

ICT SECTOR

According to experts' estimates, the development of the ICT (information and telecommunication technologies) sector in Russia today is lagging 3 to 5 years behind the world leaders. It is still in a stage of rapid saturation of new segments of the market: average rates of growth in recent years have reached 40%; in single sectors 100% and more.

During the Soviet period, in the Northwest of Russia, primarily in St. Petersburg (Leningrad, at that time), a large production of electronic equipment was created. Specialized educational and R&D institutions were also established. After the collapse of the Soviet Union, many of these companies, especially equipment manufacturers, experienced serious difficulties. Due to the development of new sectors, however, St. Petersburg was able to maintain its leading positions in the ICT sector of Russia. Today, only the Moscow area, which includes Moscow and the Moscow Region, exceeds St. Petersburg in ICT terms. The first call from a mobile phone in Russia was made in St. Petersburg in 1991. The first fiber-optic network for data transmission and the first third-generation (3G) cellular network in Russia were also created in St. Petersburg.

DATA TRANSMISSION NORTHWEST RUSSIA NETWORKS IN

Data Transmission Networks in Northwest Russia



CURRENT SITUATION

At present, the ICT sector of the Northwest of Russia is in a stage of active expansion and formation of a new structure. The basis for this process is the high and continually growing demand for information and telecommunication services, as well as the availability of a well-developed educational system in St. Petersburg, which provides for the high quality of training of specialists. New services continually emerge on the market, players change their strategies, monopolies are faced with the necessity of restructuring, the circle of related and supporting industries is widening, and international partnership is growing. The latter has great significance for the ICT sector of the Northwest, since it has an important advantage of proximity to one of the highest developed ICT sectors of the World: the Finnish ICT sector. The main fiber-optic cable passes through the region that connects Russia with Finland, and through Finland with the rest of the world. This allows for viewing the Northwest as a Russian "digital window to Europe."

The ICT sector of Northwest Russia is distinguished by a high density—its only agglomeration is virtually limited to the territory of St. Petersburg. St. Petersburg has recently accounted for over 60% of all information and telecommunication services in the region. The specific weight of the sector in the city economy is nearing the level of 10%, whereas in Russia as a whole it accounts for only 2%. At the same time, the prospects for further growth are closely related to the development of the ICT sector in other regions of the Northwest. Their large

areas and low population density necessitate their rapid integration into a single information zone, which would facilitate their sustainable development in all spheres.

The ICT sector consists of two main parts—the sub-sector of telecommunications and the sub-sector of information technologies—the development of which is accompanied by their growing convergence. Currently, the share of the sub-sector of telecommunications in the ICT sector of Russia is approximately twice as high as that of the sub-sector of information technologies; the portion of the latter, however, is continually growing and is most likely to maintain this trend in the future.

TELECOM SUB-SECTOR

The mobile telephone network, data transmission services, and Internet access service enjoy the highest rates of growth among other telecommunication services. Already by the end of 2002, the number of mobile phones in St. Petersburg exceeded the number of regular fixed phones. The rate of penetration of cellular telecommunications in the Northwest generally exceeded the Russia-wide rate—15% to 12%, as of the end of 2002. The rate of penetration of Internet access in the Northwest is currently also higher than in Russia on average. These figures are, however, much lower in comparison with those of most European countries: by several times in the penetration of cellular telecommunications; and in the number of personal computers and users of the Internet, calculated per 1,000 persons, by more than 10 times. Corporate Internet access rates in Russia (and in the Northwest) are higher than private Internet access rates.

