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Russia and the Information Revolution

D. J. Peterson

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Preface

This report examines the sources, dynamics, and consequences of Russia's increasing reliance on information and communications technologies to improve the transparency and performance of its government institutions, to reform industry and stimulate economic growth, and to improve access to information and the quality of life for Russian citizens.

The objective of this study, which was conducted between 1999 and 2005, is to understand how some of the momentous global trends in the 21st century will impact Russia. This research effort seeks to bring to light emerging opportunities and challenges facing Russia's domestic development as well as its international posture. This study should serve to assist decisionmakers in government, business, and non-governmental institutions in Russia and internationally to make more-informed choices regarding technology investment, management, and policy in Russia.

This report builds on a number of RAND Corporation studies of the impact of the Information Revolution around the world:

- Richard O. Hundley, Robert H. Anderson, Tora K. Bikson, and C. Richard Neu, *The Global Course of the Information Revolution: Recurring Themes and Regional Variations*, MR-1680-NIC, 2003, available at <http://www.rand.org/publications/MR/MR1680/>.
- Nina Hachigian and Lily Wu, *The Information Revolution in Asia*, MR-1719-NIC, 2003, available at <http://www.rand.org/publications/MR/MR1719/>.
- Grey E. Burkhardt and Susan Older, *The Information Revolution in the Middle East and North Africa*, MR-1653-NIC, 2003, available at <http://www.rand.org/publications/MR/MR1653/>.
- Michael S. Chase, and James C. Mulvenon, *You've Got Dissent! Chinese Dissident Use of the Internet and Beijing's Counter-Strategies*, MR-1543, 2002, available at <http://www.rand.org/publications/MR/MR1543/>.
- Christopher R. Kedzie, *Communication and Democracy: Coincident Revolutions and the Emergent Dictator's Dilemma*, RGSD-127, 1997, available at <http://www.rand.org/publications/RGSD/RGSD127/>.

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Summary

This report presents the findings of a RAND Corporation research project undertaken in Russia to examine the impact of the growing use of information and communications technology (IT) in Russia's government, economy, and society. The objective of this study is to bring to light emerging opportunities and challenges facing Russia's domestic development as well as its international posture. This study should serve to assist decisionmakers in government, business, and nongovernmental organizations (NGOs) in Russia and internationally to make more-informed choices regarding technology investment, management, and policy in Russia.

The research, which was conducted between 1999 and 2005, involved a systematic literature review of published and unpublished reports by government, industry, the media, and NGOs; an examination of Russian-language content on the Russian portion of the Internet (dubbed the "RuNet"); participation in conferences and workshops; and site visits. RAND also conducted interviews with more than 90 representatives from more than 65 large and small organizations, including IT companies; firms that use IT in their operations; research organizations; government agencies; and NGOs.

A principal conclusion that emerges from this study is that while information technologies in Russia have had a big impact on the lives of many Russian citizens who have access to those technologies, an Information Revolution in Russia's government, economy, and society, such as many of its supporters have anticipated and hoped for, remains off in the distance. A more detailed summary of findings follows.

Information and Communications Technology and the Economy

Government officials and IT industry leaders in Russia regularly extol the country's "human capital potential"—a legacy of the Soviet government's large investments in computing research and development, mathematics, and engineering largely to support its defense and space exploration objectives. Perhaps not surprisingly, since the early 1990s, a vibrant, market-oriented, and decentralized IT industry has developed very quickly and been engaged in a broad swath of activity in the fields of telecom-

munications, hardware assembly, packaged software, IT systems design and integration, and elite offshore software engineering and technology research and development. This IT sector is the most visible manifestation of an Information Revolution in Russia's economy: In 2004, Russia's mobile and fixed-line telecommunications-sector revenues were estimated at about \$19 billion, and information technology goods and services totaled an estimated \$9 billion to \$10 billion—which together accounted for 4.9 percent of Russia's gross domestic product (GDP).

Important drivers of IT sector development are IT investments by private companies to better manage their operations, develop new business opportunities, and improve competitiveness. This process began in the mid-1990s and accelerated markedly around 2001 as the Russian economy recovered from its post-Soviet economic disarray, a recovery that was fueled by high energy and minerals prices. Since then, demand for technology and communications goods and services by businesses in Russia has been growing at 25–30 percent annually, and by the beginning of 2005 had reached an annual pace of about \$9.3 billion in purchase acquisitions. In larger firms, the first step many executives are taking in this process is to use IT to better control their companies by improving accounting and recordkeeping; more closely monitoring and coordinating operations and logistics; and imposing management oversight and discipline, especially over far-flung enterprises. Information technologies are being applied in Russia's newer firms—such as mobile phone companies, airlines, financial services firms, retail chains, and the media—to help grow the firms' operations and develop new markets. For many larger firms, investment in information systems is seen as key to implementing good governance practices and attracting foreign investment.

Despite such spending and the availability of talented IT specialists, the net benefit of IT for Russian business is debated. In recent years, many Soviet legacy firms have undergone impressive turnarounds, and many new firms have enjoyed explosive growth, but most managers of these firms have a difficult time specifying IT's contribution. In their comments to RAND, many company owners and managers downplayed the need for IT, stating that their priorities are more focused on fundamental restructuring efforts: trimming payrolls; reducing worker drunkenness, absenteeism, and theft; improving product quality; and upgrading facilities, equipment, safety, and security. From their perspective, IT industry representatives questioned whether Russian managers really wanted to use IT to its fullest advantage, which would require relaxing controls on information flows and decentralizing decision-making. Meanwhile, international firms setting up operations in Russia are bringing their global IT systems and management practices along with them, thereby increasing competitive pressures. If Russian firms are to compete successfully over the long term, they eventually will have to rely more heavily on technology solutions. When they do so, they will, however, have a large pool of highly talented IT specialists on

which to draw, and they will be able to benefit from decades of lessons learned around the world.

International IT companies developing offshore software and technology solutions in Russia spoke very highly of their experiences, and many international firms—including Sun Microsystems, Intel, and Samsung—have expanded their Russian operations in recent years. Russian engineers' teamwork approach, problem-solving skills, know-how, and innovations gradually are elevating Russia's visibility in global technology markets and are giving currency to the label "made in Russia."

Russia's international IT business, however, tends to be concentrated in the high end of the market, thus making the country a "boutique" player in the global marketplace. The ability of Russia to seize a larger share of the market is constrained by a number of factors, including high taxes; undeveloped infrastructures, such as poor airport access and service; red tape and corruption; and a strong ruble, which has been bolstered by massive exports of natural resources. Russia has made progress on some of these fronts in recent years, but many of its competitors in the IT space—such as India, China, the Philippines, and Malaysia—appear to be moving even faster. While other countries aggressively market their capabilities, encourage capital investment, and implement technology-friendly policies, Russia still remains detached, if not aloof, from the global IT mainstream. Just as Russia's long-term economic sustainability has been undermined by massive capital flight, the sustainability of its IT sector is being threatened by "reverse offshoring" of key businesses functions and personnel to the United States and elsewhere. In sum, the offshore sector is unlikely to become a major driver of economic growth and diversification in Russia in the foreseeable future.

Information and Communications Technology in Government

The Putin administration has spent a great deal of time and energy examining the significance of the Information Revolution to determine its potential to improve government performance. In 2004, federal government spending on information technologies and services rose to more than \$640 million, and spending was projected to double in 2005. Government spending on IT at all levels in 2004 amounted to an estimated \$1.8 billion, or about 0.3 percent of Russia's GDP; this rate compared favorably with the rate in a number of other countries, such as Germany. As a result, the public sector became the largest purchaser of IT hardware, software, and services—accounting for an estimated 20–25 percent of IT purchases in 2003 and 2004—and has functioned as a major stimulant to IT sector growth.

This report identifies a number of local and international initiatives being implemented to stimulate the Russian government's use of IT. Today, a large volume of government information is now provided online—including laws and draft legisla-

tion, economic data, and agency activities and points of contact. Such information-dissemination efforts are a far cry from the situation during Soviet era, when even phone books were not printed. IT also is being applied to improve administration of social services, taxes and customs, and the banking system, and to improve public-sector procurement of goods and services.

Many such initiatives have been dubbed “electronic government” and have been given such names as “e-Moscow” and “e-Russia.” The rhetoric being used to describe such initiatives focuses on improving public-sector service delivery, responsiveness, openness, and transparency. However, the substance of most efforts does not conform to models of e-government familiar in the West and elsewhere. First, efforts to implement e-government programs in Russia have been stymied by poor design, resistance to change, and a pervasive culture of secrecy and unaccountability. Moreover, the underlying drivers for most of these initiatives are more state-centric: to burish the image of government and officials and, in the view of many, to improve the state’s command-and-control capabilities *over* the economy and society. Indeed, many of the problems that IT is said to help ameliorate—secrecy, corruption, waste, and the unresponsiveness of public officials—seem to have become much worse under the Putin administration, despite huge investments in IT. This suggests that an Information Revolution in government will not occur until the public-sector culture is changed.

Information and Communications Technology in Society

In terms of individuals’ lives, the changes wrought by information technologies in recent years are striking. In the Soviet era, citizens waited for years to get a telephone in their apartment. Now, they wait only a few minutes to get a phone in their pocket. Keeping in touch with friends and family in other cities and countries has been revolutionized: Just a decade ago, telegrams were a principal means of long-distance communication, and a rare occurrence at that. Now, e-mail and text messaging via mobile phones are becoming the norm for long-distance communication. Because Russia has a highly educated and technologically proficient population, the uptake and use of technology have been rapid.

In early 2005, Russia’s Internet audience—defined as the share of the adult population browsing the Web or using email at least once a week—reached an estimated 10.3 million, or about 9 percent of the adult population. Since 1999, Internet penetration has been rising at about 30–40 percent annually. Internet use is strongest among Russian youths due to government and NGO initiatives to promote Internet access and training in schools and colleges. More than two out of five Internet users in Russia were under the age of 25 in 2004.

Early on, activity on the RuNet was oriented toward entertainment. Now, the RuNet is being used more intensively by the general population for personal information-gathering purposes—e.g., for checking the weather, comparing consumer goods, planning a construction project or travel, or monitoring financial markets. The RuNet is being used for personal and professional development and to pursue personal interests and hobbies, such as automobile tuning and repair, health and fitness, and sports. The RuNet also has become an important channel of alternative, independent, and unofficial information and news, especially during fast-breaking events and crises. RuNet traffic routinely has peaked during crises, such as during the Beslan terrorist incident in September 2004, when more than one-third of RuNet activity was directed at news and information sites.

Online access offers Russian citizens the unlimited information space of the global Internet; nonetheless, Russian Internet users tend to rely on domestic Web resources. While the Internet in the West is commonly seen as a force for globalization, there is little indication that information and ideas from abroad are having much impact on anything in Russia beyond pop culture and consumer preferences. While English-language proficiency has increased markedly in recent years (English instruction is now compulsory beginning in the fifth grade), language barriers and the limited availability of international sources of information and ideas in Russian clearly are factors in the reliance on domestic sources of information on the Web. Perhaps more important is an apparent lack of interest in (or aloofness from) global flows of knowledge and ideas—including a lack of interest among Russia's educated youth.

The RuNet largely has been an apolitical space. Russian users, wary of the political upheavals and rhetoric of the late 1980s and 1990s, have demonstrated little interest in reading or expressing political thought or directly pursuing activism online. Politically inclined actors tend to use varying levels of self-censorship online to avoid angering those in power. Environmentalists and human-rights advocates have been particularly avid users of the Internet and e-mail—but mostly among themselves and their counterparts abroad.

Because of these factors and the fact that Russia's active Internet-using population has been fairly small, overt controls over the Internet have not been implemented on a large scale, as is the case in China and other nations. (Nevertheless, the authorities have in place organizational and technological systems to monitor public and private information flows at any time.) The Kremlin has applied "soft power" to shape Internet development. It has aggressively developed a variety of official and unofficial Web sites to get its message across—many of which are proving to be fairly popular with the public. In short, while exploitation of IT and the Internet has become more prevalent, the political climate has become more authoritarian and the government less accountable to the public. Russia (in contrast to the trend in

Ukraine and Central Europe) in many ways has become more politically and socially isolated from the global mainstream.

In 2004 and 2005, as Internet activity continued to grow, a number of more politically dissident voices emerged on the RuNet, perhaps in response to the IT-enabled political activism witnessed in such nearby countries as Serbia, Ukraine, and even China. Government officials appear to be taking these developments very seriously, with increased calls from many quarters for Internet controls and censorship. It is widely anticipated that more-aggressive efforts will clamp down on Internet (and mobile phone) freedoms, as the regime has done with broadcast and print media, especially if it is faced with a crisis in which the Internet becomes a more potent source of alternative information and views. The ability of the regime to firmly control access and content for a long period of time—especially given Russia's large pool of highly talented IT specialists and enthusiasts—is unclear. Like the regime's selective attacks on business, any such attack on Internet freedom is likely to further erode the country's and the regime's image and further remove Russia from the global social, political, and technology mainstream.

To conclude, instead of catalyzing change, information technologies—for better or worse—largely have mirrored or reinforced ongoing business, government, social, and political developments in Russia. This situation is not unlike that in other countries: It has taken decades of investment, integration, use, and learning for institutions and individuals in the West and elsewhere to realize and recognize the impact of the Information Revolution. Given Russia's late start, it likely will take many years, though probably not decades, for information technologies to become deeply embedded and utilized before their impacts are fully realized. Until then, the role and effect of IT will be debated in Russia, as it will around the world, by techno-optimists and techno-pessimists. Perhaps in this way, the Information Revolution in Russia is proceeding apace.

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Acronyms

CEO	chief executive officer
CIS	Commonwealth of Independent States
CMM	Capability Maturity Model
CRM	customer relationship management
DSL	digital subscriber line
EBRD	European Bank for Reconstruction and Development
ERP	enterprise resource planning
FAPSI	Federalnoye Agenstvo Pravitelstvennykh Svyazi i Informatsii (Federal Service for Government Communications and Information)
FOM	Fond “Obshchestvennoye Mnenie” (Public Opinion Foundation)
FSB	Federalnaya Sluzhba Bezopasnosti (Federal Security Service)
GDP	gross domestic product
GR	government resources
IBS	Information Business System
ICT	information and communications technology
ISP	Internet service provider
IT	information and communications technology
NGO	nongovernmental organization
PC	personal computer
R&D	research and development
SEU	Social-Ecological Union

SORM	Sistema Operativno Rozysknykh Meropriyatii (System of Operative and Investigative Procedures)
VC	venture capital

Introduction

It is widely believed that the advent of *glasnost*, or transparency, in the USSR in the 1980s catalyzed the political awakening and upheavals that ultimately brought down the Soviet regime in 1991. Just two years later, in October 1993, pleas from the Kremlin relayed through the means of nascent Internet connections helped to rally Western support for Boris Yeltsin in his armed conflict with rebel government officials. The near-simultaneity of these events and the advent of the heralded “global Information Revolution” virtually ensured that *informatizatsiya*—the acquisition and sharing of information and ideas enabled by technology—would continue to play a central role in what Russia’s founding reformers and their supporters hoped would be the newly independent nation’s rapid transition to a “normal, civilized country.”

In Russia, as in other countries around the world, information and communications technologies (IT) are viewed as crucial enablers in overcoming a number of daunting reform, development, and modernization challenges. One such challenge is posed by the cumbersome, sclerotic, and self-serving governmental *apparatus* that independent Russia inherited from the Soviet regime. Unless this governmental machine is drastically overhauled, few of the policy initiatives of the country’s political leaders are likely to produce their intended effects. A second major challenge is posed by the country’s long-stagnant economy. Market forces combined with the nation’s integration into an increasingly global economy are viewed as essential prerequisites for a dramatic improvement in economic performance and individuals’ standard of living. Increasing reliance on technology and knowledge-based development, instead of exploitation of natural resources, is seen as a way to sustain that economic growth. A third major challenge is posed by the country’s paucity of a civil society. The thousands of so-called “informal movements” that sprung up in the late 1980s and early 1990s that played a significant role in Russia’s achievement of independence clearly demonstrated that many Russians were capable of joining forces to articulate and aggregate their common interests. But much wider and deeper civil-society development is required if the country’s political system is to become more transparent, democratic, and accountable.

In recent years, some of the predictions that information technologies will help to change the country have begun to come to pass. Today, the reach of wired and wireless communications is rapidly expanding in Russia. Mobile phones have become the dominant mode of communication, and millions have gained access to e-mail and the Internet. As of 2005, the size of the Russian Internet audience ranked 23rd worldwide, ahead of the Internet audiences of most countries outside northern Europe and the English-speaking world. As part of this trend, schools in Russian cities and small towns alike have been outfitted with computers and wired for Internet access. Russia's economy has enjoyed a robust recovery and growth, and firms in all sectors—oil and gas, metals, retail, and finance—also are investing in IT to restructure their enterprises, boost efficiency, develop new businesses, and compete internationally. (See Table 1.1 for economic and other facts on Russia.)

Russia now has a number of small but highly innovative software development and IT research firms and centers—most built from scratch during the past 15 years. Collectively, they constitute one of Russia's most vibrant and internationally competitive economic sectors outside of the natural resources sector. Finally, under President Vladimir Putin, electronic government initiatives such as E-Russia, E-Moscow, and E-Chuvashia have been championed with the stated goals of improving public-sector transparency, efficiency, service, and accountability.

Pointing to these developments, Russian and international observers frequently argue that the nation can become a full-fledged participant in the global Information Revolution by drawing on its significant human-capital assets, including a sizable number of high-tech specialists with deep knowledge of mathematics and engineering; an extensive array of high-tech research and development facilities; world-class

Table 1.1
Russia at a Glance, 2004

Population	143.4 million
Literacy rate	99.6%
Average annual economic growth rate, 1999–2004	6.5%
Gross domestic product (GDP) per capita (purchasing-power parity)	\$9,800
GDP composition by sector	Agriculture: 4.9%
	Industry: 33.9%
	Services: 61.2%
Federal budget revenues	\$106.4 billion
Mobile phone accounts	37 million
Adult population browsing the Web or using e-mail at least once a week	10.3 million

SOURCES: Central Intelligence Agency, *World Factbook*, Langley, Va., 2005; International Telecommunication Union, *Europe's Telecommunication/ICT Markets and Trends, 2003–2004*, Geneva, 2005; Public Opinion Foundation, *The Internet in Russia Survey*, Issue 10, Moscow, March 22, 2005.

institutions of higher education and advanced training; and a receptiveness to and facility with new technologies among the general population.

Despite these IT accomplishments and aspirations, Russia's reputation for red tape, corruption, and capricious government undermine the country's potential as a location for technology innovation, business formation, "offshoring" (contracts and R&D relationships involving foreign clients; see Chapter Two), and investment—both domestic and foreign. While the Putin administration seemingly has embraced information technology as a productivity enhancer in government and an economic motor in business, the Kremlin's active campaign to curtail media freedom and democratic activity suggests that the regime is not really interested in IT's potential to promote openness and accountability in government or politics or to promote an informed and engaged civil society. In short, Russia's exploitation of and role in the global Information Revolution in the foreseeable future remain quite unclear.

Study Objective

This report addresses the uncertainty of Russia's role in the global Information Revolution and examines the sources, dynamics, and consequences of Russia's increasing use of and reliance on information and communications technologies to, among other goals, improve the transparency, accountability, and performance of government institutions; to modernize business and industry and stimulate economic integration and growth; to improve information access and sharing of ideas; and to enhance the quality of life of Russian citizens.

