the privatization and liberalization of Russian economy.

Currently, the policy-making process in the area of ICT development in Russia is heavily dependent and tied to economic issues and predicaments that seize a large share of government resources and time, with little left for crafting adequate strategy for technological development.

However, certain policies aim to establish an encouraging environment for ICT development in Russia. The Electronic Signature Law, which is going to be adopted this year, would significantly facilitate business relationships between private companies and government entities. This law will provide legislative acceptance of digital ID and an electronic signature as a legal document that would have functional equivalence with paper-based transactions and signatures. However, it should be accompanied by significant reduction of laws, regulations, and instructions that require the use of paper to enact or record transactions.

Tax issues have always been central to business development. Currently, e-commerce in Russia is taxed the same way as traditional business activities. However, since the

consumer has an access to goods and services from all over the world, including "tax havens", the tax legislation should be more oriented towards final consumer rather than corporate taxpayers, thus encouraging local industries to grow.

As the Russian system is very similar to the Value-Added-Tax (VAT) rules throughout the European Union (EU), the country may adopt the EU experience in this area. One of which is to require all non-Russian suppliers to register for VAT in the country, as it is made in the European Union. The supplier would then be responsible for withholding and paying VAT to the country for all sales within its borders.

Moreover, the 20% Value Added Tax (VAT) can be initially removed from the electronic commerce transaction, thus stimulating growth of online trade, and promoting faster development of e-commerce at least in the initial stage. This may stimulate the development of many other sectors of the economy, particularly the banking sector, which currently does not provide transactions through credit cards due to a relatively few number of users, and a generally underdeveloped infrastructure.

The deregulation of the telecommunication sector is another issue that should concern policy-makers, interested in development of the ICT sector of the economy. Although recently, the Russian government announced the program for development of the telecommunication services market, the outcome of that project does not seem credible in terms of promoting competition and attracting foreign direct investment. It is intended to

establish a single primary Internet operator in Russia, which would further redistribute its services through private Internet service providers.

Currently, in order to reach their subscribers, online service providers often have no choice but to purchase local exchange services from monopoly- or government-owned telephone companies. These services are often priced at excessively high rates, inflating the cost of data services to consumers.

The problems are very similar with leased lines that must be obtained from national telephone companies, also monopolies or state–owned enterprises. In the absence of competition, telephone companies usually impose artificially inflated prices and usage restrictions that impede the provision of affordable, quality service by ISPs.

Another barrier to growth, a view held by many ICT developers, is copyright protection in the country. As was mentioned earlier in this report, almost 90% of software products used in Russia are pirate copies[51]. This creates disincentives for local software producers, especially those working on packaged products, which is the most lucrative from a business viewpoint. At the same time, it diminishes the credibility of the country, in general, and paralyzes the development of the software industry, thus supporting further "brain drain".

Several other issues should also be brought to the attention of policy-makers. The requirement established by the government for certification of any imported equipment

through the state organization RosTest, currently practicing in the country, just adds costly barriers.

At the same time, there is a lack of certification organizations in the country, such as ISO (the International Standards Organization). Russia has very few organizations, which provide ISO certification. The lack of expertise in this area hinders the speed at which ICT companies will be able to expand their activities abroad, as well as their abilities to attract direct investments from abroad.

Here, in terms of network policies, the key to development of successful information and communication technology policies is that government regulation and intervention should not be, at least, an inhibitor to growth in this area. Instead, the regulation should encourage universal access to telecommunication services for people. The government should provide people with clear established legislative environment.

Conclusions

The great potential of information and communication technologies for economic development is obvious. The gains that communities receive in joining the global information networks, especially in the countries with transitional economies allow them

[51] McKinsey Global Institute

to “leapfrog” in their development process to significantly higher level of productivity and growth. The initial stage for the development process should be a critical assessment of current conditions of infrastructure of ICT. This would significantly facilitate the process of planning of changes, which are necessary to make in order to achieve better results.

As it has been described in this report, Russia has its strength and weaknesses in regard with the different aspects of ICT development. Even within each category of network access, networked learning, networked society, networked economy, and network policy, which describe in detail the situation with ICTs in communities, such different levels of readiness appear.

Apart from issues related to general predicaments of Russian economy, there are certainly many other problems to the development of information and communication technologies described in this report, that require implementation of proper policies and improvements of ICT infrastructure.

However, one of the most concerning factor is the immense difference in terms of the level of economic and social development between two central cities, Moscow and St. Petersburg, and the rest of the country. Very few other regions are even come closer to the level of readiness of those two areas. Such a situation creates disadvantage for communities geographically located far from the center, especially in terms of ICT

development. Herein, it is necessary to apply special efforts in order to cope with such an unequal distribution of resources.

PRIMARY TELECOMMUNICATION PROVIDER

Rostelecom[52]

Being the primary long-distance and international telecommunications operator in Russia, Rostelecom has an extensive electric communication network based on digital and analog cable and radio relay transmission lines. Satellite network, as well as secondary network (automatic switching center, long-distance switching office, automatic toll station) ensuring transfer of long-distance and international traffic.