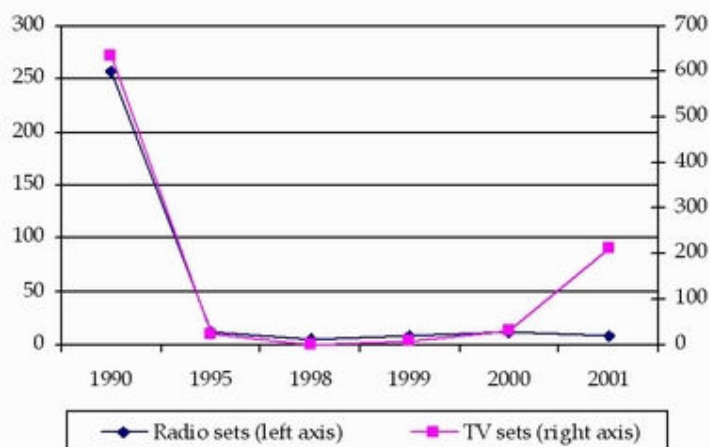
The wired telephony is developing very slowly, which places serious limitations on the development of Internet access service, since in Russia dial-up Internet connection will continue to prevail in the near future. The number of digital telephone exchanges in the Northwest, as well as in Russia on average is still only about one-third of the total number of exchanges.

TELECOM EQUIPMENT PRODUCERS

In the rate of growth and volume of sales, manufacturers of telecommunication equipment are currently inferior to the companies that provide telecommunication services. Large companies that are concentrated in St. Petersburg were created during the Soviet period and specialized in manufacturing complex equipment. They found themselves unviable in the new open market economy and sharply reduced their production. Smaller companies that formerly were parts of these larger companies, as well as subdivisions of international companies, are primarily involved in production of components or assembly. Their products are in demand, but their production volumes are still rather low. The disorganized and contradictory government policy on regulating customs tariffs, privatization, government procurements for a long time was a damper in this area. The situation began to improve, however, and in 2003 rapid growth in assembly of personal computers, computer monitors, television sets, and other mass-market equipment was registered.

TV and Radio Sets Production in Northwest Russia, ths

TV and Radio Sets Production in Northwest Russia, ths



SOFTWARE SUB-SECTOR

Software developers play the leading role in the sector of information technologies. The basic products are packaged software, project software, integrated systems and providing information security. In addition to subsidiary companies St. Petersburg's leading technical universities, research centers of international firms located in St. Petersburg such as Siemens, LG, Alcatel, Motorola, and others are also involved in these activities.

TRAINING

The training of specialists for the ICT sector of Northwest Russia is carried out primarily in the educational institutions of St. Petersburg. In recent years, approximately 6,000 specialists have graduated annually in telecommunications and information sciences. The number of students being accepted each year into these programs continues to grow. In addition, the number of specialists in other fields who also receive training in information technologies increases yearly. Many universities and technical training schools graduate specialists who enter the ranks of the companies of the sector; however, there are six universities in particular in St. Petersburg that have already developed outstanding traditions in these disciplines. The fact that students from these universities consistently win prizes in international competitions in programming and computer science attests to the superior level of education in these universities. More evidence of the competitiveness of St. Petersburg's leading universities is the fact that many their graduates are able to find jobs in their areas of specialization in North American and European companies.

RESEARCH & DEVELOPMENT

Unfortunately, in the R&D of the ICT sector there has been a decline. Most of the organizations, which are also concentrated in St. Petersburg, have been experiencing substantial difficulties during the last decade due to a sharp reduction in orders. Many highly qualified specialists, primarily the young and mobile, have left the larger institutions. There is almost no influx of new specialists, since the best graduates avoid low-paying jobs in the R&D. Nevertheless, some of the specialists who left the large organizations moved to research subdivisions of the leading international companies, which have opened in St. Petersburg in recent years. Thus, the R&D potential of the sector has been partially preserved.

ICT sector development

The development of the ICT sector is closely connected to the spread of mass media and the entertainment industry throughout the world. The traditional media take on new forms quite rapidly. This process is also underway in Russia, albeit with some delay. Here it is fostered to a certain degree by the large distances between populated areas and the outdated infrastructure of the traditional mass media. The audience of the main Russian

information portals in St. Petersburg already exceeds that of daily newspapers, and will most probably continue to grow.