The objective of this study is to apply an understanding of what may be some of the momentous global trends in the 21st century to the case of Russia. In doing so, this research effort seeks to bring to light emerging opportunities and challenges facing Russia's domestic development as well as its international posture and to assist decisionmakers in government, business, and nongovernmental organizations (NGOs) in Russia and internationally to make more-informed choices regarding technology investment, management, and policy in Russia.

Information and personal views used in preparing this report were gathered over a five-year period beginning in fall 1999, with the bulk of the research being conducted in 2003 and 2004. This work involved a systematic review of relevant scholarly and policy literature;¹ analysis of published and unpublished reports by govern-

¹ Relevant studies of e-government implementation around the world, include Jane E. Fountain, *Building the Virtual State: Information Technology and Institutional Change*, Washington, D.C.: Brookings Institution Press, 2001, and James S. L. Yong, ed., *E-Government in Asia: Enabling Public Service Innovation in the 21st Century*, Singapore: Times Media, 2003. For a comprehensive review and critique of theories concerning the role of IT in political development and democratization, see Shanthi Kalathil and Taylor C. Boas, *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule*, Washington, D.C.: Carnegie Endowment for Interna-

ment, industry, the media, and NGOs; an examination of Russian-language content on the Internet (dubbed the “RuNet”); participation in conferences and workshops; and site visits.

RAND engaged a number of Russian consultants to assist with information gathering and analysis. Yury Ammosov, a Moscow-based independent journalist with significant experience in the Russian IT sector, compiled data and information on the IT industry and IT trends in business, politics, and society. A team led by Boris Brusilovsky, chairman of the F1 Group and the head of the Novosibirsk Chamber of Commerce and Industry, produced a detailed report about IT developments in the Novosibirsk region.² Sociologists from the Yury Levada Analytic Center (formerly with the Russian Center for Public Opinion Research) compiled a review of public opinion polls on the subjects of IT and the Internet.³

Most important, this research venture involved in-depth, focused discussions with more than 90 representatives from more than 65 organizations covering a broad spectrum of institutions of various types, sizes, and perspectives:

- IT services firms, including software developers and systems integration and consulting, telecommunications, and information services firms
- firms that use IT in their business operations and management
- research and analytical organizations
- government agencies
- NGOs and business associations
- international organizations.

These participants were selected for their leading positions within their fields, their accomplishments in the information arena, and their ability to think broadly and creatively about management, operations, social, and policy issues. The individuals and organizations that shared their views are listed in the appendix.

tional Peace, 2003. For accessible yet insightful discussions about how IT is transforming the global economy, business, and labor, see Thomas L. Friedman, *The World Is Flat: A Brief History of the Twenty-First Century*, New York: Farrar, Straus, and Giroux, 2005, and Joel Kotkin, *The New Geography: How the Digital Revolution is Reshaping the American Landscape*, New York: Random House, 2000.

² Novosibirsk Chamber of Commerce and Industry, *IT in Novosibirsk City and Region: Conditions and Trends in 2003*, Novosibirsk, August 2003.

³ Aleksei I. Grazhdankin, et al., *Computerization and the Internet in Russia in the 2000s*, Moscow: Yury Levada Analytic Center, 2003.

Organization of This Report

Chapter Two examines Russia's emerging information technology sector, including telecommunications, IT integration and consulting, hardware and software development, and information services. The chapter also examines trends in software development and research and development (R&D) outsourcing to Russia and the challenges that Russian firms face in competing in the global IT market. The chapter discussion concludes with an examination of industry and government policy initiatives to mitigate these challenges.

Chapter Three provides an overview of how business and industry in Russia are seeking to use information technologies to enhance productivity and profitability, develop and enter new markets, and improve management and governance. The chapter brings to light differing views among Russian business leaders about the necessity of IT in achieving these objectives at this point in their firms' development and Russia's transition to a market economy.

Chapter Four examines the impact of IT on government operations. Numerous initiatives to diffuse and employ information technologies have been undertaken in recent years in Russia at the federal, regional, and local levels with the objective of making government operations more efficient and accountable to the public, improving public-sector services, and stimulating economic growth. The chapter reviews these policies and initiatives, and it outlines the challenges in the long-term process of fostering an Information Revolution in government.

Chapter Five surveys the course of the Information Revolution in Russian society, particularly with respect to how people use the Internet, and IT's impact on civil-society development, advocacy, and politics. The chapter closes with a survey of the Putin administration's Internet-related strategy and policy, particularly as it relates to freedom of information and democratization.

Chapter Six synthesizes and summarizes the report's key findings and offers an outlook on information technology developments in business, government, society, policy, and politics in Russia in the coming years.

The IT Sector

The clearest evidence that an Information Revolution is under way in Russia is the emergence and growth of a small but robust IT sector.

At the time of the Soviet Union's collapse in 1991, Russia did not have an internationally competitive, business-oriented, or market-driven information technology sector. Rather, the country's considerable math, engineering, microelectronics, communications, and computing capabilities and expertise—which, among other accomplishments, enabled the USSR to compete with the United States in the conquest of space—were embedded in the military-industrial enterprises and to a lesser extent in government ministries and research facilities. Moreover, the IT systems the Soviet Union had were oriented around large, increasingly outdated centralized mainframe computers running highly customized software that were not networked on a significant scale.¹

With the paralysis and atrophy of Soviet institutions in the late 1980s and early 1990s, talented and entrepreneurial individuals left the state-owned IT centers to start their own private-sector firms. Prominent among these entrepreneurs were Dmitry Zimin (founder of mobile telephone company Vypelcom), Anatoly Karachinsky (founder of Information Business Systems [IBS], a software and systems integration group), and Alexis Sukharev (founder of Auriga, an offshore programming specialty firm). Relcom, one of Russia's largest Internet service providers (ISPs), emerged in the early 1990s from Moscow's Kurchatov Institute of Atomic Energy. These and other companies that started in the early 1990s form the core of Russia's commercial IT sector today.

This new, commercially oriented IT industry grew gradually during the 1990s, fed largely by contracts from the banking sector and key government clients. In 2000, demand accelerated, driven by robust economic growth, a significant boost in public-sector spending, and rapid growth in personal income and purchasing power

¹ A push by the Gorbachev administration in the late 1980s to quickly develop a personal computer (PC) industry based on cloning Western technologies failed (Igor Agamirzian, "Russia on the World IT Services Market: Current Situation and Perspectives," presentation at Software Outsourcing Summit 2001, St. Petersburg, Russia, June 2001).

(these factors are examined in depth in later chapters). More recently, elite or high-level offshore software and technology-development ventures have gained traction and visibility.

As a result of all these trends, growth of the Russian IT sector has averaged an estimated 20–25 percent annually, compared with 5.8 percent growth in the United States and 3.4 percent growth in Western Europe in 2004. Accordingly, Russia has ranked among the top-five fastest-growing IT markets in the world—along with China, Korea, Japan, and India. The Ministry of IT and Communications estimated that in 2004 revenues in Russia’s communications sector were about \$19 billion, and information technology goods and services totaled an estimated \$9–10 billion in revenues, which together accounted for 4.9 percent of Russia’s GDP.²

The following sections examine IT sector development in the areas of telecommunications, hardware, software, services, technology development, and offshore programming and R&D. The discussion then turns to impediments that threaten IT sector growth over the longer term and industry and policy initiatives to mitigate those threats.

Telecommunications

A little over a decade ago, Russia’s telephone system was run by a government monopoly, and service was notoriously poor. Outside of Moscow, making a long-distance call typically required making a reservation with an operator. As a result, most intercity (and often local) communications were sent by telegram. Since then, marketization and the integration of new technologies have spurred an explosion of telecommunications activity. Between 2000 and 2004, telecommunications revenues almost quadrupled. In 2004, an estimated \$4.25 billion in investment—one-fifth of it from abroad—poured into Russia’s telecommunications sector. In 2004, telecommunications accounted for about 6 percent of all capital investment in Russia.³

Key developments in what might be called a “Telecommunications Revolution” in Russia include the following:

- Efforts are under way to modernize the country’s telecommunications infrastructure. The Ministry of Telecommunications has undertaken a ten-year plan to spend \$30 billion to upgrade its networks, with a high priority being placed on Internet development. Similarly, the Railways Ministry is investing hundreds of millions of dollars to expand Transtelecom, a subsidiary that provides com-

² Vitaly Solonin et al., *The IT Market: 2004 Results*, Moscow: CNews Analytics, 2005. By comparison, IT spending in Russia remained a small fraction of what it was in the United States (\$416 billion) and Western Europe (\$267 billion) in 2004.

³ Maria Popova, *Telecoms in Russia 2004*, Moscow: C-News Analytics, 2005.

munications services for the railways, into a commercial nationwide voice and data carrier.

- Several national wireless firms—MTS, Vypelcom, and Megafon—are developing competing, nationwide mobile-phone networks. As a result of improved service and falling prices, the number of mobile-phone accounts has increased 50–100 percent annually since 2000, making Russia one of the fastest-growing mobile-phone markets in the world. In 2004, the number of mobile-phone accounts surged past the number of fixed-line subscribers, which stood at about 37 million, for a nationwide penetration rate of 25 percent—the average rate of penetration worldwide.⁴ In Moscow and St. Petersburg in 2004, penetration rates were 79 and 70 percent, respectively.⁵ For 2004, Russian mobile-telecommunication revenues were estimated at \$7.8 billion, while fixed-line revenues totaled an estimated \$8.9 billion.⁶
- The market for data transmission services in Russia in 2003 was estimated at \$350 million—a 25 percent increase from the year before. The volume of data traffic has been increasing robustly, up 100 percent in 2002 alone. Major carriers are RTKomm.RU (owned by the state telecommunications holding company Svyazinvest), Transtelecom, Golden Telecom, MTU-Intel, and regional telephone companies.
- Russia has hundreds of national and local ISPs. Regional cable operators, such as Comcor in Moscow, are now moving to compete with phone companies for broadband service, and, eventually, Internet telephony.

Over time, private-sector development has eroded the state's telecommunications monopoly. Independent providers of mobile communications, Internet access, and other services accounted for more than half of telecommunications revenues in 2004. And, to support its growth, Russia's booming telecommunications industry has become a prominent consumer of IT goods and services.

Hardware

Russia has a vibrant market for IT hardware, driven by government and industry purchases and growing consumer markets. Hardware plays an unusually large role in

⁴ International Telecommunication Union, *Europe's Telecommunication/ICT Markets and Trends, 2003–2004*, Geneva, 2005. By comparison, mobile-phone market penetration in Russia in 2003 was slightly behind that in Turkey (27 percent) and far behind the average in Eastern Europe (48 percent) and Western Europe (86 percent).

⁵ Ivan Zassursky, *Economics of Attention: The Internet in Russia in 2004*, Rambler Foundation for Research and Social Initiatives, Moscow, January 2005.

⁶ Popova, 2005. Many people in Russia possess more than one mobile phone number, but not all are necessarily active at one time.

IT sector development in Russia, because many organizations are in the process of acquiring their first information systems. International hardware makers have done well in Russia selling servers, printers, and telecommunications equipment.

As Russia's IT hardware market has grown, so has the number of Russian firms, dubbed "red assemblers," that build and market personal computers, servers, monitors, and data-storage equipment, typically using components imported from Asia. The three largest equipment producers in 2002 were R-Style Group, Aquarius Group, and Kraftway Corporation. PCs assembled in Russia are said to be nearly identical to foreign brands in terms of performance and quality. Russian PCs enjoy a modest price advantage but the ability to underprice is limited due to less-efficient operations and smaller economies of scale in production. R-Style Group revenues totaled only an estimated \$89 million in 2002.⁷ Russian PC producers likely will continue to survive, if not thrive, because the domestic market is expected to remain strong in the coming years, and because government agencies often are under a legal obligation to purchase "domestic" goods when such an option exists.

One of Russia's few component manufacturers is the Micron chip foundry in Zelenograd, outside of Moscow. Micron was founded in the late 1950s as a secret institute to develop electronic systems for the Soviet defense industry. Today Micron is Russia's largest integrated circuit manufacturer: It specializes in low-end chips for toys, exporting 70 percent of its production. Micron is one part of a research, development, and manufacturing complex controlled by the AFK Sistema conglomerate, which is seeking to develop a domestic brand for industrial electronics, telecommunications equipment, computers, software, and consumer electronics under the Sitronics name.

Packaged Software

While most computers run standard Western software products, a number of Russian packaged software products have carved out significant niches in the Russian market (and to a lesser extent, in markets in the former Soviet Union and beyond) in such areas as accounting, ERP, and antivirus protection (see the related discussion under "Kaspersky Anti-Virus"). A prominent example is the 1C mass-market accounting software for small businesses. Russian enterprise resource planning (ERP) applications developed by Parus, Galactica, Diasoft, Optima, and Sterling are being used by midsize and larger firms in such industries as banking, power generation, and oil production.

⁷ Dmitry Grishankov and Larisa Krashchenko, "Virtual Sector," *Ekspert*, July 23, 2003.

Kaspersky Anti-Virus

The antivirus software produced by Kaspersky Lab is a rare example of a Russian information technology product that has enjoyed broad success in both domestic and international markets.

Kaspersky Lab started in 1989 and sold many products—including shoes, karaoke systems, and voice-recognition technology—before focusing on its core competency in anti-virus software and establishing itself as a major brand in the mid-1990s. In 2004, Kaspersky's antivirus software enjoyed an estimated 45–60 percent share of the Russian consumer market and 30 percent of the corporate market. The company also enjoyed strong positions in Poland, France, and Italy.

According to Chief Executive Officer Natalya Kasperskaya, Russia is a good place to develop anti-virus, anti-spam, and network security software, because the country has an excellent IT engineering workforce and a strong culture of computer hacking and (perhaps because of a tradition of government secrecy) IT security.

In comments to RAND, Kasperskaya attributed her firm's success to having not only a technologically superior product (verified by third-party testing) but also one that meets the needs of the market. "This is what Russian companies cannot do very well," Kasperskaya said. To this point, Kaspersky offers stripped-down software packages and frequent product updates to compete with the pirated-software market. IT specialists in the corporate world who try pirated versions of the products to see how well they work often opt for a licensed product. Perhaps because of Kaspersky's strategy, traffic to the company's Web site (<http://www.kaspersky.ru>) doubled in 2004 and was ranked by the Rambler Web counter⁸ as one of the top 20 in growth.

Russian and international software products each have their own partisans. Russian products tend to be viewed by small and medium-sized firms as easier to use and as having better local sales and support networks. Russian accounting software also is seen as being much better tailored to Russian tax and accounting rules and management practices. Western products are often viewed as being too complex and feature-heavy for the needs and capabilities of many Russian companies, especially given such firms' limited planning and management capabilities. For large firms and conglomerates, Russian products tend to be viewed as being too simple and their user support, especially for commercial customers, is seen as being much more limited than products from abroad. For those willing to purchase licensed products, the most significant difference between Russian and international software applications is price. Domestic document-management and ERP systems, for instance, cost on the order of one-tenth as much as international products.⁹

However, some Russian software products are losing their market edge. In recent years, many larger Russian companies have been making a transition to international accounting and ERP software produced by such firms as Germany's SAP and

⁸ "Rambler" is a portal/search engine (much like Yahoo.com). Its traffic counter and Web-site ranking data (in Russian) are available at <http://top100.rambler.ru>. Rambler Media Group owns the Rambler search engine. The Rambler Foundation for Research and Social Initiatives is the research arm of the media group.

⁹ Grishankov and Krashchenko, 2003.

U.S. firms Platinum and Oracle. Foreign owners and investors tend to view a firm's use of internationally recognized accounting and ERP software products as an indicator (but not necessarily a predictor) of competent management and good corporate governance. Thus, many managers are opting for the more expensive foreign systems, because having them in place is seen as a way to help attract foreign investment.

Perhaps the greatest threat to the long-term business prospects of Russian packaged software producers is piracy. Despite official statements that the government is committed to protecting intellectual property rights, an estimated 89 percent of all packaged software in use in Russia in 2002 was pirated, compared with 92 percent in China and 40 percent worldwide.¹⁰ While the rate of piracy of Russian products is much lower than that for foreign products, piracy reduces the incentive for developers to enter the market and to add value to and upgrade their products.

IT Integration and Support Services

A dynamic and highly competitive market segment based on the integration of Russian and Western technologies emerged to become the largest segment of the IT sector, accounting for almost one-half of domestic IT revenues in 2002.¹¹

Western firms initially dominated the IT integration and support field for large projects, given their know-how in organizing and implementing complex projects and their long-term relationships with multinational clients. In the early 1990s, Russian IT services firms started developing their expertise in implementing IT systems in finance and government. IBS, for example, built its reputation as one of Russia's most capable integration firms by working on complex and sensitive projects, such as the automation of the Treasury and Central Bank. After the financial crisis of 1998, Russian banks and other corporate clients became more cost conscious, giving Russian IT services firms a boost over their international competitors. Strong economic growth since 1999 has led to robust demand for integration services in the finance, energy, and government sectors. In 2002, the top Russian integration and services firms—IBS, TechnoServ, KROK Incorporated, and Aquarius Group—each earned revenues of \$50 million or more and employed up to 2,000 personnel. However, most integration and support services companies (including four in the top ten) are very small and have annual revenues of less than \$2 million. To build their capabilities for more-complex and high-end business, IBS and other firms have aggressively sought to hire marketing and project management talent from multinational technology and consulting firms from abroad as well as those operating in Russia.

¹⁰ International Planning and Research Corporation, cited in "Software Piracy Rises to 89% in 2002," *Interfax*, June 5, 2003.

¹¹ Grishankov and Krashchenko, 2003.

The Russian IT services market is evolving. Among Russian clients, projects often are limited to new system integration, because operating firms rely heavily on their in-house capabilities (see the related discussion under “Russia’s Hidden IT Sector”). However, as systems in Russian firms become more complex, observers predict that demand will increase for system support, software development, and business consulting—activities that are a mainstay of the IT services industries in the West. Another emerging area of opportunity for Russian IT services firms is medium-sized businesses in such sectors as food, retail, and real estate, whose rapid growth in recent years may outstrip the capabilities of their in-house IT teams.

Technology Development

Firms engaged in information technology development sell or license highly specialized products directly to customers while retaining control over their intellectual property. Examples of Russian technologies being used on the domestic market include the QUIK electronic brokerage interface and the Gorod electronic payments system (see Chapter Three)—both of which were developed in Novosibirsk.

A number of Russian technologies that have succeeded in foreign markets entail algorithm-heavy software applications. Some examples are optical character recognition technologies produced by ABBYY and Cognitive Technologies; three-dimensional image manipulation and rendering by A4Vision; artificial neural network technology by Neurok LLC; Internet telephony and voice processing software by Spirit Corporation; and trading tools for financial derivatives markets developed by Egar Technologies. These technologies have been developed for highly specialized applications and are marketed and supported internationally through well-developed customer relationships (see the discussion later in this chapter under “A4Vision: A Russian Technology Developer”).

A number of venture capital (VC) funds have been set up with foreign and local backing to bring new Russian technologies and know-how to market—a trend that has accelerated noticeably since 2002. There is keen interest in information technologies—especially in finding the “killer application,” said Mikhail Gamzin, CEO of Russian Technologies, a VC firm acquired by Alfa Group and recapitalized in 2003. “Russians are great at thinking outside of *our* box,” said Alistair Stobie, managing director of Mint Capital, a local boutique VC firm. “There are significant niches where Russians will make significant contributions.”