The primary backbone network includes both land and satellite components.

Being currently used within the **land network** are analog and digital transmission systems made by means of coaxial, symmetrical metal cables and analog radio relay links and digital transmission systems made by modern Fiber Optic Transmission Lines (FOTL) and Digital Radio Relay Links (DRRL).

[52] Information is announced by Rostelecom

- Analog and digital transmission systems built around metal cables and radio relay links extend for 160.6 thousand kilometers.

- Digital transmission systems built around modern FOTL and DRRL extend for 44.3 thousand kilometers.

Rostelecom pursues a consistent policy directed toward removal from service of obsolescent and physically out-of-date transmission systems.

Starting with 1993 the Company built fiber optic and radio relay transmission lines using the NEC digital equipment manufactured by the Scientific Instrument Engineering Pilot Plant in Chernogolovka (Russia), featuring a carrying capacity of 155, 622 Mbit/s, 2.5 Gbit/s.

The network is based on Moscow-Novorossiysk, Moscow-St. Petersburg and Moscow-Khabarovsk fiber optic lines. The Rostelecom digital network is connected via FOTL with Finland, Denmark, Turkey, Italy, Japan, Korea, China, Estonia, Kazakhstan, Ukraine and Belarus.

Satellite communications of Rostelecom are based on the satellite communication system with use made of LMI-1 man-made satellite. In 2000 the first turn (eastern fragment of the satellite communication system) of 11 ground stations (3 junction and 8 peripheral stations) were made and put into service in the regions of Siberia and Far East in the cities of Gus'-Khrustal'ny, Novosibirsk, Khabarovsk, Barnaul, Kirov, Gorno-Altaisk, Kyzyl, Yakutsk, Novokuznetsk, Yuzhno-Sakhalinsk and Salekhard.

TYPICAL LARGE PROVIDER OF TELECOMMUNICATION SERVICES

GOLDEN TELECOM[53]

Golden Telecom (GT) operates digital voice and data network in more than 90 cities throughout Russia. At present the company provides a complete range of voice and data services in 15 cities of Russia: Moscow, Arkhangelsk, Vladivostok, Volgograd, Voronezh, Ekaterinburg, Irkutsk, Krasnodar, Nizhny Novgorod, Novosibirsk, Samara, Syktyvkar, Tumen, Ufa, Khabarovsk.

Additionally, a complete range of data services is provided in other cities and regions of Russia, such as Kazan, Krasnoyarsk, St.Peterburg, Kaliningrad, Murmansk, Yakutsk.

Network architecture

GT operates digital voice and data network in more than 90 cities throughout Russia and the CIS. At present the company provides a complete range of voice and data services in 15 cities of Russia: Moscow, Arkhangelsk, Vladivostok, Volgograd, Voronezh, Ekaterinburg, Irkutsk, Krasnodar, Nizhny Novgorod, Novosibirsk, Samara, Syktyvkar, Tumen, Ufa, Khabarovsk. Additionally, a complete range of data services is provided in other cities and regions of Russia, such as Kazan, Krasnoyarsk, St.Peterburg, Kaliningrad, Murmansk, Yakutsk.

International channel information

After the acquisition of 2,4 Gbit international channel from Moscow to Stockholm Golden Telecom now owns the largest international connectivity in Russia.

As a result Golden telecom linked its network to the Ebone broadband network deployed by Golden Telecom's mother company GTS. The geographically extensive GTS Ebone allows transport customers' traffic directly over its 2.5 Gbps backbone not only to end-destinations in Europe, but also in the USA via multiple transatlantic links. This extends over 16,964 route kilometers, through 12 European countries and with Points of Presence (POPs) in 28 cities. At the physical level of the network, dense wavelength division multiplexing (DWDM) increases the data carrying capacity of Ebone optical cables. The Synchronous Digital Hierarchy (SDH) transmission layer guarantees a carrier-class quality of reliability and performance. The project between GTS and FLAG Telecom (www.flagatlantic.com) almost doubled the capacity of FLAG Atlantic-1 (FA-1) channel. The world's first 2.4 terabits dual cable system, connecting GTS Ebone network in London and Paris with Atlantic US coast in New York, is now capable of carrying over two hundred hours of digital video per second, 30 million clear voice channels, or over two trillion bits of IP or data traffic per second.

Golden Telecom provides several digital telephone lines and high speed dedicated Internet access over one single line. The solution guarantees quality voice connection and significant savings as a result of integration. The solution is based on Voice over IP technology. The customer is supplied with voice-enabled router, which is used as universal gateway for his LAN PC's and office telephones or PBX (Private Branch Exchange). The number of telephone lines and the speed of Internet access vary depending on the connection speed and equipment configuration.

[53] Adopted from the Golden Telecom company

Dedicated Internet access and Direct Moscow Phone Numbers over single line

There are two basic options of the integrated solution. All prices are in US$, VAT is not included.