Daily Audience of St. Petersburg Newspapers, TV News Programs, and Russian News Portals (August 2002)

Mass media audience	Audience, thousand people	
	Min	Max
Daily circulation of the main newspapers in St. Petersburg	20	71
Daily audience of the main TV news programs in St. Petersburg	150	520
Daily number of visitors to the main Russian news and information portals	30	90

Source: www.spylog.ru; www.top100.rambler.ru; TV ratings; Itogi magazine, No. 33(323), 2002

Even in a highly computerized post-industrial society, as international experience demonstrates (Silicon Valley, for example), the ICT sector will not be able to achieve complete independence from traditional industries, in particular the electric power industry. The reform of this industry that is underway in Russia may influence the development of the ICT sector.

Since new information and telecommunication projects often go hand in hand with high risks, the ability of companies to attract venture capital plays an important role in the development of the industry. Neither an efficient market for venture capital, nor an efficient stock market has been created yet in Russia, however. For this reason, when implementing projects companies are forced to rely above all on their own resources, which severely limits their capabilities. Only the largest mobile communication operators have access to the services of the world's leading stock markets.

MARKETS

The products and services of the ICT sector of the Northwest of Russia are oriented primarily toward the domestic market. Unlike domestic markets of other industrial sectors, it has not experienced any reduction in the past decade, and its steady, and in some sectors rapid, growth is the main prerequisite for its development. The sector of telecommunication equipment is the only exception here. The competitiveness of the Russian manufacturers of telecommunication equipment proved to be very low in the open market. The demand for such equipment and consumer goods as TV sets, telephones, etc. is satisfied today primarily through imports. The development of local assembly line production is expected in the near future.

Only a small portion of the products of the sector is currently exported. Software is the main export article. In 2001 Russia exported software to the tune of \$154 million; St. Petersburg companies accounted for around 40% of this. There is no comparison, however, between these figures and the export figures of, for example, the offshore programmers of India—which equaled \$6.8 billion in 2001. In addition to software, the ICT sector of the Northwest of Russia exports components for electronic equipment, manufactured primarily by subcontracting (for example, by the St. Petersburg subdivision of the Finnish company Elcoteq). The volumes of these supplies, however, are low.

At present, the competitiveness of the ICT sector of Northwest Russia is founded on production factors inherited from the Soviet period: the system of education, human and, to a lesser degree, industrial capital. The potential of these factors is still relatively great, but insufficient investment during the past decade has lowered it. In particular, educational institutions, and even leading universities, are experiencing a more and more acute shortage of young, innovative experts. Low salaries are a reason for the brain drain from educational institutions, which accounts for the gradual decline in quality of training despite its quantitative growth.

The inherited industrial capital is now being used only to a limited extent; however the very fact of its existence within the highly concentrated agglomeration of the ICT sector points to the possible emergence of new competitive manufacturers.

INTERNATIONAL COOPERATION

The possibility of more active over-the-border cooperation with the Finnish ICT sector should also be viewed as a positive potential factor of competitiveness. This cooperation has been held back until now by customs barriers, bureaucratic delays, and other obstacles of an unfavorable investment climate. The expansion and strengthening of cooperation will be mutually beneficial. For the companies of the Northwest of Russia, it means access to a well-developed system of related and supporting industries, new technologies, and effective marketing channels on the world market. For Finnish companies, it provides access to a nearby labor force that is qualified and relatively cheap, an industrial and R&D infrastructure, and a potentially large market. This combination represents a truly unique, potential competitive advantage for the ICT sectors of both countries.

DEMANDS

The fast-growing domestic demand for new telecommunication and information services is the main impetus for the development of the ICT sector. In spite of the fact that in some sub-sectors—mobile telecommunications, Internet access service, IP-telephony, and others—the annual rates of growth often exceed 100%, market saturation is still a long way off. Even in St. Petersburg, the market is not yet saturated; and in the other regions, the introduction of new technologies is essentially just beginning. Added to this is the fact that the level of modern information and telecommunication services that has already been achieved in Western Europe is unavailable in Russia, due to the continued low purchasing power of the population.