Russia's Hidden IT Sector

Much of Russia's IT talent resides not in information technology and services firms but in the IT departments of companies. In the West, organizations seeking IT solutions typically purchase standardized, off-the-shelf products and obtain systems-integration support from an outside consultant. Russian firms typically use in-house IT departments to design, develop, and integrate customized IT solutions by themselves. "It's a typically Russian thing," said one IT manager. There are several reasons for the do-it-yourself approach, according to individuals interviewed by RAND:

- Developing IT solutions in house can be significantly cheaper in Russia than in Western countries. Talented software engineers and writers are relatively easy to find and inexpensive to retain. This situation was contrasted with the often-significant up-front investment in software licenses and service contracts required by providers of Western systems. One RAND interview participant reported that his team had developed an ERP system for one-hundredth the cost of acquiring a foreign ERP solution, and there was no ongoing support contract. "The program was a gift," he said. Russia has "an unbelievable pool of programmers," said Jere Calmes of Vypelcom. During the firm's early phase of development, Calmes said, the dominant thinking was, why spend money when you can do it yourself? Since 2000, the firm has shifted to the use of more standard off-the-shelf products in such areas as accounting and billing. Vypelcom still relies heavily on its own people for systems integration.
- Western software products are viewed as not being tailored to the often-unique practices and demands of the Russian business environment (*russskaya spetsifika*). Russian regulators, such as the Central Bank, impose unique demands, said one participant. Another pointed to complex formulas for calculating value-added tax. Filings must be made in hard copy according to arcane and frequently changing rules. Physical signatures and stamps on documents remain a standard operating procedure both within companies and in companies' interactions with government. A financial industry representative, for instance, said his firm uses custom software for its accounting and official reporting functions.
- The value of hiring an outside IT consultant also was questioned. In rapidly developing sectors, such as retail, companies are growing so fast, and their longer-term strategies are evolving so quickly, that investing in a complex, long-term IT solutions was seen as too costly, time-consuming, and disruptive. The IT strategy developed by a prominent Western consultant was seen as being too expensive and too complex for the organization to assimilate, said the IT manager of a major manufacturer. The proposed system might be appropriate three to four years down the road, he said. Western IT specialists are accustomed to working in "well-ordered systems," said another IT manager. "There is a lot of chaos in [Russian] companies." A better solution, he argued, was to scale up existing software and systems until the time when management's vision of the future had become clearer. He explained that retailing was a very competitive and cost-conscious business and his firm needed to grow fast. "We are not prepared to spend millions of dollars," said another IT manager. "It gives us time before we grow into a national [entity]."
- Concerns about system security and a lack of trust are also factors. Going to an outside IT vendor requires opening your firm to scrutiny, and some firms have things to hide. IT integrators, therefore, have the most complete and accurate understanding of the Byzantine operations of business (and government) in Russia, participants said.

However, the greatest commercial prospects are not in information and communications technologies but in pharmaceuticals, biotechnology, and materials sciences, observed Gamzin and Stobie.¹² They noted that many proposals coming to them were from late-career scientists whose innovations dated to the Soviet era, and the vast majority of ideas do not have apparent or imminent commercial applications. Given the rapid pace of innovation and obsolescence of information technologies, these factors raise questions about the long-term viability of Russia's IT innovation pipeline.

Offshore Programming and R&D

Contract programming and R&D (also known as outsourcing) involves work in which the client keeps the resulting intellectual property. In Russia, most contract programming and R&D relationships involve foreign clients. Therefore, this market segment typically is referred to as offshoring.¹³

Software offshoring started in Russia around 1990 when the end of Cold War competition and cuts in government funding of science and technology freed up a sizable number of mathematicians and engineers with broad and deep software design and programming know-how.¹⁴ The practice gained speed during the 1990s as international travel and the Internet further developed. Much of the offshore programming commissioned in Russia involves individuals and small teams of programmers—often working for a former classmate or colleague now living abroad. Examples of medium-sized offshore specialty firms include Auriga, which has distinguished itself in development of embedded telecommunications technologies; Spirit Corporation, which does subcontracting for Texas Instruments; and Terralink, which has worked with multinational energy firms operating in the Commonwealth of Independent States (CIS).

Offshoring to Russia gained momentum in the wake of the bursting of the tech bubble, as U.S. and European IT firms have aggressively sought to reduce costs and

¹² This view is also stated in Maria Douglass and Peter Falatyn, *More than Money: Small Technology Spin-Offs of the WMD Complex*, Moscow: International Science and Technology Center, 2002.

¹³ The programming and R&D needs of Russian companies tend to be limited, and Russian firms prefer to keep these activities in house, therefore limiting the size of the Russian outsourcing market. For an early sector and policy analysis regarding offshoring, see "Whitepaper on Offshore Software Development in Russia," Information Technologies and Telecommunications Committee, American Chamber of Commerce in Russia, March 21, 2001 (http://russiansoftwaredev.esolutions.ru/en/amcham_whitepaper.doc; in Russian; last accessed August 2005). The <http://russiansoftwaredev.esolutions.ru> website maintains conference reports on software developments in Russia.

¹⁴ Russia in the late 1990s ranked third in the world in the numbers of workers in science per total population—behind only Japan and the United States.

A4Vision: A Russian Technology Developer

Applications for Vision (A4Vision) is one of a few Russian IT companies to secure venture capital funding and establish itself in the international marketplace.

The venture began in 1998 at Moscow's prestigious Baumann Technology University as a senior thesis project of founder Artem Yukhin. Yukhin developed a contact-less optical scanner to make a digital three-dimensional image of an object; the scanner was originally intended as a component of robotic vision. After patenting the device, Yukhin and Andrei Klimov co-founded A4Vision in 2000 and started seeking funding. After presenting their concept to several international venture capital firms, they accepted a \$1 million offer from myQube, a fund established by, among others, the Pirelli industrial group of Italy. Since then, A4Vision has received substantial follow-on funding.

Initially, myQube recommended that the company develop a service to supply 3D images of goods for e-business Web sites. The idea was soon abandoned, and the company began working on software products for plastic surgery. After September 11, 2001, the company refocused on security products—in particular, automatic face tracing and face recognition software. The company redesigned its scanner to read a facial image, which is then processed and verified via a proprietary algorithm that analyzes the skull geometry and bone structure unique to each individual.

A4Vision quickly established itself as a worldwide leader in both imaging and identification: Alternative biometric technologies, such as fingerprint and iris scanners, have proven susceptible to misidentification and deception. In 2003, A4Vision, in partnership with Unisys, received a U.S.-government grant to develop a mobile 3D imaging and identification system. Subsequently, the company announced a partnership with a subsidiary of the DuPont Company to develop inexpensive but detailed 3D images for passports and other means of identification. Finally, A4Vision developed face-tracking software that can be used in videoconferencing and digital cameras. This technology was licensed to Logitech, a leading provider of computer peripherals and also a minority shareholder of A4Vision.

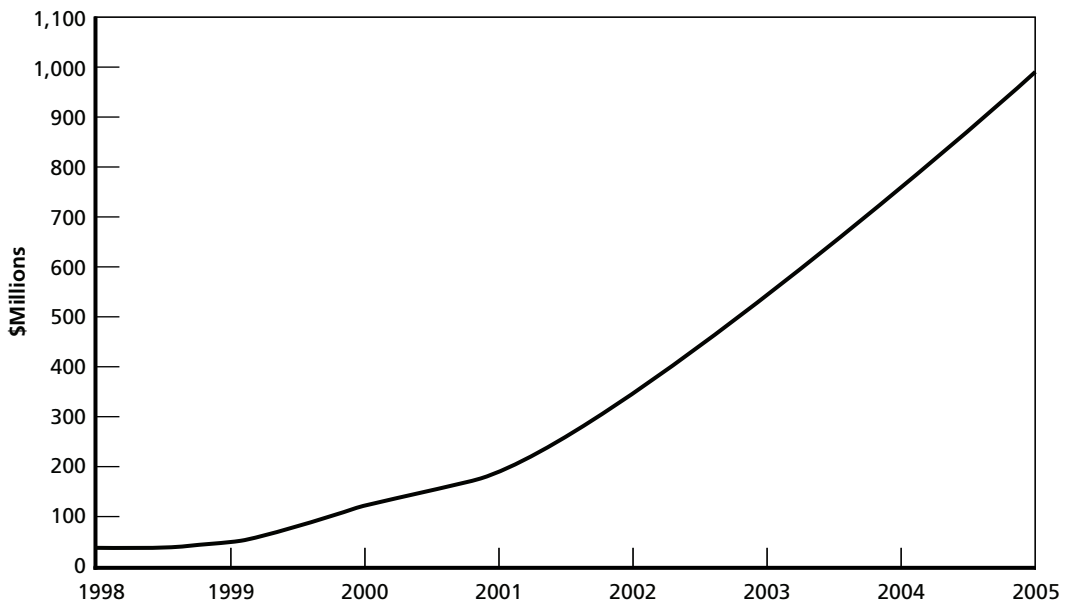
A4Vision may serve as a model for Russian software startups. First, it marketed its ideas and received sufficient funding to enable the company to transition its technologies from the laboratory bench to the commercial demonstration phase and then on to the market. Second, A4Vision has assembled an experienced management team that complements the technical skills of the company's young founders. It built a strong board of directors that provided funding, access to networks, and help in recruiting a chief executive away from a U.S. competitor.

Finally, A4Vision has made strategic location decisions. The company has centered its research and development operations in Moscow to take advantage of local talent and lower costs (as of 2003, 60 staff members were employed there), but it established its corporate headquarters in Silicon Valley and a sales office in Switzerland. Cultivating a reputation as an international—if not American—firm can reduce common concerns about Russia's business environment and the reputation of Russian firms. It also can be a crucial prerequisite for contracting with U.S. and European government agencies—especially in the security field.

SOURCE: <http://www.a4vision.com/>; unpublished material supplied by Yury Ammosov, a Russian consultant on this study.

seek new competitive edges. At the same time, a number of ventures have emerged in Russia that have been able to grab a larger share of the international market. Examples include Luxoft (founded by IBS Group), which has worked for Boeing, Dell, and IBM; Sibintek (created by the Yukos oil company in the late 1990s to employ laid-off oil field engineers); and Epam Systems. An estimated 30,000 people are engaged in offshore software programming to some extent. Based on a survey of company activity, the sector has been growing by about 40 percent annually: In 2004, revenues were estimated at about \$750 million and are projected to reach almost \$1 billion in 2005 (see Figure 2.1).¹⁵ As early as 1999, the McKinsey Global Institute found that Russia's software development industry had the highest productivity of ten sectors that were examined and, thus, was its most internationally competitive industry.¹⁶

Figure 2.1
Russian Software Exports



SOURCE: Fort Ross Consortium and CNews Analytics, 2004.

NOTE: 2004 estimate is based on midyear results; 2005 is projected.

¹⁵ Fort Ross Consortium and CNews Analytics, *Software Export Market in Russia*, Moscow, 2004. Figures about offshore revenues and employment are subject to great uncertainty, given the small size of most offshore enterprises, their highly dispersed locations, and the lack of rigorous accounting.

¹⁶ McKinsey Global Institute, *Unlocking Economic Growth in Russia*, Moscow, 1999. The other sectors examined were steel, cement, oil, dairy, confectionery, residential construction, food and merchandise retailing, hotels, and software.

Russia's potential as an offshore destination for contract programming and R&D lies in its human capital. Russian institutions of higher education and advanced training graduate almost 100,000 new programmers every year, resulting in a local labor surplus. Despite brain drain and cutbacks in public funding, Russia's schools have retained their world-class caliber, judging by their repeated high placement in international competitions.¹⁷ A common perception is that Russian specialists have deep practical know-how (in contrast with the prevalence of theoretical knowledge in the United States and rote skill in developing countries), which enables them to devise ingenious and efficient solutions to the most complex or vaguely formulated problems. Moreover, they are seen as working exceptionally well when collaborating closely with specialists in the client company's other facilities. Such top-level talent can cost one-fifth to one-half of what such labor costs in the United States, even considering the added expense of setting up and managing an offshore operation. Indeed, according to a RAND interview with Andrey Krylov, vice chairman of the Department of Computer Science at Moscow State University, an average salary for a top-level mathematician in 2004–2005 was only \$175 a month, and the university charges only 15–19 percent overhead on research grants and contracts.

A number of major international firms—such as Boeing, Motorola, and Airbus—have gone further and have established dedicated offshore programming and IT-intensive R&D centers in Russia. Four other ventures include the following:

- Samsung opened a Moscow operation in 1993. Areas of IT in which the firm is active in Russia include semiconductor microelectronics for memory and digital processors; multimedia technologies, such as three-dimensional graphics and modeling; and systems for mobile and stationary telephony. Samsung employs 80 engineers and programmers who helped the firm secure 50 international patents in 2003 alone, and it has an active contract research program. “Russia is number-one destination for technology outsourcing,” said a company executive.¹⁸
- Since 1991, Sun Microsystems has contracted systems software and customized implementation work to engineers working in Moscow, Novosibirsk, and other locations. Jason Horowitz, the Russian project team manager, noted to RAND that Russian programmers are “very serious engineers” and, in comparison with their counterparts in other countries, tend to be “stronger at tasks that require a deeper mathematical background.” Sun has teams around the world working on similar projects—in such countries as Ireland, India, Israel, and the Czech Republic—but programmers in such countries typically “don't have anywhere

¹⁷ In 2000, 2001, and 2004 teams from St. Petersburg schools won the International Collegiate Programming Contest World Finals. In 2005, three Russian teams placed among the top ten.

¹⁸ Moon Ihlwan, “Want Innovation? Hire a Russian,” *Business Week*, March 8, 2004.

near the talent as the Russians,” Horowitz observed. In May 2005, the firm announced it was expanding its global engineering capabilities in St. Petersburg and in three other locations—Bangalore, Beijing, and Prague.

- In 2000, Intel opened a Development Lab near Nizhny Novgorod to capitalize on the proven talents of mathematicians who once worked at the Sarov nuclear weapons research facility. Intel uses the Nizhny Novgorod lab for important research challenges, such as software for its wireless technologies, which are a central element of the firm’s business development strategy. Intel has repeatedly expanded its R&D presence in Russia and in 2004 bought out two technology firms it had been working with, Elbrus and UniPro, bringing its total employment in Russia to more than 1,500. The firm’s current goal is to integrate the organization’s architecture expertise with software development and hardware design. Intel representatives reported to RAND that they have been successful in reorienting their research staff from a focus on abstract science toward applied problem-solving for the market—a significant issue in light of the fact that specialists from Russia’s “closed cities” for nuclear weapons production often have been portrayed as having little understanding of the outside world.¹⁹
- Cadence, an integrated-circuit and electronic design and engineering firm first opened a sales and support office in Russia in 1992 to supply local manufacturers and R&D centers with its U.S.-made technologies. The firm in 2001 opened an R&D center in Moscow (managed by an R&D outsourcing specialty firm) with four employees for the purpose of upgrading the firm’s existing technologies. Based on the success of this venture, Cadence in 2004 converted its operation to a dedicated center for state-of-the-art R&D in the areas of optics, physics, and sophisticated mathematical modeling. To do so, Cadence has invested in and developed close relationships with Russian research centers, such as the Department of Applied Mathematics at Moscow State University. In late 2004, the firm employed 75 engineers, who were mostly in their 20s or 30s.

Challenges for Russia’s IT Industry in the Global Marketplace

Despite the country’s purported wealth of human capital and the impressive development and maturation of the IT sector, Russia in many ways remains far behind the countries to which Russians like to compare themselves and countries with which it competes.

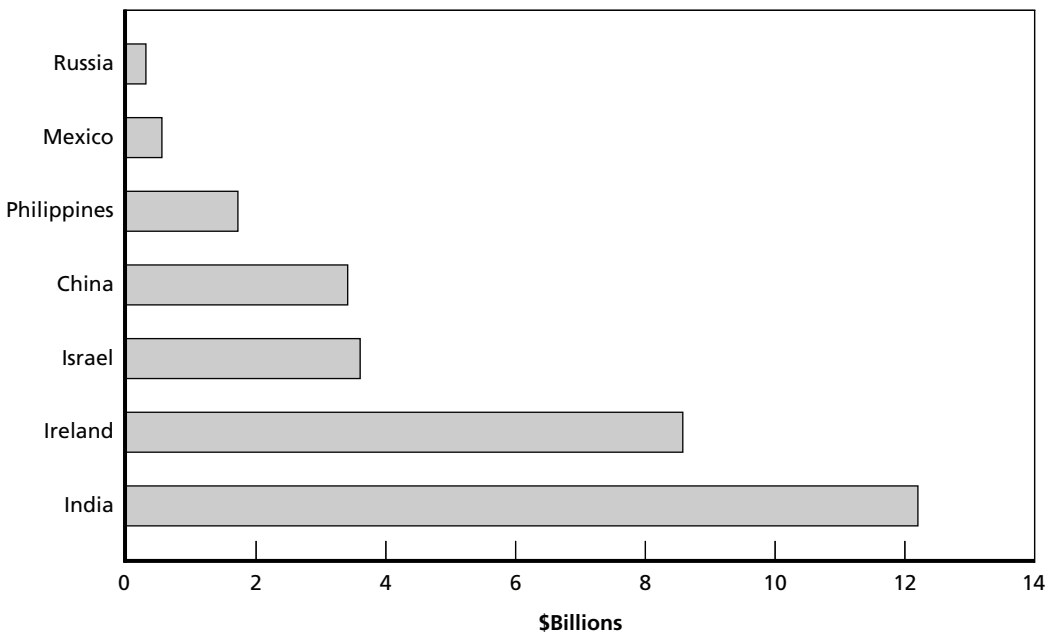
With outsourcing revenue in Russia estimated at \$750 million in 2004, Russia is still capturing only a fraction of the action: Gartner Group estimated that the

¹⁹ The Soviet Union (and now Russia) designed, produced, and stored its nuclear weapons arsenal in ten secret, highly restricted, closed cities.

global outsourcing market in 2004 totaled \$200 billion. One reason for this showing is that Russia has made inroads into only a small subsegment of the market: elite offshore software engineering and technology development. The exploitation of basic software programming and IT-enabled services, such as data and call centers, are the bases on which India, Ireland, and other countries have gained most of their outsourcing revenues and built their IT sectors. In 2003, India's total offshore industry for IT services and other business processes was 40 times larger than Russia's, while Israel's and China's were more than ten times larger (see Figure 2.2). Given the scale of business and the pace of growth elsewhere in the world, Russian IT entrepreneurs and firms still have a long way to go to fully capitalize on the opportunities being created by rapidly growing, but highly competitive, domestic and global markets.

Russian firms and specialists seeking to build offshoring businesses were frequently criticized in the RAND discussions for not having adequate marketing, client relations, and project management know-how and for not fully understanding their clients' business processes and issues. Investors and R&D managers with whom RAND spoke said that aspiring IT developers lack sufficient knowledge of the markets they seek to enter, and they often lack a coherent business plan or an

Figure 2.2
Value of Offshore IT Business Processes and Services Market, Russia and Six Other Countries, 2003



SOURCE: Diana Farrell et al., *The Global Labor Market*, San Francisco: McKinsey Global Institute, June 2005.

organizational strategy. Ideas they pitch to potential funders often are intriguing in concept but usually have few prospects for practical application in the marketplace. To improve the situation, they need a better grasp of global technology market trends, technology needs, and hot spots in technology evolution. They also need to complement their scientific and research know-how with “business-building capability” and management discipline, Jan Dauman, of the Central European Trust, told RAND. Researchers and technology developers in Russia often are hesitant to bring in outside talent and investors and to relinquish control of their companies. Anatoly Karachinsky, the CEO of IBS Group, noted, “This mindset is in stark contrast with the Israeli example, where, when a good deal knocks, entrepreneurs respond.”²⁰

We thought all we had to do was be good and people would recognize us.