Option 1: Two Direct telephone numbers and Dedicated Internet

#	Service	One time	Monthly
1	Frame Relay last mile	525	185
2	Internet access at 64 Kbit\s, including 200 Mbytes of incoming traffic. (Outgoing traffic is not charged) Each extra Mbyte costs 0.08$	50	50 *
3	Allocation of 8 permanent IP addresses	25	5
4	Moscow direct numbers, 350 USD one time fee per number. 25USD monthly per each number **	700	50
5	Local calls	free of charge	free of charge
6	Router management	0	19 ***

Total
1300
309

Option 2: Four Direct telephone numbers and Dedicated Internet
#
Service
One time
Monthly

1
Frame Relay last mile
790
300

2
Internet access at 128 Kbit\s, including 200 Mbytes of incoming traffic. (Outgoing traffic is not charged) Each extra Mbyte costs 0.07$
70
70 *

3
Allocation of 8 permanent IP addresses
25
5

4
Moscow direct numbers, 350 USD one time fee per number. 25USD monthly per each number **
1400
100

5
Local calls
free of charge
free of charge

6
Router management
0
23 ***

Total
2285
498

Standard, non discounted international tariffs

Direction	**Per minute charges**
Europe	0.50
America 1 (USA/Canada)	0.50
America 2 (rest of America)	1.30
Asia 1 (Japan, South Korea, Hong Hong, Singapore)	1.00
Asia 2 (China, Israel)	1.00
Asia 3 (rest of Asia)	1.40
Oceania 1 (Australia, New Zealand)	1.10
Oceania 2 (rest of Oceania)	1.25
Africa	1.40
Latvia, Lithuania, Estonia	0.65
CIS	0.30
Inmarsat	9.00

Standard, non discounted long distance tariffs

Direction	**Per minute charges**
Moscow region (by 100 km)	0.18
St. Petersburg	0.20
North West Russia	0.20
N. Novgorod and region, Voronezh and region	0.14
Arkhangelsk, Syktivkar and Komi, Samara and region, Ufa and Bashkorkostan, Volgograd and region	0.17
Ekaterinburg and Sverdlovsky region, Krasnodar and Krasnodarsky Krai, Tumen and region, Novosibirsk	0.22
Irkutsk and region	0.30
Khabarovsk and Khabarovsky Krai, Vladivostok and Primorsky Krai	0.40
European Russia and west Siberia	0.20
Central Siberia and Far East	0.36

Prices for Moscow city telephone number (in $$)

	One-time fee	Monthly fee
Moscow city phone	400	25

Tariffs on dedicated Internet access in Moscow

All prices in US $, VAT is not included.

Basic services
Services
Speed/Cost

Frame Relay 64 Kbit/s, CIR-32 Kbit/s
Dedicated line,64 Kbit/s
Frame Relay 128 Kbit/s,CIR 64 Kbit/s
Dedicated line128 Kbit/s

One time payments

Installation of the dedicated line
525
525
790
790

Internet port installation
40
40
50
50

Allocation of 8 fixed IP addresses
25
25
25
25

Monthly payment

Rent of dedicated digital line
160
250
250
400

Internet access fee
40
40
50
50

Incoming traffic included in the fee(Gbite)
0,20
0,20
0,40
0,40

Each extra Mbyte of incoming traffic
0,06
0,06
0,06
0,06

Maintaining of 8 fixed IP addresses
5
5
5
5

Additional services
Services
One time
Monthly

Allocation of fixed IP addresses

up to 16
25
10

up to 32

30
15

up to 64
30
20

up to 128
40
20

"C" class network
50
25

Registration of the 2nd level domain ("name_domain".ru)
45
5

Registration of the 2nd level domain ("name_domain".com)
90
5

Maintaining of the primary DNS zone
50
20

Maintaining of the secondary DNS zone
50
10

Equipment for a local network
Cost for sale

Router CISCO 805 with cable
918

Router CISCO 1601-CH with cable
1330

Router Motorola Vanguard 320 with cable
1320

Additional options
One time
Monthly

Sale of IP Firewall for CISCO 1601-CH
750
-

Installation of IP Firewall CISCO 1601-CH
80
-

Installation and management of a client's router
50
25

Tariffs on dedicated Internet access via Radio-Ethernet channel

Last mile is provided by Art Communications. Available speed rates are from 128 to 2048 Kbps. The installation and monthly payment for the service consist of: 1) Radio-Ethernet channel setup and support fee. 2) Internet connection via Golden Telecom network setup charge and traffic monthly fee - see below.

Traffic fee
Monthly fee, USD
Free limit in GB
USD/Mb rate over limit

70
0.50
0.07

Installation fee
Bit Rate
One-time payment, USD

128 - 2048 Kbps

70

IP addresses registration and support

Number of IP addresses

256
128
64
32
16
8

One-time payment, USD

50
40
30
30
25
25

Monthly fee, USD

25
20
20
15
10
5

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