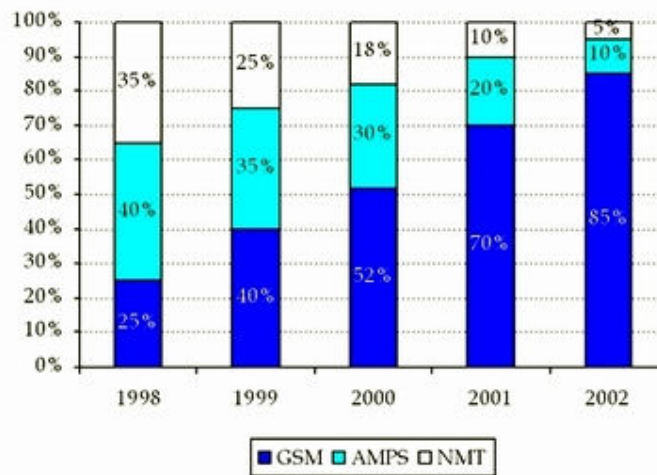
In addition, demand for the new services is for the time being limited largely to the basic functions: for example, mobile telephony is used almost exclusively for voice communication and sending SMS texts. In the future, however, we may expect an increase in demand, due to other services such as data transmission, access to the Internet, etc. This is especially relevant in view of the long distances in Russia and the insufficient state of development of wired communications.

Software has a potentially very large domestic demand. The comprehensive computerization of traditional industries and other sectors of the economy has only just begun in Russia. Consumers often express a preference for domestic software products, not only because of their more moderate prices, but because of their superior applicability (as compared with their western counterparts) within the structure of manufacturing and management in the specific circumstances of Russian companies. The development of the software market in Russia, however, is severely hampered by the absence of effective observance of copyright and the extremely widespread use of pirated software. According to international experts, up to 90% of all software products used in Russia are pirated.

The potential for growth of domestic demand is present in other sectors, as well. In wired communications, this is related to the replacement of the outdated analog devices of most telephone exchanges for modern digital devices, which creates the possibility of delivering new services (IP telephony, simultaneous Internet access, etc.). In the sector of equipment manufacture, this potential is connected with the rapid growth of demand for ICT services. There is also an undeniable potential for the increase of exports. This is related above all to the large volume of the world market for information products and the presence of certain essentials for significant growth in the volume of offshore programming in St. Petersburg: a high concentration of qualified personnel, universities, and R&D organizations; the gradual spread of marketing skills and vital international contacts among software developers.

The structure of the ICT market in Northwest Russia differs significantly according to sub-sector. The most highly developed competitive environment may be observed in the mobile telecommunications sub-sector. All three of the largest Russian players are present here: Megafon, MTS, and Vimpelcom. The first two of these occupy the leading positions on the regional market. In addition to the leaders, there are also several smaller companies, including Delta Telecom, the pioneer in mobile telecommunications in Russia.

Relative Portions of Different Standards on the Russian Cellular Market (figures correspond to the beginning of the year)



Cellular standards: GSM - Global System for Mobile Communications; AMPS - Advanced Mobile Phone Services; NMT - Nordic Mobile Telephone.

Source: Sotovik.ru, Goskomstat

KEY PLAYERS

All the companies are striving to expand the number of services offered through the introduction of new technologies. The first generation of mobile communications has almost completely been replaced by the second. In addition, the companies are proceeding very cautiously in implementing the transition to the third generation (3G), as they are aware of the negative experiences of many of the world leaders, who overestimated the prospects of the market on the new level and have encountered many difficulties because of this.

A virtual monopoly, controlled by the government-held Svyazinvest, reigns in the sector of wired communications. It possesses more than 90% of all the fixed networks. The regional subdivisions of Svyazinvest are distinguished by a very low level of efficiency, which may be explained by the severely worn out equipment and networks of the unwieldy structures the companies inherited from the Soviet period, and by the obligation to offer services at low government rates. In order to increase its investment attractiveness, the management of Svyazinvest united all its regional subdivisions in the Northwest into a company called Northwest Telecom at the end of 2002. Another move intended to attract investors will be the introduction of time-based charges for services of wired communications in the near future.