—Dmitry Loschinin, Managing Director, Luxoft²¹

Many industry leaders in Russia emphasize the country’s “Western” orientation, yet the IT sectors of India and other Asian competitors are, in many ways, more integrated and plugged into the global technology and information economies. To understand what is going on in the world, said Kamil Isaev, a manager with Intel in Moscow, you have to be there in person, something that takes significant effort and expense. Asian entrepreneurs have accumulated critical industry, market, and cultural knowledge and business networks through decades of experience studying in the United States and Western Europe and working for multinational companies—both in the United States and abroad. And Asian governments and industry groups have aggressively reached out and marketed their countries as “open for business.” In contrast, a foreign investor with deep knowledge of Russia lamented, “Even the most sophisticated people still don’t know how global technology and the global economy work.”

Despite the growing number of Russians studying and working abroad and international business ties in Russia, Russian IT services and technology specialists still remain largely outside of, if not aloof from, the global flow of human capital, knowledge, ideas, and business relationships. While Russia produces a large number of capable math, engineering, and computer science graduates every year, a survey of international human resources specialists by McKinsey & Co. revealed that less than

²⁰ International Business Systems, briefing on the Russian IT industry, mimeo, Moscow, October 2002.

²¹ Esther Dyson, “Russia Rolls Out Thriving Program Skills,” *South China Morning Post*, May 1, 2001.

half of these graduates are considered suitable and accessible by foreign employers.²² Two factors contribute to this situation: Many graduates are not located near a major international airport (an important attribute for offshore ventures), *and* they are unwilling to move from their home or college towns to find employment (see Figure 2.3). According to a number of people with whom RAND spoke, the language barrier in Russia is still formidable. Among Asian researchers and entrepreneurs, English proficiency is considered *de rigueur*. Speaking of Russia, Isaev said, “Our biggest problem is isolation from the world.”

Among the first to embrace the free market economy in the early 1990s, Russian IT entrepreneurs fell behind traditional-economy companies in terms of applying business processes to product development.

—Anatoly Karachinsky, CEO, IBS Group²³

Business leaders in Russia have garnered a widespread reputation for poor corporate governance and dubious business practices. Esther Dyson, a U.S.-based IT investor and writer, commented to RAND that, in contrast, Russia’s IT businesses are characterized by greater transparency and better management because they emerged in the post-Soviet era and are oriented toward Western technologies and practices. Nevertheless, IT businesses must overcome the persistent image of Russia as the “Wild East.” Speaking at the U.S.-Russian Technology Symposium in Silicon Valley in January 2004, one U.S.-based venture capitalist joked, “The only time my firm would ever consider investing in Russia is when I have been kidnapped.”²⁴ Robert Agee, the head of Cisco Systems in Russia, said industry executives who are not familiar with the country still perceive a “Russia threat” concerning security and theft of intellectual property. Natalya Kasperskaya, CEO of Kaspersky Labs, lamented that such stereotypes contribute to a lack of trust and to her country’s marginalization: “We are quite far from the rest of the world.” While Russia is seen as a good place to do business in the eyes of those who are already there, the IT industry has been slow in getting the word out and refuting negative stereotypes.

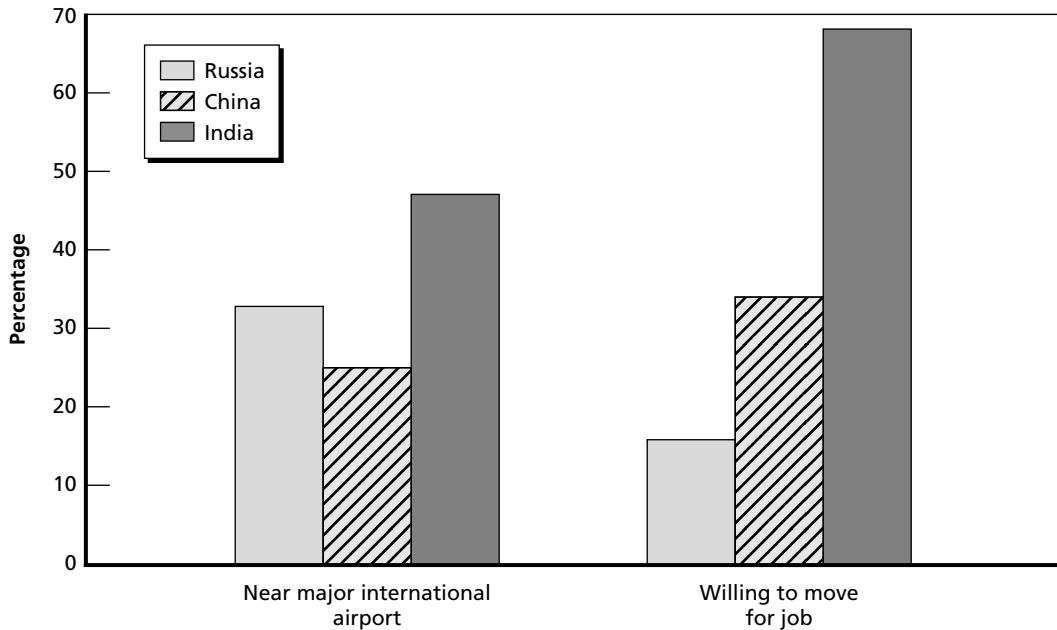
Russian companies have been trying to respond to the competitive challenge. A number of significant mergers and acquisitions took place in 2004 and 2005, as firms

²² Farrell et al., 2005. According to the Farrell et al. study, language-related barriers to employability in Russia were not as serious those as in Brazil or China.

²³ International Business Systems, 2002.

²⁴ Laura Mack, “Will Russian VCs Invest in Russian Start-Ups or Will Russian Start-Ups Move to America?” *Johnson’s Russia List*, February 1, 2004.

Figure 2.3
International Human Resource Managers' Criteria for Hiring College Graduates, 2003



SOURCE: Farell et al., 2005.

try to build bulk and capabilities. Many firms are now making an effort to train their programmers in English and quality management concepts. Several Russian software houses have obtained CMM-4 and CMM-5 (the highest) certifications for quality—a remarkable accomplishment for having such brief histories.²⁵ Some firms are seeking to establish corporate intellectual property protection policies and procedures.²⁶ Companies also have worked jointly to improve their competitiveness. Between 2002 and 2004, several regional organizations merged to create RUSOFT, a national organization representing 73 firms, which is aspiring to undertake market and policy research, lobby government, and strengthen Russia's position in the global marketplace.²⁷ A growing number of international technology showcases and business symposia have been conducted, including two large meetings at Stanford Uni-

²⁵ The Capability Maturity Model (CMM) is a quality standard to measure the maturity of the processes used by software developers, among others. See <http://www.sei.cmu.edu/cmm/cmms/cmms.html>.

²⁶ While Russia has come under pressure to enforce intellectual property rights by clamping down on the sale of pirated packaged software, instances of Russian offshore programmers stealing clients' (and third-party) intellectual property is not as large an issue in Russia as it is in China.

²⁷ See <http://www.russoft.org>.

versity in January 2004 and February 2005, where successful ventures and the notion of “Made in Russia” as a sign of quality were touted.²⁸

Due to the consolidation of industry groups and the greater emphasis on marketing, industry leaders jointly have concluded that, given Russia’s recent emergence as an offshore supplier and companies’ poor results marketing themselves as low-cost jacks-of-all-trades, they should market their core competency as that of high-quality contractors that can apply complex algorithms and engineering and tackle the difficult jobs that others cannot. “Russia can compete in the world ICT [information and communications technology] market only through positioning [itself] in new, as yet unoccupied segments and offering products and services [that] to do not exist yet,” said Mikhail Krasnov, president of Verysell Group.²⁹ But this highly focused approach also has a potential downside: By eschewing more basic projects, Russian IT entrepreneurs may forgo important opportunities to learn about global trends and practices and to build relationships with foreign customers.

Challenges of Russia’s IT Policy Environment

The industry efforts discussed above will help promote business and foreign investment, but development of the IT sector depends on broader policy improvements. A number of policy challenges have particular salience to industry.

- Russian business laws and regulations have not been updated for the Information Age and are not well-suited for intellectual property rights protection, technology transfer from the public to the private sector, allocation of radio frequencies, enforcement of antipiracy conventions, licensing, leasing, setting up investment partnerships, and stock-option agreements. The IT sector, given its fast pace of technology innovation and obsolescence, is characterized by very high rates of investment. Russian tax codes provide for the depreciation of capital equipment over 25 years. This depreciation schedule needs to be shortened to three to four years, said Robert Agee of Cisco Systems.
- Russian tax laws disadvantage knowledge-oriented businesses and reduce Russian firms’ competitiveness in global markets. Steep taxes (a 24 percent social security tax plus a 13 percent profits tax) especially hurt IT firms, which are labor-intensive and must pay high wages to attract and retain skilled professionals. Labor accounts for about 70 percent on average of Russian IT firms’ costs, according to Alexander Kapchaev, president of Parus Corporation—a major IT

²⁸ See also Yury Ammosov, “California’s Counting on Us,” *Ekspert*, September 4, 2003 (available at <http://www.outsourcing-russia.com/kb/docs/outourcing/o04093-02.html>; last accessed August 2005).

²⁹ Mikhail Krasnov, “Time to Intervene,” *Ekspert*, June 2, 2003.

integrator.³⁰ Firms must also pay value-added tax assessed at 18 percent. Yet, the federal tax law is not clear about intellectual property such as software (Is it a good or a service?), and thus is prone to subjective determinations and bribery by tax officials. While the tax is reimbursable in principle upon export of the product, it is difficult and time-consuming to obtain timely refunds, effectively making it a sales tax. The tax burden, Russian companies say, forces them to trim their profits to remain competitive with firms in India and elsewhere.

Russian business operates in extremely adverse conditions—in an environment where tax and customs legislation and...enforcement virtually force an absolute majority of enterprises to operate in serious violation of laws using various shady schemes.

—Mikhail Krasnov, President, Vercell Group³¹

- The customs service has no set procedure for clearing software (including packaged products) in and out of Russia, and licenses for each shipment often must be renegotiated each time with officials who have little understanding of the nature or value of a product. Temporary imports of components and equipment essential for bench-testing new software can be so complicated and time-consuming that it is extremely difficult to schedule projects, and conditions at the Russian border effectively bar Russian companies from participating in "just-in-time" processes. Because of such uncertainties in the customs law, IT firms are particularly subject to bureaucratic fiat. "There is no way to completely avoid the grey areas," said Ron Lewin, the managing director of Teralink, a software developer.
- IT firms are threatened by so-called "Dutch Disease": Large trade surpluses created by massive energy and minerals exports have bolstered the value of the ruble, which lowers the cost of imports and makes Russian technology exports less competitive internationally.³² Moreover, rapid economic growth and inflation driven in part by high energy prices have pushed up wages. As a result, Russian real labor costs are increasing, especially in comparison with other low-wage countries. Interestingly, the Putin administration's 2001 innovation policy ac-

³⁰ "The IT Market Believes in Reiman," *CNews*, November 25, 2004. By comparison, wages at GAZ, Russia's second-largest automobile manufacturer, accounted for only 15 percent of costs in 2003, even after a sharp increase in wages at the firm (Tatyana Mernova, Director of Accounting, GAZ, personal communication, April 2003).

³¹ Krasnov, 2003.

³² Currency appreciation is one symptom of Dutch Disease, which is experienced by many countries heavily dependent on windfall earnings, usually from energy exports. See, for example, Alan Gelb, *Oil Windfalls: Blessing or Curse?* New York: Oxford University Press, 1988.

tually committed the country to promoting additional resource development in the short term.

- Old-economy firms have used well-developed political connections—dubbed “government resources” or GR—to gain government favors—e.g., favorable legislation and regulation, preferential licenses, state subsidies, soft loans, and tax breaks—all of which impose a de facto tax on entrepreneurial activity.³³
- Entrepreneurship is hampered by red tape and official corruption. According to a 1999 study by the European Bank for Reconstruction and Development (EBRD), almost one-third of Russian firms surveyed reported that they paid bribes frequently and that these side payments on average amounted to 4.1 percent of their revenues. The EBRD found that the “bribe tax” disproportionately affected small firms.³⁴ Such conditions deter new company formation: Russia in 2002 counted just three entrepreneurs per 100 adults, compared with five per 100 in Germany, more than ten per 100 in the United States, and almost 15 per 100 in South Korea.³⁵

In 2005, the Economist Intelligence Unit ranked Russia number 52 among 65 countries—behind India, the Philippines, and even Saudi Arabia—for Internet business development potential (see Table 2.1). The data indicate deterioration in performance from just three years before.³⁶

Table 2.1
Russia’s Ranking in Selected Business Surveys

Survey	Rank	Percentile
Economist Intelligence Unit, Business Environment Ranking (2003)	46/60	77
Economist Intelligence Unit, E-Readiness Ranking (2004)	52/65	80
Heritage Foundation/ <i>Wall Street Journal</i> Index of Economic Freedom (2004)	114/161	71
IMD World Competitiveness Rankings (2004)	50/60	83
Transparency International, Corruption Perceptions Index (2004)	90/146	62
Milken Institute, Capital Access Index: Lower Middle-Income Countries (2003)	22/26	85
World Economic Forum, Growth Competitiveness Ranking (2004)	70/104	67

³³ Clifford Gaddy and Barry Ickes, “Russia’s Virtual Economy,” *Foreign Affairs*, September/October 1998.

³⁴ European Bank for Reconstruction and Development, *Transition Report 1999—Ten Years of Transition*, London, UK, 1999.

³⁵ Global Entrepreneurship Monitor, cited in “One-Yen Wonders,” *Economist*, June 28, 2003.

³⁶ In 2001, Russia was ranked 42nd among 60 countries, placing it in the 70th percentile. Economist Intelligence Unit, “2005 E-Readiness Ranking,” 2005 (<http://www.ebusinessforum.com/>; last accessed August 2005).

IT Policy Initiatives

The legislative foundation of the management of industrial science is extremely clumsy, complicated, and confused. The system of protection, defense, and use of the rights of intellectual property is also inadequate.

—President Vladimir Putin³⁷

The unfavorable conditions hampering IT sector development have not been overlooked by Russian policymakers. At an April 2001 meeting of IT business executives to discuss ways to stimulate the production, diffusion, and utilization of information and communication technologies, President Putin deplored the fact that “new technologies” accounted for just 0.6 percent of the Russian GDP, and, he concluded, “Unfortunately, the level of development of the New Economy does not yet correspond with its importance for the country.”³⁸ Some worry that Russia is forgoing an important economic development opportunity. “Russia is five to ten years behind the leading Western countries in terms of ICT development,” asserted Mikhail Krasnov, President of Verysell Group. “At present industry growth rates, we won’t be able to reduce this gap—it will only grow—confirming our technological as well as economic lag,” said Krasnov.³⁹ Minister of Economics German Gref lamented not only the brain drain, but the fact that Russian émigrés are boosting other countries’ high-tech development.⁴⁰

Justifiably or not, the development of the IT sector has so far not been on the [Russian] government’s list of priorities.

—Anatoly Karachinsky, CEO, IBS Group⁴¹

Government and industry leaders have convened commissions and working groups, issued white papers, developed strategic plans, and reorganized bureaucracies. In 2004, the Ministry of Communications and Informatization was rebranded as the Ministry of Information Technologies and Communications. On the policy front,

³⁷ BBC Monitoring Service, “Text of Russian President’s Annual Address to Federal Assembly,” transcribed from a Moscow television station broadcast, April 3, 2001.

³⁸ “Putin Sets Hi-Tech Priorities,” *Interfax*, April 13, 2001.

³⁹ Mikhail Krasnov, “Time to Intervene,” *Ekspert*, June 2, 2003.

⁴⁰ “Russia Loses Half of High-Tech Exports Within Decade,” *Interfax*, January 30, 2003.

⁴¹ International Business Systems, 2002.

some industry and government representatives have advocated direct government support for IT companies and technology development, while others advocate market mechanisms and “administrative barrier reduction.” A list of sample policies and proposals follows:

- An approach consistent with Soviet tradition that has been frequently put forth is the call for direct government support—often through industry policy and “mega-projects.” The Electronic Russia Federal Priority Program is one such example: Per the terms of the program at its inception, which were approved by the government in January 2002, one-third of spending under the program (about \$800 million) was to be dedicated to infrastructure development, such as the construction of high-speed Internet backbones and peripheral links.
- The government has sought to stimulate the IT sector by boosting its purchases of goods and services. This is one rationale for E-Russia, the computers-in-schools initiatives, and the federal government’s drive to upgrade its information and telecommunications capabilities. The 2003 Law on Communications mandates that all towns with a population of more than 500 have a public Internet access point.
- The IT industry has called for tax relief and for streamlining and fast-tracking the customs process. In late 2004, a new “Strategy to Promote IT Sector Development,” promulgated by the new Ministry of IT and endorsed by the government, called for, among other measures, eliminating customs duties on PCs and components and providing income-tax credits to stimulate purchases by consumers. Shortly afterward, President Putin announced that the “government is prepared to consider” proposals for distributing tax revenues generated by natural resources development to support high-tech industries.⁴² Picking up on the idea of an “IT tsar,” venture capitalist Alistair Stobie said the IT industry needs a powerful ombudsman in government who can “poke the customs guy” and to keep critical trade moving.
- Local officials together with the federal government and international donors and lenders, such as the U.S. Department of Energy and the EBRD, have supported the development of a number of technology parks, “incubators,” and innovation centers that seek to nurture companies and new technologies by providing technical support and financial incentives (see the related discussion under “The Experience with Technology Parks”). Borrowing an idea from Ireland, India, and elsewhere, the Ministry of Economic Development and Trade in early 2004 proposed creating “special economic zones” that would allow for

⁴² “High-Technology Industries, Applied Research Must Enjoy Tax Benefits—Putin,” *Interfax*, October 26, 2004.

The Experience with Technology Parks

Since the late 1980s, more than 80 technology parks have been established—most at or near technology schools and research facilities around Russia. One goal of technology parks is to serve as incubators to nurture and promote start-up firms and their technologies. Others have been managed more like real-estate ventures that seek to develop underutilized infrastructure and facilities of their parent institutions, which have experienced a steep decline in funding from the state.

Technology parks have been created by Moscow's Kurchatov Institute, Russia's leading physics and nuclear engineering research center; in the "science cities" of Dubna, Obninsk, and Puschino on the outskirts of Moscow; and in other cities and regions, such as Tomsk, Novosibirsk, Yaroslavl, and St. Petersburg.

Moscow State University's technopark is one of the better and most successful facilities: It offers B-class office space with good communications infrastructure and a relatively central and convenient location. Housing around the university is considered to be pleasant and affordable for researchers. The firms also benefit from the proximity to graduates of one of Russia's best computer science programs. The park's tenants have included the Garant Group, which offers various IT-related services, from legal databases to systems integration; the Internet media group Rambler; and Neurok, a developer of neural network technology developed by researchers from the closed nuclear city of Chelyabinsk-70.

Technology parks in Russia designed as incubators have had very limited success. Most technoparks are poorly funded, maintained, and managed. Efforts to promote networking, collaboration, and mentoring among tenant firms is largely nonexistent. The startup and business support and training functions of incubators typically are very poor. The tenant selection and management processes are not handled strategically: Access to space often is limited to insiders of the sponsoring institutions, and most incubators do not impose limits on residency for firms that fail to thrive. Yury Ammosov, an IT analyst, in remarks to RAND, labeled such incubators "technology kibbutzes," fronts for R&D teams that have little or no business experience and market knowledge that operate for the sake of providing their employees with a means of existence and an opportunity to do the type of research they want to do. Often, such kibbutz firms are heavily subsidized by income from non-technology businesses (such as real estate, commodity trading, or retail) or their founders, friends, or families.

A motivation for the Russian government's interest in creating and investing in technoparks is to compensate for shortcomings in Russia's broader economic environment. Yet, many skeptical IT industry leaders argue that reducing bureaucracy and other business impediments would be more effective. "I don't see a technopark solving the problems that plague [IT] industry life" said Terralink's Ron Lewin, in speaking with RAND.

The creation of such innovation zones, Jason Horowitz of Sun Microsystems noted to RAND, is subject to abuse because the zones become tax shelters and "in the Russian context become goals in themselves." For years, Russia's closed nuclear cities enjoyed tax-exempt status in an effort to employ their high-tech human capital, until a number of scandals ended the policy. (The tax-evasion case that brought down the Yukos oil company empire in 2004 involved such a scheme.) Referring to such abuses, a former government official concluded, "The model does not work in Russia." Horowitz suggested that a better policy approach would be the government's "benign neglect" of the IT industry.

tax-free import and re-export of goods (such as hardware components, laboratory equipment, and test models), provided that they are intended for use only within the zones. The proposal included provisions for small zones (less than one square kilometer) intended to attract firms engaged in R&D and larger zones for manufacturing, such as zones with chip foundries. President Putin talked up the idea in a visit to Novosibirsk in January 2005, and the proposal was expected to be put into law by the end of the year.

- The Ministry of Science and Education, borrowing an Israeli development model, has sought to provide “seed funding” to private venture funds, which would then invest in prospective firms and technologies. Starting in 2002, the ministry promised to hand out \$200 million to ten funds, but three years later only a few million dollars had been allocated for this purpose.
- Calls have been made to liberalize intellectual property rights provisions for government-funded innovations. The E-Russia program called for facilitating the transfer of the stock of existing technologies from government and defense institutions to private firms and entrepreneurs. Looking to the future, Minister of Science and Education Andrey Fursenko has sought to allow organizations and researchers that receive government support to retain the rights to the intellectual properties developed with that support—a practice that is common in the United States, Canada, and elsewhere. Putin endorsed this idea in March 2002 and again in February 2004 at joint meetings of his Science and Technology Council and National Security Council.

All these policy initiatives are unlikely to have an appreciable impact on IT sector development unless the Russian government follows through with its intentions and improves on its track record with regard to technology policy. First, the government has been slow to implement law and policies intended to promote IT development. Legislation passed in 1994 to protect intellectual property rights is good, said Olga Dergunova, the head of Microsoft in Russia and one of the most active opponents of software piracy. However, while Russia has broad copyright protections written into law, the government has failed to promulgate adequate measures and to enforce antipiracy laws. The federal government has a long history of not adequately funding its many ambitious “Federal Priority Programs” in science and technology. In its first three years, 2002–2004, the E-Russia program received less than 20 percent of the planned amount. (In 2004, program expenditures were only \$63 million, and 2005 planning called for just \$82 million.) As a result, most of the money has ended up being spent on overhead, consultants, and concept development, but little progress has been achieved in any technology initiatives. The Ministry of Science’s venture funds initiative received less than two percent (\$2 million) in its first year. Venture funds chose not to apply because the money involved was so small, given the bureaucratic hassles involved.

Second, government efforts in any country to pick “winning” technologies as part of an official industrial policy typically do not result in the most productive use of government resources. Such endeavors are especially problematic in the IT sector, given the rapid pace of technological change. The Russian government has sponsored numerous strategic research programs, but the priority-setting process typically has not been guided by merit but by personal relationships and often favors “old-school” institutions over new and emerging enterprises. Moreover, the Putin administration has made it a priority to fund defense-oriented, and not civilian-oriented, research and development.⁴³

Third, proposals for any kind of tax breaks have been met with adamant resistance from the Ministry of Finance, which fears that such provisions would encourage abuse. Previous experience with targeted tax zones and public benefits—to help handicapped persons find work, for instance—instead attract commodities traders, vodka dealers, and other businesses that exploit the provisions.⁴⁴ Efforts to transfer rights to technologies that are now in government hands also have been thwarted by the ministry. The ministry fears giving away a rich endowment accumulated through decades of government largess, even though most informed observers feel that anything of value already has been *de facto* privatized and expatriated.

Fourth, the industry’s policy development and lobbying activities have been weak. A lack of funding, know-how, and organizational support has rendered the national organization RUSSOFT largely inert. Data on the industry are not very comprehensive or reliable: One reason is that IT firms are reluctant to reveal their employment numbers, revenue, and information on projects for fear of losing a competitive advantage and encouraging scrutiny by tax collectors. Without good data, the industry cannot advocate effectively on its own behalf.⁴⁵ And, while Russia’s IT community is cognizant of the country’s lagging status globally, said Mikhail Yakushev, a policy specialist with Microsoft, its leaders still are divided on the appropriate policy strategy to overcome this problem. Until the IT sector develops coherent and compelling policy analysis and recommendations and then communicates that information effectively, the government is unlikely to take decisive action on the industry’s behalf.

Finally, and most important, a technology-centric policy approach will never be able to adequately compensate for Russia’s highly unfavorable innovation, invest-

⁴³ Irina Dezhina and Loren Graham, *Russian Basic Science After Ten Years of Transition and Foreign Support*, Washington, D.C.: Carnegie Endowment for International Peace, Working Paper No. 24, February 2002.

⁴⁴ To this point, the federal government in prosecuting the Yukos oil company in 2004 for underpayment of taxes cited the firm for abuses of special tax provisions for handicapped persons.

⁴⁵ In conducting its survey of the IT sector in 2002, the Expert Rating Agency found a number of companies refused to report key data or had problems in retrieving the needed data altogether. Some could not report how much money they made on a specific contract, and one company had no idea that it was actually losing money because of the gray accounting schemes it used (Grishankov and Krashchenko, 2003).

ment, and business climate. Conditions had been improving after the economic upheavals of the 1990s. But starting in 2003, the government's selective attacks on businesses—epitomized by the dismemberment of the Yukos oil company and efforts to undermine Vypelcom, the mobile telephone operator—have raised new doubts about the attractiveness of Russia as a business destination, especially when compared with its competitors in the IT world. As illustrated in Table 2.1, Russia ranks near the bottom when compared with other countries for a business-development environment. The business-environment conditions have slowed foreign investment and innovation in the IT sector. Another indicator at hand is new business formation: Russia's largest and most accomplished IT firms (such as those mentioned in this chapter) largely got their start in the 1989–1991 period; few major entrants have appeared since then.

Moreover, ventures that have managed to develop in Russia have been forced to take costly compensatory action. While industry advocates tout the relatively “clean” and transparent character of the IT sector, the realities of Russia's business environment motivate many IT ventures to operate partially or entirely under the table. As indicated above, IT companies routinely use convoluted financial schemes to hide their revenues and underreport labor expenditures to “manage” their tax burden. Following a widespread practice in Russian business, IT firms often set up foreign shell operations or holding companies to pay their employees and then park their profits in offshore accounts. Others, such as A4Vision and Auriga, have gone further and have offshored key business functions, such as the chief executive, finance, and marketing functions, while R&D and programming operations stay in Russia. Finally, some companies have decided to quit Russia entirely—such cases include Parallel Graphics (three-dimensional tools) and Aptiva (optical technologies).⁴⁶ Because Russia's IT entrepreneurs and specialists are motivated to keep at least one foot out the door through these various forms of “reverse offshoring,” Russia's poor business climate has undermined the long-term vitality of the IT sector.

⁴⁶ The membership of the American Business Association of Russian Expatriates (<http://www.ambarclub.org>) counts more than 1,000 IT entrepreneurs and engineers in the Silicon Valley area.

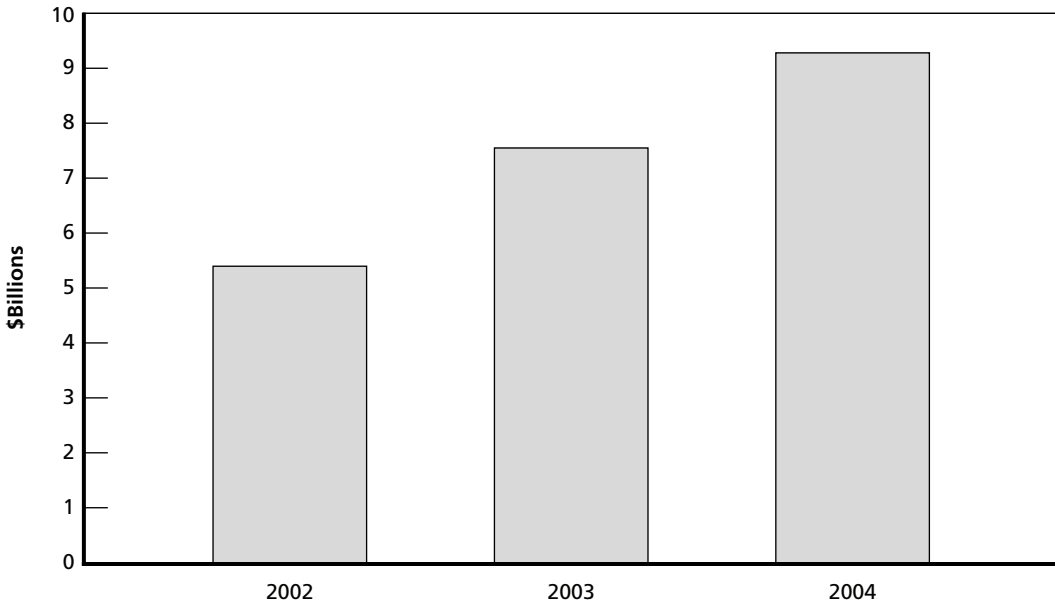
IT in Business and Industry

The Soviet Union collapsed in part due to its outdated and inefficient economy. As one would expect, many Russian businesses today are investing in information technologies to modernize their operations and management and develop new capabilities within a wide range of business processes:

- Finance: Software and systems for budgeting, internal and external accounting, tax reporting, billing, and retail and electronic transactions.
- Human Resources: Payroll, personnel management.
- Process Controls: Systems for monitoring and controlling industrial process equipment.
- Office Automation: Systems to document production and management, database management, e-mail.
- Enterprise Resource Planning: Complex database-driven software used for inventory management, purchasing, and product planning. ERP programs also may include modules for finance and human resources management.
- Customer Relationship Management (CRM): Database-driven software that enables organizations to track customer activity and customer preferences and to develop marketing strategies.
- Communications: Firms increasingly are using the Internet for marketing, public relations, and investor outreach.

This modernization process began in the mid-1990s and accelerated markedly around 2001 as the Russian economy recovered from its post-Soviet economic disarray, a recovery trend fueled by high energy and minerals prices. Since then, demand for IT goods and services by business and industry in Russia has been growing at 25–30 percent annually, and by the beginning of 2005 purchases of IT goods and services were worth about \$9.3 billion a year (see Figure 3.1). Surveys by the *Ekspert*

Figure 3.1
Purchases of IT Goods and Services by Business and Industry, Dollar Value, 2002–2004



SOURCE: Vitaly Solonin et al., *The IT Market: 2004 Results*, Moscow: CNews Analytics, 2005.

Rating Agency and CNews Analytics indicate that the financial sector and telecommunications are the largest purchasers. Other leading purchasers are the oil and gas industry, electric power generators, and, more recently, mining and metallurgy.¹ Sibir, Russia's largest airline, as well, has embraced IT technologies to help it manage an increasingly complex business within an increasingly competitive market (see the related discussion under "Siberia Airlines Uses IT to Manage Growth").

The growth in IT spending has helped fuel the growth of the IT sector discussed in the previous chapter. Approximately one-half of IT spending goes toward hardware (see Figure 3.2). Hardware plays an unusually large role in IT sector development in Russia because many organizations are in the process of acquiring their first information systems. Twelve percent, or approximately \$1 billion, of IT acquisitions is for services, such as systems integration and consulting. As was discussed in the previous chapter, Russian firms tend to draw heavily on in-house IT departments and expertise. This situation contrasts with global IT markets, and the West in particular, where IT services and outsourcing are a much larger portion of overall IT spending (see Figure 3.3).

¹ Dmitry Grishankov and Larisa Krashchenko, "Virtual Sector," *Ekspert*, June 23, 2003.

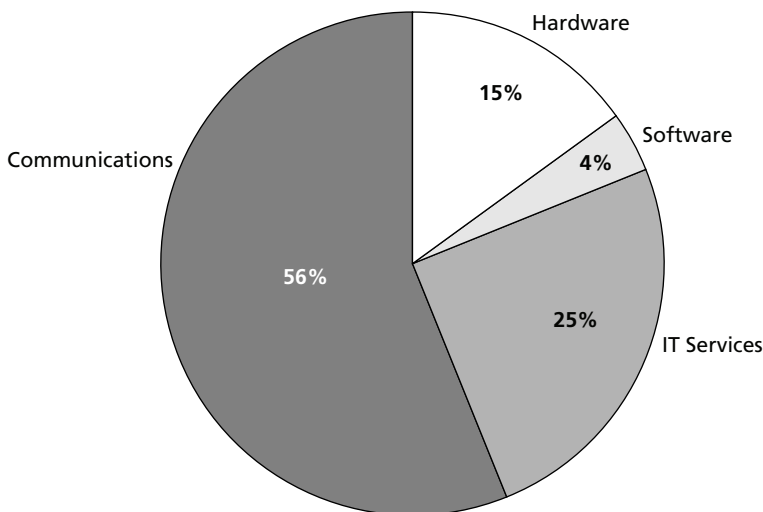
Siberia Airlines Uses IT to Manage Growth

Siberia Airlines (Sibir), which was founded in 1992, has a large domestic and international network with a major hub in Novosibirsk. Sibir is Russia's largest airline in terms of domestic passenger traffic. Its passenger load grew by more than 40 percent in 2002 alone to 2.7 million people. Sibir has adopted IT to better manage its growing and increasingly complex operations.

The main reason for upgrading the company's information management system was intensifying competition in the airline's main routes to and from Moscow, creating the need to better manage resources and costs. Sibir operates as many as 100 flights per day on its network. Because each flight involves the coordination of a significant number of suppliers, the company had to process a large volume of accounts. The volume and variety of documents slowed accounting and billing and caused troubles in managing vendor accounts and monitoring cash flows.

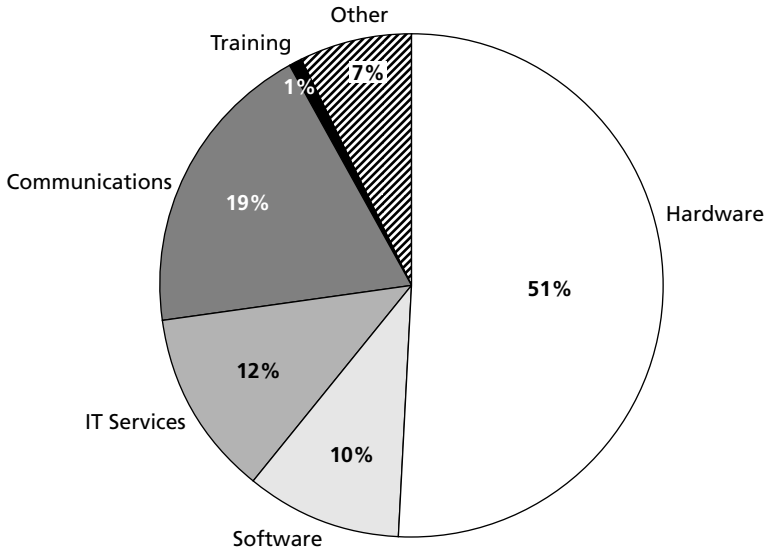
A business-process automation project was started in 1998, initiated by the company's chief financial officer and chief accountant. Galactica, a Russian enterprise resource-planning package, was chosen, and the F1 Center company in Novosibirsk was selected as the supplier and integrator. Galactica enables the company to maintain a single database with all of the company's accounts and transactions. System architecture, analytical indicators, and data flows were developed by F1. With the implementation of Galactica, the volume of open accounts receivable and accounts payable decreased significantly, the quality of financial information increased, and management of the company's cash flow improved. After launching, a separate system for accounts payable was created.

Figure 3.2
Proportion of IT Goods and Services Purchased by Business and Industry in Russia, 2004



SOURCE: Solonin et al., 2005.

Figure 3.3
Proportion of IT Goods and Services Purchased Worldwide, 2004



SOURCE: Gartner Dataquest, cited in Solonin et al., 2005.

Because integration of modern information technologies in Russian businesses is a very recent phenomenon, the process is far from complete in most firms. This lagging technology integration makes it difficult to assess in a comprehensive manner the overall impact of IT spending. The following sections present anecdotal evidence regarding three broad and somewhat overlapping objectives: exploiting new markets and developing new business opportunities, boosting the performance and productivity of operations, and improving internal management and governance.

Use of IT for Business Development and E-Commerce

Russia’s banking industry was the first Russian industry to make large investments in IT in the 1990s to automate such core functions as accounting and transactions settlements. Banks that have made a commitment to develop serious client-oriented retail businesses have gone further and made significant investments in IT to improve their services. Over the past several years, Alfa Bank has invested heavily in developing state-of-the-art retail bank branches outfitted with self-service kiosks and tellers with large volumes of information at their fingertips. Citibank’s retail business development strategy in Russia is to create a “virtual” presence that relies heavily on ATMs and electronic banking in an effort to overcome the overwhelming advantage Alfa Bank and Sberbank, the large state-owned savings banks, have in the number of bank

offices. Probusiness Bank is using IT to speed up intrabank communications and information delivery to enable bank representatives to appraise customer creditworthiness and make car loan and home loan decisions within a couple of hours—something generally unheard of in Russia. In January 2004, Vneshtorgbank, a Soviet legacy bank in which the federal government still has a controlling share, announced that it was embarking on a \$200 million expansion in Russia and abroad and it planned to offer new services—all of which would be facilitated by information technologies. To this end, it hired Andrei Korotkov, the federal government's E-Russia program coordinator, to spearhead its IT development strategy. In recent years, Russia's insurance industry has experienced very strong growth, and many insurance companies are investing in IT for both core operations and customer service.

As recently as the mid-1990s, the abacus was the standard accounting tool used at checkout counters in Russian stores. They now have been replaced by optical scanners at fast-growing hypermarkets. The large retail chain Perekriostok and the juice and dairy products maker Wimm-Bill-Dann rely on IT to manage inventory and product flows across their rapidly growing operations, including at facilities outside of Russia.

The telecommunications industry, by definition, is an intensive user of information technologies, both on the operations side and for accounting, billing, and customer service. Jere Calmes, Vice President for Customer Relations of Vympelcom, noted that his firm in an effort to develop a competitive advantage and to distinguish itself in the marketplace had created a number of ways in which customers could manage their mobile phone accounts electronically. While there were concerns that customers would prefer the traditional method of making a payment—to a clerk at a service window—to ensure that a payment was registered, Vympelcom's customers are quickly adopting the electronic alternatives.

An example of just how far electronic commerce has come in Russia is the online brokerage system offered by the Siberian Interbank Currency Exchange (see the discussion under "The QUIK Electronic Broker.").

The Russian media are using IT and the Internet to reach new markets. As of September 2004, more than 1,200 online periodicals had been registered with the Ministry of the Press—an increase of 35 percent over the previous 18 months.² In late 2004, the Rambler Foundation for Research and Social Initiatives tracked 1,608 media sources.³ *Interfax*, which was founded in July 1989 and was one of the first

² "Over 1,000 Periodicals Registered in Russian Internet," *RIA Novosti*, September 30, 2004; "What Do Russians Read?" *Pravda.ru*, March 26, 2003. Registration with the Ministry of the Press is a legal requirement. For comparison, as of March 2003, more than 38,000 print publications were registered.