Other operators of wired communications in the region are dependent on the infrastructure of Northwest Telecom. In addition, many of them have close ties to Northwest Telecom through personal contacts within between top managers, participation in capital stock, etc. Alternative operators specialize in new services: providing Internet access, IP telephony, card telephony, the creation of local networks for serving corporate clients and individual condominiums. They primarily embrace the more affluent segment of the market, and the efficiency of these private companies is significantly higher than that of Northwest Telecom.

Selected Companies of the Northwest Russian ICT Sector

Company	Turnover in 2001, USD million	Personnel
<i>Wired communications</i>		
Northwest Telecom	134.9	9,000
PeterStar	47.9	400
Sonera Rus	20	70
Metrocom	18	150
Ruscom	15	100
<i>Cellular communications</i>		
MegaFon (Northwest Region)	199.5	300

MTS (Northwest Region)	80**	n/a
Delta Telecom	30	240
<i>Equipment Manufacturing</i>		
Neva Cable	7	60
Sevkabel-Optic	7	50
Bercut	n/a	150
Sveltana	2.8*	600
Supertel	2.5	110
<i>Software Development</i>		
Lanit-Tercom	3	200
Digital Design	2.5	120
Reksoft	2.5	150
Astrosoft	2.5	170

* - Data for 2000

** - Estimation for the first nine months of 2002

Source: data provided by companies

FOREIGN INVESTMENTS

Foreign investment in Russian telecommunications has played a strategic role in the last decade. It was in fact foreign companies who created the new market virtually from scratch. Today, due to the crisis in the world ICT industry and the influx of domestic capital, the specific weight of foreign capital in the Russian telecommunications sub-sector has declined. Foreign companies, however, continue to have a great influence on the development of the sector through the import of new technologies and the experience of effective work. In the Russian Northwest, the role of foreign investors is especially strong. Companies from Finland, Sweden, Germany, and other countries have a share in almost all the large telecommunications companies doing business in the region. The portion of capital from developed countries is also high in other sectors of the ICT sector of Northwest Russia.

In the sub-sectors of software development and telecommunication equipment manufacturing, the regional market still finds itself in the stage of initial development in the first case, and of prolonged restructuring in the second. It is currently made up of a rather large number of small and medium-sized companies that occupy small niches. They compete primarily with international manufacturers, both on the domestic, and on the international markets. Most successful are the smaller companies with flexible structures, which grew out of large organizations and inherited basic competitive advantages from them, and the St. Petersburg divisions of the transnational ICT corporations. In some projects for the development of software products intended for export, a high level of productivity is being achieved, as compared with the level of world leaders.

CONCLUSION

The Russian authorities have repeatedly stressed the need for the rapid development of high-tech industries in the country; however, truly effective measures have not been adopted up until now. On the government level, a clear conception of a purposeful industrial policy that could substantially improve the investment climate of the industry is lacking.

Federal budget expenditures on R&D and education over the last decade have amounted to only 1% of the Russian GDP; and the volume of this GDP has shrunk significantly in comparison with the year 1990. In addition to its low level, government financing has been extremely ineffective up to now. The funds are targeted at a system inherited from the Soviet period that has remained virtually unchanged. As a result, even the scanty resources that are available are channeled into many obviously irrelevant projects.

The prospects for the development of the ICT sector of the Northwest of Russia are closely tied both to global trends in the area of the introduction and implementation of new technologies, and to the general state of the country's economy. Without substantial growth of the GDP, it is not possible to expect serious government influence on the development of the sector and an increase in the volume of the domestic market.

At the regional level, the leading positions of the ICT agglomeration of St. Petersburg will undoubtedly be maintained and strengthened. It will be within the agglomeration of St. Petersburg that innovations take hold in the future, and then expand into the other regions of the Northwest. St. Petersburg will remain the most important market for products and services of the ICT companies due to the high concentration here of various kinds of business activity.

The most important trend at the corporate level in the coming years will most likely be the strengthening of competition in all sectors and the development of markets, both quantitatively and qualitatively. The successful development of the ICT sector depends strongly on the continuing process of Russia's integration into the global production and distribution network.