³ Ivan Zassursky, *Economics of Attention: The Internet in Russia in 2004*, Rambler Foundation for Research and Social Initiatives, Moscow, January 2005.

The QUIK Electronic Broker

The QUIK electronic broker (<http://www.quik.ru>) represents an example of successful business-process automation and the development of electronic commerce using a Russian technology.

The IT department of the Siberian Interbank Currency Exchange in Novosibirsk created a proprietary information and brokerage interface called QUIK (Quickly Updateable Information Kit) to enable clients to trade on the exchange remotely and securely. QUIK evolved out of an electronic currency-trading system first implemented by the exchange in 1994.

QUIK gives banks, financial services providers, and individual traders direct access to Russian markets for currency, equities, bonds, commodities, and other financial instruments without the need for middlemen (i.e., brokers). In addition to executing trades through its proprietary interface or via an Internet browser, the system allows banks and their clients to monitor market information in real time and to manage their accounts. The QUIK system is certified as secure by the federal communications agency FAPSI (Federal Service for Government Communications and Information), and it is certified for trading on a number of exchanges, including Moscow's Russian Trading System stock exchange and the St. Petersburg stock exchange.

Many regional exchanges in Russia have adopted the technology, and it is being used by more than 150 Russian banks and 5,000 clients. A number of allied products have been developed, including a trading and information interface for mobile phones (pocketQUIK) and a real-time training module (QUIKjunior) for use by teachers in the classroom.

news agencies in the world to distribute its dispatches via facsimile, has grown to become the largest and most comprehensive and authoritative independent news service in Russia and the CIS. Online-only media were the first news sources to emerge on the RuNet in the mid-1990s, and they typically rank as the most popular news sources on the RuNet today. Three Moscow-oriented Internet media sites—Gazeta.ru, RosBusinessConsulting (<http://www.rbc.ru>), and Lenta.ru—are the most popular and influential online media sites in Russia. They also are regularly cited by the mainstream press, and their material is frequently repackaged and redistributed by regional and local online information services. The mainstream media—*Izvestiya*, *Komsomolskaya Pravda*, *Moskovsky Komsomolets*, *Kommersant*, and *Vedomosti*—also have developed popular online versions of their periodicals that carry a mixture of material from their offline productions and original content, such as discussion forums and trivia. Adjacent to the news articles on its Web pages, *Izvestiya.ru* offers a feed of daily news briefs on the same topics. *Vedomosti.ru*, popular in the business community, has a searchable database of job listings. RuNet portals, such as Yandex and Rambler, emerged in the late 1990s to become the most popular online sites, and by 2004 they equaled Russia's leading press in terms of their number of daily readers or viewers.

Russian firms of all sizes increasingly are using the Internet as a communications channel. The number of domain names registered on the RuNet grew by more than 40 percent in both 2003 and 2004, a trend attributed to growing interest by busi-

nesses in getting online.⁴ In 2004, the number of goods and services, leisure, and building materials sites tracked by Rambler increased by more than 30 percent. The most rapidly growing online sector was insurance—up 114 percent in 2004.⁵ Because Internet users in Russia tend to be younger, better educated, and wealthier than the general populace, they are targeted by online content providers and advertisers as style-, opinion- and thought-leaders, said Yelena Koneva, CEO of a market research firm, in comments to RAND. Given the proficiency of local IT talent, many Russian sites rival their Western counterparts in style and functionality.

Russian businesses are developing Web sites for many purposes. Many large firms have invested heavily in flashy sites for public relations purposes. Such examples include the sites of the state-controlled natural-gas producer Gazprom (<http://www.gazprom.ru>) and state electricity monopoly Unified Energy Systems (<http://www.rao-ees.ru>). Some sites are being used to a greater extent for investor relations, such as those of the major oil company Lukoil (<http://www.lukoil.ru>).⁶ The Internet also is seen a handy way to quickly make a company and its products look up-to-date. An example is GAZ (<http://www.gaz.ru>), which makes a sedan that dates back to the early 1960s. In the highly competitive consumer retail and travel and leisure sectors, firms are using the Internet to advertise lower prices and enhanced services. Popular sites that have emerged are Sotovik.ru and Porta.ru, which offer consumer and technical information about mobile phones and portable electronics. Price.ru, a bulletin board, is used by smaller offline electronics stores in Moscow to advertise their prices.

Unlike in the United States, business-to-consumer e-commerce has been slow to take off in Russia. While the Internet is being used intensively for marketing, most consumers are not making purchases online. The lack of an efficient and extensive logistics network outside of Moscow makes shipping goods difficult, costly, and time-consuming. Credit and debit cards are still not yet widely held, and government regulations concerning encryption have thwarted the development of secure online transactions. Consequently, purchasers typically have to wire money via interbank transfer or fax their credit card information. That said, Russian consumers are not averse to conducting business electronically, as is often believed. In many cities, electronic payment systems are emerging that work without credit cards and work around the shortcomings of the banking system (see the related discussion under “A Russian Approach to Electronic Commerce”). Given such workarounds, business-

⁴ “Internet Audience Growing Fast in Russia,” *Izvestiya*, April 6, 2005.

⁵ Zassursky, 2005.

⁶ For more on the subject of online investor information, see Ludmila Budnikova, “The Role of Russia’s Internet in Attracting Foreign Investment,” in Ilya Semenov, ed., *The Internet and Russian Society*, Moscow Carnegie Center, 2002 (<http://pubs.carnegie.ru/books/2002/08is/>; in Russian; last accessed August 2005).

A Russian Approach to Electronic Commerce

In Novosibirsk, the city (*gorod*) e-payment system has brought e-commerce and e-government to a broad segment of the population. Gorod brings together more than 300 service suppliers and organizations and more than 20 payment-recipient organizations into a unified “one-stop” payments system (see <http://www.kvartplata.ru/scdp/page>; in Russian). The technology originally was developed by a local software developer, the Financial Technologies Center, on contract to the city government in Novokuznetsk in a neighboring region. The goal was to better manage payments for such basic services as rent, electricity, heating, and telephone. In the past, consumers had to fill out forms and pay in cash at the cashier window of each service provider.

The success of the system in Novokuznetsk motivated the firm to develop and manage a similar system for Novosibirsk. A citywide network of one-stop payment points was set up around Novosibirsk and neighboring communities, including 40 Sberbank branches and 48 cashier offices maintained by the local telephone company—Novosibirsk Electrosvyaz. More organizations have joined the City System, enabling residents to pay for mobile phone, cable, and Internet services; private patrol and security services; insurance; newspapers; and traffic tickets. Consumers can also make payments using a mobile phone, with the “Golden Korona” banking card at more than 70 automated teller machines, or with a standard credit card (such as VISA, MasterCard) over the Internet. (Since about 2001, many of Novosibirsk’s enterprises have disbursed paychecks electronically to debit card accounts.) Within four years, City System was handling up to 1.9 million transactions a month. Other regions and cities, including Kemerovo, Bashkiriya, Chelyabinsk, Barnaul, and Izhevsk, are implementing this technology, while others, such as Moscow, are considering or implementing their own e-payment systems.

to-consumer e-commerce is increasing, and purchases totaled an estimated \$662 million worth in the first 11 months of 2004—a 38 percent increase over the dollar amount of the previous year.⁷

Business-to-business e-commerce has been growing on a similar scale: Sales totaled an estimated \$442 million in the first 11 months of 2004—a 40 percent increase over the previous year.⁸ According to the Russian online publication *Web Planet*, 58 percent of workers in the construction industry used construction-oriented sites to gather information about building materials.⁹ The biggest, and perhaps most important, e-commerce development involves business-to-government trade. In 2004, the segment saw a 15-fold increase in turnover, to more than \$2.1 billion, thanks to the rapid development of online procurement schemes.¹⁰

⁷ Zassursky, 2005.

⁸ Zassursky, 2005.

⁹ Zassursky, 2005.

¹⁰ Zassursky, 2005.

Use of IT for Managing Operations and Boosting Productivity

Since 1999, the Russian economy has enjoyed robust growth, and it has seen huge improvements in business productivity—up 49 percent in the industry as a whole between 1998 and 2003.¹¹ Unlike the growth in output and productivity seen in the United States in the 1990s, the turnaround and impressive performance of many firms in Russia is generally not attributed to the integration and use of IT. To the contrary, despite growing spending on IT, most managers in Russia interviewed by RAND, especially those in industry, were highly skeptical about the value of investing in IT to improve the performance and productivity of operations.

Russia's most financially successful industries—such as oil and gas production, refining, metallurgy, paper, and chemicals—continue to rely on Soviet-era plant and equipment, including many legacy information systems. While many firms have invested in basic systems for monitoring processes and equipment with the objective of improving efficiency and output quality, Soviet-era information technologies and control systems that are in use, though often crude and outdated, commonly are viewed as being adequate for the short- to medium-term. Switching to advanced process automation and integration based on international technologies is seen as very costly if not impractical, given the outdated and often worn-out condition of the underlying equipment they are supposed to control. A prominent example of the view that large-scale investment in new IT systems is not needed is the nuclear power sector: While Western industries and policymakers in the second half of the 1990s scrambled to avert the so-called Y2K problem, leaders in the Russian nuclear-power sector argued that Y2K was not a problem because Russian reactors did not depend on automated control systems.

A 1999 McKinsey report pointed out that Russian firms in many sectors can achieve significant gains in productivity and become more competitive internationally through better management of existing assets and thus avoid the need, at least for the intermediate term, for extensive investment in new plant and equipment.¹² These points were reiterated in personal interviews with RAND. Russia's second-largest automaker, GAZ, uses a large number of robots based on Western technology that the company acquired during the 1980s automation drive of the Gorbachev regime. But the cost of labor at GAZ is so low (only about 15 percent of total costs), and the number of employees is so high (even after large-scale layoffs in recent years), that its popular light commercial vans are still assembled mostly by hand. An executive of a prominent Russian heavy-engineering firm commented in 2002 that he was achiev-

¹¹ Andrei Illarionov, advisor to the President of the Russian Federation, in a radio interview on *Ekho Moskvy*, January 30, 2004.

¹² McKinsey Global Institute, *Unlocking Economic Growth in Russia*, Moscow, October 1999 (<http://www.mckinsey.com/knowledge/mgi/Russia/>; last accessed August 2005).

ing enormous productivity increases at his operations just by getting rid of excess workers. And, he said, his operations still had a long way to go before information technologies would be needed to offset laid-off workers. Another CEO said that after acquiring a major manufacturing operation in 2002, his first priority was to secure facility perimeters and post armed guards at exit points to reduce theft. Other priorities business leaders identified for turning around their operations included shedding noncore operations, such as housing, health, and recreation facilities; reducing drunkenness; improving safety; and increasing worker discipline. (For a notable exception to this thinking, see the related discussion under “IT at Yukos.”)

Many industry executives who were interviewed for this study argued that even when IT is useful for the operations side, it is not a critical necessity on the business side. Firms in petroleum, metals, and other basic industries, those executives pointed out, typically have rather stable planning horizons, customer relations, and distribution networks. Managing their supply chains without large investments in IT seems feasible to many of them. The CEO of a major tire producer commented that the supply-chain management needs for his firm were not that complex and could still be adequately managed using existing personnel and manual processes. Similarly, e-commerce also was not seen as a priority for such firms. The CEOs of two of Russia’s largest industrial conglomerates known for their high-technology products both chuckled when asked for their views about information technologies. One cited several reasons why IT was not important in the business office and could be seen as detrimental to productivity. First, after spending \$20,000–\$30,000 per work station (including several generations of hardware, software, and networks), he complained that his secretary still could only type at a rate of 12 minutes per page. Second, having the Internet at one’s fingertips is a huge distraction, the CEO added. “What does a person do with a computer?” he asked. He argued that one is tempted to spend more time than necessary engaged in e-mailing and surfing the Web. He equated having a computer at one’s desk to having a television in one’s bedroom: It is too easy to turn on and watch for long periods of time. Third, because government regulations require that essential documents be handled and maintained in hard-copy format, the need for electronic document management and data-storage systems was obviated.

IT at Yukos

A notable exception to the general wisdom that Russian industry need not invest significant resources in IT to improve the productivity of its operations is the Yukos oil company, which, before its breakup as a result of government intervention, touted its IT capabilities for managing crude-oil production.

In a meeting in 2003, Joe Mach, the company's vice president responsible for production, said in a RAND interview that when he joined the firm, it had no meaningful IT capabilities and it had a "know-how problem." As a result, the company's wells were underproducing, even though its production technologies and practices were fairly modern. His strategy was to use IT, paired with a rigorous staff-training program, to boost production know-how and capabilities.

With the assistance of consultants from the Western business-services firm Schlumberger, Yukos, beginning in the late 1990s, built a state-of-the-art oil well modeling and production monitoring system. Mach demonstrated how he could model reservoir dynamics and monitor in real time on his laptop in Moscow the conditions of individual wells across the company's far-flung operations. This capability, he said, gave his managers in the home office and in the field the ability to make decisions about where to target maintenance activities, among other activities. In addition, by 2003, more than 95 percent of the company's production wells had been connected to a master network that enabled operators to remotely monitor, assess, and control wellhead performance.

In Mach's estimate, Yukos' IT capabilities for oil production in 2003 exceeded those of most global oil companies. He credited these capabilities with helping Yukos to boost production to record levels even as its number of active wells decreased sharply.

Use of IT For Corporate Management and Governance

Russian firms have a reputation for poor corporate governance, and for some executives, IT is seen as a way to improve management and oversight. Views of this objective and the results that firms have been able to achieve with IT are mixed.

Most oligarchs wanted to control the cash flows of their companies because they were afraid they might lose [the companies] as arbitrarily as they gained them.

—Anatoly Karachinsky, CEO, IBS Group¹³

Motivations for IT Integration

For many executives, the most important objective for investing in information technologies is to enhance their command and control over their organizations (an objec-

¹³ Arkady Ostrovsky, "High-Tech Designer Who Prefers a Low Profile," *Financial Times*, October 2, 2000.

tive not unlike that of government organizations). Corporate managers and consultants spoke of using IT to organize information flows vertically and to limit autonomy in the ranks—a process one person described as “extreme centralizing using computers.” This IT strategy contrasts with the priorities in Western firms where the goal of IT systems is to better distribute and share information throughout a business enterprise and to distribute or “push out” decisionmaking responsibilities to managers and even staff and workers in the field. Several motivations for the unique IT objectives in Russia were cited.

First, the 1990s was a period of economic and organizational upheaval and uncertainty characterized by rapid and often chaotic privatizations, corporate raids and ownership struggles, asset stripping, and capital flight. Since 1998, conditions have stabilized somewhat, and property rights, in most cases, have been established. Most of Russia’s new business owners are now seeking to actively manage and develop their firms. Yet, there often is a lack of reliable information at the top: A knowledgeable IT executive, speaking of one of Russia’s most prominent “oligarchs,” told RAND, “He himself does not know” what is going on inside his own company. One priority for businesses has been to invest in accounting and inventory management systems to tally property and assets and to establish a clear picture of cash flows. To this point, one Western executive brought into a major Russian firm said, in a RAND interview, that critical IT goals for him were gaining “top-down command and control” and “trying to get some transparency” in his firm to “stop the hemorrhaging” of cash. With timely and accurate information about their businesses, managers can then develop coherent restructuring and operational plans and impose the management discipline required to ensure execution of those plans. Before the Russian railway was converted from a federal ministry to a state-owned company in 2003, IBS was hired to help the organization document more than two billion items in its inventory so it could develop an accurate balance sheet and workable operational strategy. Having a detailed property register, it was claimed, could help boost productivity by up to 15 percent.¹⁴

Second, many business leaders spoke of the need to reduce fraud, kickbacks, corruption, and theft within the ranks of their firms. Better information about cash flows was seen as key to this end. Middle managers often have a vested interest in hindering greater transparency for fear of the mismanagement it might reveal. Information solutions were seen by another manager as a way to circumvent the “Soviet bureaucracy” in his firm.

Third, information command and control is equated with information security. Many IT specialists expressed concern about competitors or other hostile parties gaining access to their information systems. Their concerns are not unfounded. In

¹⁴ Alla Startseva, “Russian Railways Co. Ready to Roll,” *Moscow Times*, July 28, 2003.

early 2003, for instance, Russia's largest mobile phone company acknowledged that the personal data on its five million customers had been appropriated and CDs containing the data allegedly were being sold on the streets. A similar event happened at another major mobile-phone provider several years earlier. At the same time, a Western executive in a Russian firm commented that "security paranoia" among rank-and-file professionals impacted efforts to improve information management in his organization.

Finally, the command and control approach to IT was seen as a necessity in a country where IT infrastructure and business management capabilities in Moscow (where most corporate headquarters are located) vary significantly from those in the provinces. An IT director at Wimm-Bill-Dann, which has numerous juice and dairy operations in distant and rural locations, many of them outside Russia, noted that his firm had centralized IT facilities in Moscow because the local communications infrastructure was not sufficiently reliable, and qualified local personnel in the provinces were hard to find, train, and retain. Another discussion participant said that his firm had difficulty finding qualified managers for its large retail outlets. As a result, financial performance varied greatly between locations. Despite the significantly higher labor and real estate costs in Moscow, it was ultimately cheaper to concentrate IT operations and management decisionmaking there.

Having modern information systems also is seen as a key way to demonstrate to investors that a firm is being run in a financially prudent manner and is adhering to principles of good governance. There is a financial incentive for having such systems: Many Russian firms want to attract direct foreign investment and want to sell bonds. The use of such systems and a reputation for transparency both can boost a company's market value and credit rating. The Tyumen Oil Company began implementing an ERP system in early 2001. Alexander Bloch, the firm's chief information officer at the time, argued that the information that the system generated about the company's operations and efficiencies was instrumental in helping the company to float a \$400 million Eurobond, and it facilitated British Petroleum's subsequent decision to merge its operations in Russia with Tyumen Oil's operations.¹⁵

Challenges of IT Integration

The impact of IT on corporate governance in Russia is difficult to assess. One reason is that many firms only recently have sought to adopt good governance policies and practices, and the IT systems to back them up. More important, there is no definitive causal relationship between technology acquisition and good corporate management and governance. Indeed, discussion participants from operating companies as well as from IT services firms pointed to many pitfalls in initial IT integration efforts and

¹⁵ Olga Kharif, "Russia: Playing Catch-Up in Tech," *Business Week Online*, March 2003.

skepticism about its impact on management and governance. Several reasons were given for this skepticism.

Because many of Russia's business leaders have technical backgrounds, there has been a propensity to approach information technology projects with unrealistic expectations about what can be accomplished through technical engineering. Given this perspective, IT is sometimes perceived as a "magic bullet" or a "plug and play" device that produces results with which they can quickly gain control over unruly organizations, turn around operations that are losing money, and generate profits. Organizations have also made efforts to look modern by installing computer terminals in front offices and retail outlets and by developing Web sites, but often such cosmetic changes have not been backed up by investments to improve back-office business and management processes.

People were looking at technology as a panacea that would solve their business problems. . . . In the West, you don't spend money on IT until you control the situation.

—Company executive

But there are limits to what can be achieved with technology alone, and, in the estimate of one IT services executive, a lot of money has been thrown at problems and produced limited results. "Technology in and of itself, without the know-how, is a disaster," stated Yukos's Joe Mach.¹⁶ A steel-maker made a substantial investment in a Western ERP system only to abandon it one year later for another Western product because positive results were not instantly generated. One discussion participant noted that at his firm, the Moscow headquarters had state-of-the-art equipment and a "huge top-level capability" (including "on-the-spot" support from IT staff), but such systems and capabilities did not extend throughout the company. Headquarters managers wanted state-of-the-art systems around them but were less concerned about integration of IT systems with operations in the field. Eldar Bikmaev, a vice president at Probusiness Bank, likened the situation to a Potemkin village (referring to the tale of fake settlements built by a Russian minister in the Crimea to impress Empress Catherine II): If you look behind the IT "façade" the rest of the organization "looks like Russia," Bikmaev said. In short, information technologies work only as well as the organization in which they are placed. "Management does not understand that IT is just a model of their [corporate] structure," said one IT executive. Decision-makers treat information technologies like transportation, he continued, "but rather than spending money on a new automobile, many firms should get a new driver."

¹⁶ "Joe Mach Shares the Secrets of His Success," *Yukos Review*, January 2003.

I don't know of one huge IT project that is well implemented in Russian business.

—IT industry executive

IT may support good governance practices, but it may also reinforce bad ones. One reason Russian accounting software is often preferred over international products is that many firms maintain parallel sets of books—for official tax reporting purposes, for external reporting and public relations, and for internal management—so that firm finances will *not* be transparent. The impulse to centralize and control information is partly tied to the fact that most Russian firms have a very centralized management structure, following the “general director model” characteristic of the Soviet era. But in centralizing information and control, an executive can also hobble his management team. The control mentality affects all levels of an enterprise—not just the top level. Vladimir Andrienko, an investment manager with significant IT experience, observed that many midlevel business managers (again, not unlike government officials) continue to believe that controlling information is “a major tool of power” to be used in intraoffice politics. In such circumstances, IT simply becomes an enabler of these conflicts. Perhaps the most-clear examples of how IT may not, by itself, help improve management and governance are Russia’s massive, quasi-state enterprises—Gazprom, Transneft, United Energy Systems, and Sberbank. Although all of these enterprises have been spending heavily on information systems and have developed impressive-looking Web sites, they also are known for having Byzantine and opaque management structures, questionable business strategies, and a lack of internal and external accountability.

Technology is not what revolutionizes a company. You have to have processes in place. You just don't put technology ahead of the business.

—Russian company executive

Russian businesses’ experience with IT is not unique, and in many respects, they are experiencing the same challenges and learning the same lessons as businesses in the West. For those Russian firms with the appropriate management environment in place, learning appears to be occurring at a faster pace, in part because many leading firms are hiring internationally trained managers and consultants. Once some core IT systems are in place and functioning, the information generated can often point to more fundamental management needs and challenges, such as rooting out organized crime and stemming theft. In this situation, IT comes to be seen less as window

dressings and more as a key management tool, which then begins to drive corporate transformation and development. Or the opposite happens: IT project failures force managers to try elsewhere to solve problems. Two Western managers brought into Russian firms reported to RAND that they had halted or shelved front-office IT projects in favor of tackling other management needs. The aforementioned challenges may also be avoided by firms in the future: Several discussion participants spoke about how enterprise managers are starting to evaluate and restructure their business and management processes first and then they identify an IT strategy to support those processes. A Western executive brought into a large Russian firm to revamp management said he did not want to rely on technology to solve management problems. Rather, his goal was to strengthen management's engagement in the enterprise itself. "I am paid for being very simple," he added, referring to the solutions he proposed. Another Western executive noted that his Russian subordinates were closely observing the process of implementing IT solutions. After he had done the difficult work of identifying management problems and putting in place the appropriate solutions, he predicted that the subordinates would replicate the process throughout the enterprise in a fraction of the time and cost it took to do the first round of integration.

IT in Government

Improving government performance has been a recurring theme in Russia for centuries. After the 1991 collapse of central planning and the Soviet regime, government reform became a particularly urgent matter, given the need to create a more decentralized state administration, develop public-sector institutions capable of supporting a market-oriented economy, and promote more-democratic politics and policy processes with more accountability. Government reform has become an even higher priority in recent years as President Putin has sought to accelerate economic development and reassert discipline in public administration—what he terms the “vertical of power.” To these ends, a considerable amount of effort—some of it with support from international organizations and foreign governments—has been directed to modernizing public-sector institutions at all levels through the use of information technologies. Such efforts have served as a powerful stimulus to IT sector development, as discussed in Chapter Two.

This chapter examines just such policies and initiatives and the emerging issues and challenges in the long-term process of fostering an Information Revolution in government in Russia. In doing so, this chapter examines the effectiveness of IT initiatives for promoting government transparency and responsiveness; boosting public sector efficiency and performance; and reasserting discipline and the vertical of power—which may be seen, in some aspects, as contradictory or undesirable objectives.

Government Embraces IT

Despite protracted economic hardship and turmoil during the 1990s, the Russian government allocated considerable resources to establishing basic IT capabilities in critical areas such as finance, transportation, and national security. The Ministry of Taxes and Collections has been ranked as having the most extensive and effective IT investment program (see Table 4.1), as the government has sought to create a modern and efficient tax system appropriate for a decentralized market economy. To

Table 4.1
Ranking of Federal Agencies in IT Investment and Effectiveness

Rank	Agency
1	Ministry of Taxes and Collections
2	State Customs Committee
3	Ministry of Railways
4	Ministry of Finance/State Treasury
5	Ministry of Education
6	Ministry of Property/State Land Survey
7	Ministry of IT/Ministry of Economic Development and Trade
8	State Statistics Committee
9	Ministry of Health
10	State Construction Agency

SOURCE: Edward Batarshin et al., *IT in Russian Government Agencies 2005*, Moscow: CNews Analytics, 2005.

NOTE: Rankings are based on agency data and a survey of IT industry professionals.

modernize the country's antiquated banking sector, the Russian Central Bank in the 1990s started investing heavily in IT, including investments in proprietary communications satellites, allowing it to quickly implement an electronic-payment settlement system nationwide. The Russian Railways Ministry has invested billions of dollars in information systems and communications infrastructure to automate its operations, upgrade communications along its rail network, and provide commercial communications services. The Ministry of Science and Education has spent about \$1.5 billion on equipping schools and universities with computers. The State Land Survey has invested heavily in geographic information systems, and more than \$1.5 billion has been spent implementing a nationwide property register to support real estate transactions.

The integration and use of IT have become a higher priority in the Putin administration. Putin first demonstrated the importance he attached to IT at the end of 1999, when, as prime minister, he marked the unveiling of the federal government's Web portal (<http://www.government.ru>) by publishing his vision for Russia on the Internet.¹ In March 2001, Putin held a high-visibility televised "Internet Conference" in which more than 9,000 questions were submitted via e-mail from around the world. During the forum, Putin said that public officials should be computer literate, and he admitted that his official Web site did not meet his quality standards. At a meeting with IT executives one month later, Putin announced that all federal agencies would, by the end of the year, post information about their organizations and activities on the Internet and update their Web sites on a daily basis. At Putin's instigation, Russia also has seen a considerable level of activity by interagency work-

¹ The fact that the vision statement was released on the Internet drew significant media attention at the time. However, the document is no longer available online.

ing groups, special task forces, meetings with IT industry leaders, and online forums examining the potential uses of information technologies in government.

One of the results of this wide-ranging public discussion was the approval in January 2002 of an interagency “master program” to foster an “Electronic Russia” (or E-Russia). In its mission statement, the E-Russia program called for the “widespread integration” of information technology in government operations for such tasks as document management, registrations and declarations, and procurement tenders. To accomplish this mission, E-Russia’s goals also included building up the nation’s IT hardware and telecommunications infrastructure and developing a supportive legal and regulatory environment. Of note, the program’s mission statement also called for “significantly increasing the volume of information [that] government institutions provide to citizens, including via the Internet,” such as draft laws and decrees, government revenues, and budgets; performance reports by public enterprises; and assessments by auditing agencies. In the process, information technologies were seen as “cardinally changing the basis of the government’s relationship with citizens and businesses.”²

The embracing of IT at the federal level was quickly emulated at lower levels of government. Many regional and local governments have moved to adopt such programs as E-Petersburg, E-Altai, and E-Chuvashia. From 1997 to 2002, the Moscow city government alone invested more than \$100 million in IT systems. Electronic Moscow is a city-owned enterprise that was formed in part to accelerate the use of the city’s high-speed communications infrastructure by government, businesses, and the general public. In addition to improving the productivity of government offices, the program is aimed at improving the quality of life of Muscovites with the introduction of new services, such as online education, traffic monitoring and navigation aids, and improved building and utilities maintenance and emergency services (see the related discussion under “Electronic Moscow”).

Strong economic growth in recent years has enabled the government to allocate greater resources to IT investment programs. In 2004, federal government annual spending on information technologies and services rose to more than \$640 million (see Figure 4.1). Government spending on IT at all levels in 2004 amounted to an estimated \$1.8 billion or about 0.3 percent of the GDP; this rate compares favorably with a number of other countries in recent years (see Figure 4.2). As a result, the public sector emerged to become the largest purchaser of IT hardware, software, and

² Russian Federation Ministry of Communications and Informatics, *Electronic Russia: Briefly About a Complex Program*, Moscow, no date, available at http://www.e-rus.ru/articles/meaning_programm.shtml (in Russian; last accessed August 2005). An official program description can be found at http://www.e-rus.ru/articles/text_programm_1.shtml (in Russian; last accessed August 2005).

Electronic Moscow

In May 2003, the Moscow city government approved funding for “Electronic Moscow,” a \$2 billion venture intended to develop the capital’s communications infrastructure and to manage the municipality’s information systems. Like E-Russia, the E-Moscow plan includes an ambitious set of objectives. The first objective is overcoming a lack of coordination and duplication of existing IT systems and databases. Between 1997 and 2002, the city invested more than \$100 million in IT systems. According to Vladimir Serdyuk, E-Moscow’s deputy general director, the city maintains at least 20 different registries of personal data, including those of the social security service, tax service, health agencies, and traffic police. Physical-planning information also is not gathered and stored in a coordinated manner, thwarting the use of geographical information systems. In recognition of this problem, E-Moscow has been handed the task of specifying, procuring, and operating the management of the city government’s information systems.

The program intends to speed up the wiring of homes and businesses. Since 1992, Comcor, a cable company partly owned by the city, has built one of the largest intra-urban fiber-optic cable network systems in the world. Mostelecom, the incumbent cable service provider, offers only limited analog services and had impeded Comcor’s efforts to get customers on its digital network. By merging the government’s shares of Comcor and Mostelecom into E-Moscow, city leaders hope to reduce the barriers to expansion.

E-Moscow has been tasked with managing the city’s e-government efforts. Planned services include a series of government portals enabling, among other tasks, online procurement, tax filings, and permit applications. The program also includes more citizen-oriented concepts, such as online educational and cultural opportunities; a unified “social card” that can be used to manage transfer payments, housing and utility payments, and public transportation; and a unified system for logging and monitoring calls for emergency and maintenance services.

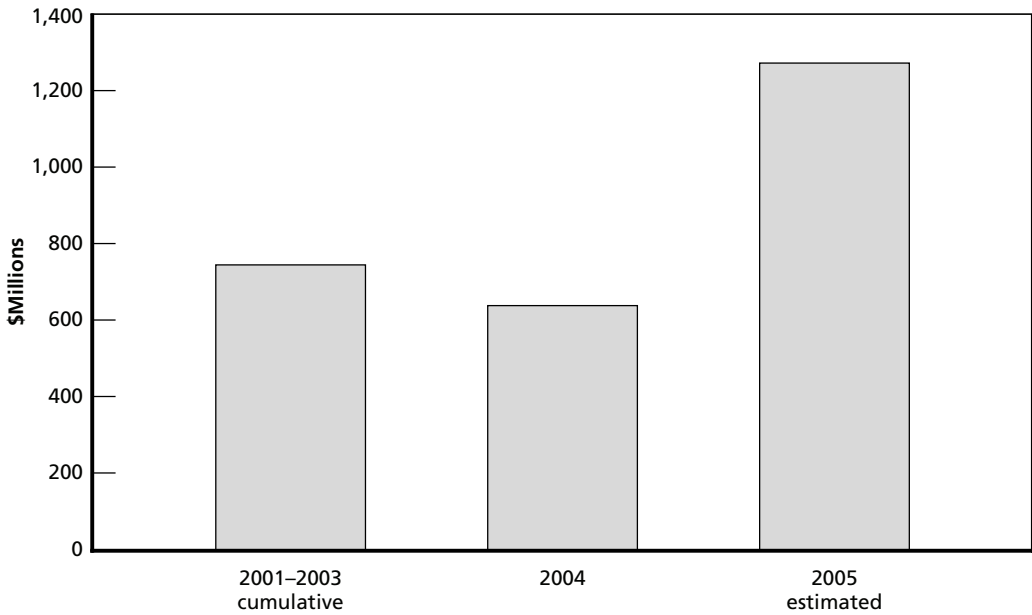
In addition to speeding economic development, including more knowledge-based and creative industries, increasing “information security” was another goal repeatedly stressed by Serdyuk. On this last point, the E-Moscow plan notes: “Many city information systems are at great of risk of being taken out of service for long periods of time or even permanently lost as a result of natural disaster, terrorism, computer crime, and the carelessness or [malicious] intent of support personnel”—a clear reference to instances in which information in city databases had been sold or leaked to the media, businesses, and the public (Moscow City Government, *Electronic Moscow Municipal Priority Program*, program documentation, Moscow, March 2003 (<http://www.el-mos.ru/2003-03-19/contents.html>); in Russian; last accessed August 2005).

E-Moscow has been structured as a for-profit corporation. In addition to the assets of Comcor and Mostelecom, the city has transferred its ownership share of the *Rossiya* television station to E-Moscow. E-Moscow’s projects are being funded from three sources:

- Municipal budget allocations to cover the cost of developing and operating the municipality’s information systems
- Service contracts with nonbudget municipal enterprises, such as the water and sanitation service, for operating their information systems
- Revenues from individuals and businesses for voice, data, cable, and other services.

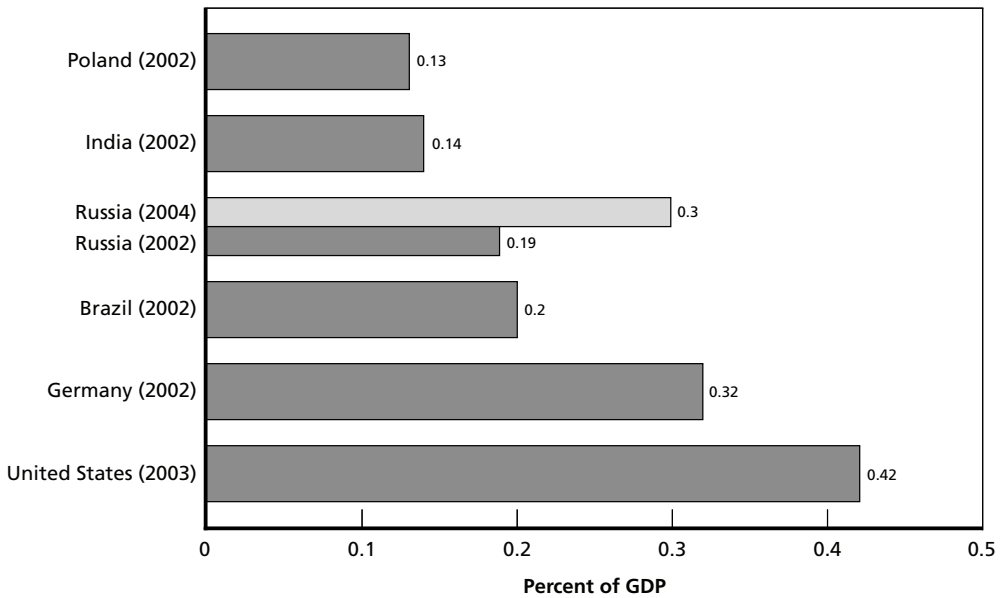
The city plans to sell a 25 percent share in the venture to raise investment capital.

Figure 4.1
Nonclassified IT Spending by the Federal Government, 2001–2005



SOURCE: Batarshin et al., 2005.

Figure 4.2
Government Spending on IT as a Share of the Gross Domestic Product



SOURCE: Batarshin et al., 2005.

services—accounting for an estimated 20–25 percent in 2003 and 2004—exceeding spending by the oil and gas industry.³

IT Initiatives and Impacts

Programs to promote the use of IT in the public sector may be grouped into two broad categories: back-office operations and front-office operations.

Back-Office Operations

The most prevalent and extensive IT projects undertaken by government entities focus on improving intra-agency or “back-office” operations.

Priority tasks for back-office improvement are extending computer and local network coverage and upgrading voice mail, e-mail, and data communications. As of mid-2003, one-third of federal staff had computers on their desks, and one-fifth of headquarters staff had access to the Internet (see Table 4.2).⁴ The growing availability of e-mail and Internet access, while far from transformative in nature, marks a significant improvement from the recent past, especially at the regional and local levels, where making a long-distance call was often not possible, and agency communications were often conveyed by telegram.

Table 4.2
Use of Information Technologies in the Federal Government, 2003

	Headquarters	Entire Agency ^a
Staff with access to a personal computer	78%	31%
Staff with access to a local area network	61%	25%
Staff with access to the Internet	19%	1%
Agencies using automated budgeting and accounting systems		80%
Agencies using human resources and resource-planning systems		40%
Agencies with an Internet presence		95%

^a Excludes the large number of operational (field) staff of the railways and interior ministries.

SOURCE: Russian Federation Ministry of Communications and Informatics, 2003.

³ IBS representative, cited in Dmitry Grishankov and Larisa Krashchenko, “Virtual Sector,” *Ekspert*, July 23, 2003; Russian Federation Ministry of Communications and Informatics “On the Use of Modern Information Technologies in the Activities of Federal Government Agencies,” mimeo, September 2003; Batarshin et al., 2005.

⁴ Connecting staff to the Internet has been a lower priority, in part due to security measures that prohibit direct hook-ups of government systems, limited throughput of the communications infrastructure, a shortage of IT know-how in agencies, and cost.

A second priority task has been acquiring “core systems,” such as electronic document management to support agency operations. According to a 2003 survey of IT managers in major federal agencies, an estimated 30 percent of officials’ time is spent searching for and reconciling documents, and 6 percent of all documents are said to be permanently misplaced. In addition, an estimated 400,000 officials deal with documents concerning citizens.⁵ Another important “core systems” priority is acquiring IT systems and know-how for planning, budgeting, and accounting. Describing the *status quo ante*, an IT executive who had worked on many implementation projects in the public sector observed that agency heads “did not have any reliable information” concerning the use of resources. As a result, management could not adequately monitor agency operations and outlays, assess program performance, or impose accountability on staff. As mentioned in Chapter Three, Russian Railways, prior to its conversion from a ministry to a state enterprise in 2003, was able to document more than two billion items in its inventory within seven months with the assistance of an information system implemented by IBS.

Public-sector institutions in the budget and finance arenas have been the biggest spenders on IT, accounting for 70 percent of federal IT outlays in 2003. Key back-office projects include the following:

- The Finance Ministry has spent more than \$220 million to modernize its budget planning and accounting systems as well as its communications and data networks. According to a RAND interview with Artem Shadrin, a ministry advisor, top-level officials at the federal and regional levels are now able to track budget flows to federal and regional agencies and to impose a measure of accountability on agency management and regional officials—a capability which he described as “a big step forward.” Now that such general spending information is at hand, Shadrin said, the next steps are to make it available to the public and to assess the cost-effectiveness of spending.
- The Tax Ministry spent more than \$120 million in the late 1990s and early 2000s on basic information management, including a pilot project to establish two regional data-processing centers funded in part by a loan from the World Bank. It is estimated that the required labor after the automation of tax collection and accounting systems had been cut by almost 50 percent, or 1.5 million work days, by mid-2003.⁶ It is anticipated that improved communications and data management will further streamline the processing of tax declarations while also enhancing revenue monitoring and compliance enforcement.

⁵ Russian Federation Ministry of Communications and Informatics, 2003.

⁶ Russian Federation Ministry of Communications and Informatics, 2003.

- The Customs Service in 2003 undertook a major information and communications-technology upgrading program with World Bank loan support. By 2007, all of the country's 650 road border crossings are expected to be online. Through automation and tighter monitoring of operations, customs authorities hope to reduce fraud and mistakes by local authorities and boost revenue by \$1.3 billion annually.⁷

Front-Office Operations

A number of projects are underway to improve extragovernmental or "front-office" performance to facilitate basic government-to-citizen and government-to-business transactions.

Two approaches to improving front-office operations using information technologies are electronic transactions and "one-stop" operations. The importance of such efforts is indicated by the fact that individuals in Russia spend an estimated three to four billion hours (about 2–3 percent of their work time) a year dealing with government—much of it spent queuing up and being shuffled from office to office. Cutting this time commitment by one-third could save the economy up to \$1 billion annually.⁸ Examples of steps in this direction include the following:

- Efforts are under way in Moscow, Chelyabinsk, Yaroslavl, Balashikha, and other cities to automate and integrate registries of personal data to improve government operations and reduce the number of forms residents must fill out concerning, for instance, vital statistics, passports, residence registration, taxes, pensions, welfare services, military conscription, and voter registration. Starting in 1994, all 27 vital-statistics offices in the city of Moscow were automated and put online. Operations of the city's internal passport offices (*passportnye stola*) and residence registries, which are managed at more than 800 service points (including hotels), also have been put online. With more-accurate and up-to-date databases—that include the timely removal of "dead souls" from registries—municipalities are expected to save millions of dollars in unnecessary welfare payments.⁹

⁷ According research by the INDEM Foundation, one of the most common forms of corruption involves side payments to government officials to rig financial transactions, tax transfers, and customs duties (INDEM Foundation, *Russia and Corruption: Who's Who*, Moscow, 1998 [<http://www.indem.ru/indemfond/projects.html>]; in Russian; last accessed September 2005]).

⁸ Russian Federation Ministry of Communications and Informatics, 2003.

⁹ "Dead souls" is a term made popular by the novelist Nikolai Gogol in the mid-1800s that refers to the names of deceased persons kept on government rolls for the purpose of subterfuge.

- In Novosibirsk and other cities, residents can now use electronic and online payment systems to pay public housing and utility bills.¹⁰ Welfare recipients and pensioners in Moscow and elsewhere will reportedly soon receive electronic “smart cards” to pay for utilities, transportation, and other services in lieu of receiving cash and vouchers from various agencies.
- Initiatives to simplify and speed up such tasks as tax declarations, customs clearances, and permit applications are also under way. In Ulyanovsk, the process of registering a business reportedly has been reduced from several weeks to two days.¹¹ Another example is the development of a real-time data processing system to be shared by customs and tax authorities to speed refunds of value-added taxes (assessed at 20 percent) when Russian products are exported. Currently, many exporters eschew the complex process, which entails filling out paper declarations for each shipment and which can take up to 90 days. Consequently, they forgo billions of dollars of working capital due back to them from the federal government, explained Oleg Byakhov, an advisor to the Ministry of Communications.
- By moving tenders online, it is estimated that agencies could reduce their procurement costs by up to 25 percent.¹² In 2001, the Novosibirsk regional government inaugurated an electronic marketplace. The following year, more than 360 suppliers participated in and \$13.5 million goods were purchased using online tenders. Approximately 15 percent of all coal purchases were executed through the system, yielding a \$1 million savings (see Table 4.3).

Web site publishing, as the following examples illustrate, is another means of using IT to enhance front-office operations, promote government openness and accountability, and stimulate investment.

Table 4.3
Selected Government E-Procurements in Novosibirsk Region, 2002

Product	E-Procurement Share of Purchases	Value of E-Procurement Purchases (\$millions)	Cost Reduction	Savings (\$millions)
Coal	36%	\$4.9	15%	\$1.0
Pharmaceuticals	56%	\$7.6	19%	\$4.1

Source: Novosibirsk Chamber of Commerce and Industry, *IT in Novosibirsk City and Region: Conditions and Trends in 2003*, Novosibirsk, August 2003.

¹⁰ The Novosibirsk experience is discussed in detail in Chapter Five.

¹¹ Russian Federation Ministry of Communications and Informatics, 2003.

¹² Russian Federation Ministry of Communications and Informatics, 2003.

- As of July 2003, all federal agencies were required by executive order to publish 40 categories of information online, including laws and regulations, draft legislation, and repealed legislation; information about agency programs, meetings, news conferences, and speeches; and biographical information about officials, including their travel itineraries. The Ministry of Economic Development and Trade already had distinguished itself as having one of the most comprehensive Web sites (<http://www.economy.gov.ru>), which includes economic data and briefings and reports to the government and president. As a result, the Web site has become an important source of information and is often quoted in the press. The ministry's Web site also has job listings, including those for executive positions.¹³

If on a particular day its Web site is not updated, it means that the ministry was not working and did not do anything useful.

—Aleksy Volin, Deputy Chief of Staff, Government Administration¹⁴

- The Duma (parliament) has made progress in presenting its membership, organization, and work since it made its debut on the Internet in 1998 (<http://www.duma.gov.ru>). The opportunity for the public to access draft legislation is a particularly significant development in Russia. Traditionally, legislation has been developed behind closed doors and only becomes subject to scrutiny late in the process when brought up for floor debate. Now, when legislative proposals appear online, policy activists (such as those concerned about welfare benefits, the environment, conscripted personnel, and information technology) have greater opportunity to critique them.
- The Central Elections Commission implemented a nationwide voter registration, candidate registration, vote tabulation, and elections-result reporting tool in 1995. The Russian-made system has sped up the reporting of presidential and parliamentary elections, making the results available on the Elections Commission's Web site (<http://www.cikrf.ru/>) within hours of the polls closing.
- Provincial and municipal governments are getting online with official portals, quasi-official sites, and promotional pages.¹⁵ The Volga Federal District Web site (<http://www.pfo.ru>) is distinguished for its comprehensiveness. Soon, more

¹³ The Ministry of Economic Development and Trade is one of the few federal agencies that hires staff externally and based on merit.

¹⁴ Maksim Trudolyubov, "Everything on Display: The Government Is Exhibiting Itself on the Internet," *Vedomosti*, July 27, 2001.

¹⁵ A comprehensive index of official and unofficial Web sites for regions and municipalities can be found at <http://www.regions.ru:8082/cities/index.html> (in Russian; last accessed August 2005).

information should be available: In 2004, the Ministry of Economic Development introduced legislation extending the federal government’s mandatory disclosure requirements to regional and local governments.

The public seems to welcome improved government transparency. Indeed, the federal government portal at times has been a victim of its success (and insufficient investment in system capacity): When the Kremlin announced an overhaul of the federal government in March 2004, for example, a flood of visitors seeking information about the structure and makeup of the new government caused the site to crash.

A Long Way to Go

Many of the potential benefits of an Information Revolution in government—in terms of performance and accountability—have fallen far short of expectations as a result of both operational and strategic problems in IT implementation. This raises concern about more-nefarious objectives and worrisome results from increasing use of IT in government.

We’ve seen an epidemic of refusals to provide information in the last four years. As soon as Putin came, [officials] all remembered the traditions of the Soviet era. They release information on a whim, and if you say there are laws about this, they don’t care.

—Oleg Panfilov, media advocate¹⁶

Information Hoarding and Secrecy

Despite the stated goal of using information technologies to promote information flows within government and between the government and the public, officials still demonstrate a “cult of secrecy.” Possessing privileged information in Russia is considered tantamount to possessing political and economic power—evoked in the policy term “information resource”—and thus is something to be distributed sparingly.

- A Ministry of Economic Development survey in mid-2003 revealed that an estimated 95 percent of “federal information resources” (understood to include statistical and economic data as well as information about government operations, budgets, and procedures) was designated classified or confidential, or, because of bureaucratic and technical constraints, simply off limits both to the

¹⁶ Catherine A. Fitzpatrick, “A Conversation with Media Activist Oleg Panfilov,” *RFE/RL Media Matters*, August 2, 2004.

public and to other government agencies. “This is an example of real organizational feudalism in the use of information [that disregards] the needs of the greater government or society,” said Tsaren Tsarenov, the ministry’s E-Russia coordinator in 2003.¹⁷ Deputy Minister of Economic Development and Trade Andrey Sharonov two years later observed that the federal government’s register of business enterprises is public information. “But it is impossible to obtain an official version of this database, all the more so through the Internet,” he said.¹⁸ Sharonov did note, however, that pirated copies of the enterprise database, complete with confidential personal information about owners, are easily available “for not much money” on the black market.

- Government agencies are not meeting the established standards of online information availability. A survey by the Ministry of Economic Development indicated that only a few agencies were in compliance with the Putin administration’s online publishing standards. While most federal agencies have Web sites, fewer than a quarter of those examined by the Russian Association of Managers in 2003 posted contact information for department heads. Efforts by journalists to compile an online who’s who of government leaders in 2001–2002 were met with resistance, including accusations of espionage. “We had to fight for every biography of a person in power in the regions,” said a project associate.¹⁹
- To make matters worse, while the government has sought to put some kinds of information online, the Putin administration has become *more* secretive by classifying information on strategic mineral reserves, production, and use; information in Soviet-era archives; and even information about entire cities and regions—dubbed Closed Administrative Territorial Bodies.²⁰

Such trends are not surprising: The president, himself a product of the Soviet KGB, has appointed a huge number of people from the security services to prominent positions in his administration in an effort to build a loyal cadre, instill discipline in government, and implement his more-authoritarian policies. For instance, the head of the Federal Service for Government Communications and Information (FAPSI)—a remnant of the former KGB responsible for the government’s secret communications network, for classifying government information, and for eaves-

¹⁷ Interviews with Tseren Tserenov, Ministry of Economic Development, E-Russia Program Leader, *Interfax*, June 6, 2003, and *CNews.ru*, January 26, 2004.

¹⁸ Vera Sitnina, “Going over to an Electronic Database,” *Vremya Novostei*, March 13, 2005.

¹⁹ Larissa Naumenko, “Strana.ru Takes Pulse of Government Openness,” *Moscow Times*, April 17, 2002. The directory, which included more than 5,400 profiles, is no longer accessible.

²⁰ In November 2003, Putin signed a decree extending provisions of the Law on State Secrets to include strategic minerals, including oil and gas. The list of minerals deemed strategic itself was classified secret, according to a 2002 presidential decree. In March 2005, Putin declassified some information about platinum and diamond production and use.

dropping—was reassigned in 2003 to head the Ministry of IT and Communication’s efforts to coordinate federal government IT programs.

Unresponsiveness

The Internet will become an active instrument of democracy in Russia only when a serious change of thinking occurs among government officials. But this will only occur as a result of persistent and growing pressure from society.

—Yury Nesterov, assistant to the deputy chair of the Duma²¹

Publishing information can be seen as just the first step in the development of e-government. One of the most important potential benefits of e-government is enabling citizens to interact and transact more easily with the government.²² Yet, public officials in Russia typically do not think in terms of “serving the public interest” and having stakeholders or customers, as has become fashionable in the West. Rather, they tend to construe their mandate as upholding “state interests” over the interests of citizens or perhaps advancing their own personal power and economic interests. Accordingly, public scrutiny is typically seen as a threat to these prerogatives. In such an environment, IT and e-government projects that have public components often are not designed to be user-friendly or client-oriented.

- Many routine applications and transactions that could be handled electronically, such as renewing registrations and licenses, are not permitted because, despite the digital signatures law passed in 2002, federal regulations still require physical signatures and seals on documents for authentication. A resistance to electronic transactions also persists in government-to-government business. One explanation for the inability to conduct even routine government business online is bureaucratic inertia. A related reason is officials’ unfamiliarity with IT systems. In 2003, the Pension Fund had to generate a hard-copy list of employer remittances to the social security fund so that the information could be relayed to the State Tax Service. The task required setting up a large cluster of printers, which consumed 15 tons of paper. The Pension Fund’s IT manager later discovered that an acquaintance was engaged by the Tax Service to scan the

²¹ Yury Nesterov, “Institutions of State Power of the Russian Federation on the Internet: Show-Case or Information?” *The Internet and Modern Society*, conference proceedings, St. Petersburg, November 2000 (<http://ims2000.nw.ru/src/TEXT83.HTML>; in Russian; last accessed August 2005).

²² James X. Dempsey, “How E-Government Interacts with Its Citizens,” *Transition*, January–March 2003 (<http://www.worldbank.org/transitionnewsletter/janfebmar03/pgs39-41.htm>; last accessed August 2005).

printouts back into the Tax Service's database.²³ While the law mandating the information exchange allowed electronic data transmission, the Tax Service required a hard copy to ensure that it met its own deadline and tax-collection targets.

- Virtually all government Web sites are hard to navigate, dull, not up to date, and unhelpful. Olga Vendina, a researcher at the Russian Academy of Science's Institute of Geography, found that efforts by district authorities in Moscow to create information portals did not attract much interest because they were not seen as useful or interesting.²⁴ A growing accumulation of old draft laws and concept papers on the Duma site leaves readers confused as to the current state of legislation and government programs. Six months after the Putin administration announced a major reorganization of the federal government, many agency Web sites, such as that of the newly merged Ministry of Science and Education, had yet to be updated. In an early survey of federal and regional Web sites, a government IT specialist criticized many sites for being self-promotional and propagandistic (he labeled them "quasi-official shop windows") instead of being providers of objective information.²⁵ Victoria Kolesnikova of the Social-Ecological Union, an advocacy group, described the Ministry of Atomic Energy's Web site as advertising "how useful and good they are" and "how much money they contribute to the federal budget." Most government sites consist largely of an assemblage of press releases, speeches by the leadership, and official declarations. Such compilations were characterized by Vladimir Artyukhov, an environmental advocate who specializes in online publishing, as "piles of garbage." Professor Tatiana Guseva of the Mendeleev University, in an interview with RAND, characterized the Natural Resources Ministry Web site as providing "pseudo-access to information."
- Online correspondence with government remains daunting. Vendina found that many Moscow city agencies did not post their contact information online. When coordinates are listed, phone calls and e-mails (to the Children of Russia program, for instance) go unanswered or are answered mechanically by unhelpful personnel. Before sending an e-mail to the federal government's office for interaction with the public, one must navigate a page full of rules and warnings and fill out an extensive form with detailed personal information—something most Russian citizens are loath to do.²⁶

²³ Yury Ammosov, personal communication, Moscow, September 2004.

²⁴ Olga Vendina, "The Internet as a Catalyst for the Development of a Civil Society in Moscow," Institute of Geography, Russian Academy of Sciences, mimeo, Moscow, 2003.

²⁵ Nesterov, 2000.

²⁶ See "Submissions to the Government of the Russian Federation" (http://www.government.ru/intserv2/asks/index.html?he_id=458; in Russian; last accessed August 2005).

In short, information technologies have not reduced government officials' tendency to treat ordinary citizens with indifference or contempt. To the contrary, the common perceptions of enhanced two-way communications and accountability enabled by IT only has further highlighted the ineptness and unaccountability of Russia's officialdom.

Corrupt Practices

It's necessary to eliminate conflicting methodological and technological practices among agencies and also efforts of individual bureaucrats to preserve their control over the speed and quality of work when serving [the public], which create opportunities for corruption.

—*Information Director* magazine, on efforts to develop e-government in Russia²⁷

If transparency is the objective, IT projects often threaten bureaucrats' personal interests. Officials reportedly have undermined efforts to develop registries of government property to better manage and oversee the use of public assets—such as the collection of royalties for use of natural resources. Increasing public access to government information reduces officials' ability to extract side payments for privileged access to government data (see the related discussion under “Goskomstat and the Information Revolution”). Electronic government reduces bureaucrats' control over decisionmaking: Individuals knowledgeable about e-procurement in Novosibirsk noted that “human factors” (namely, continued efforts by officials to negotiate the winner beforehand in backroom deals) have created a disincentive for bidders to participate and have reduced potential savings to government. E-procurements by the Ministry of Health allegedly also have been subject to rigging.

On the other hand, for many agencies and officials, IT projects often are seen as an opportunity to create new revenue-generating opportunities, rather than to improve government performance or transparency.

- A 2002 Law on Digital Signatures gave responsibility for control over certifying and licensing technologies for digital signatures and encryption to the communications agency FAPSI. This raised concerns about government monitoring and regulation of online transactions and communications, among others. According to Mikhail Yakushev, a knowledgeable observer of Internet policy, a more important issue was money-making. FAPSI officials saw themselves being sidelined by the emergence of alternative communications technologies, so they

²⁷ Sergey Gladkov, “Municipal Informatization: Dreams and Reality,” *Direktor informatsionnoi sluzhby*, January 2003.

Goskomstat and the Information Revolution

The Russian statistical agency, Goskomstat, epitomizes how secrecy, unresponsiveness, and corruption can undermine efforts to apply information technologies in government. Goskomstat collects an abundance of economic and demographic data of interest to entrepreneurs and investors as well as academics and policy specialists. Yet, the agency's Web site (<http://www.gks.ru>) provides very little data online, and the data posted are not readily downloadable or usable. The Goskomstat Web site offers an abundance of information about itself—news items, structure, and procedures—that arguably is of little interest to those outside the agency. The most interesting data must be purchased offline. In a rare corruption case brought to trial, the former head of Goskomstat was convicted in 2003 for overseeing a scheme involving the sale of confidential commercial information to businesses and government agencies, including the former government communications service FAPSI.

drafted the law and developed a cumbersome technology certification process to ensure their continued control over information flows and a lucrative licensing monopoly. The result is that commercial encryption technologies are not being used and e-government and e-commerce development has been slowed.

- Large IT projects offer lucrative opportunities for officials to extract side payments. While IT industry leaders tout their sector's openness, IT project tenders have a reputation for being let under conditions of secrecy and for resulting in significantly escalated prices.²⁸ Contracts to procure hardware, software, and services by the Computers in Schools program, among others, allegedly have been subject to improprieties. IT budgets "are a nice source of kickbacks," said Yury Ammosov, an IT industry observer. Vladimir Koptev-Dvornikov, a parliamentarian, reiterated this view to RAND.
- Data allegedly pilfered by officials from tax collectors, traffic police, and other authorities periodically show up on Moscow streets. A CD labeled "Incomes of Moscow Individuals in 2003" appeared on the streets in early 2005 for \$200. With information on more than 9 million taxpayers, the database revealed that President Putin declared his 2003 income to be 1,643,700 rubles (about \$57,000 U.S.). In 2003, FAPSI, which had a history of corruption, was broken up and reorganized amid a number of scandals involving the sale of confidential information by agency leaders.²⁹ "It's an open secret that information which

²⁸ Edward Batarshin et al., *IT in Russian Government Agencies 2005*, Moscow: CNews Analytics, 2005.

²⁹ Max Verbitz (pseud.), "New Russia in an Old Trap," *Perspective*, Boston University Institute for the Study of Conflict, Ideology, and Policy, March/April 2004. FAPSI ultimately was not weakened: Most of its functions were returned to its former parent, the FSB (the Federal Security Service, the successor to the KGB), while others went to the Ministry of Defense.

Russians provide to government sooner or later becomes absolutely declassified,” concluded Pradva.ru about the tax data scandal.³⁰

Lack of Coordination

For many years, Russian ministries and agencies have computerized in whatever way they saw fit, creating a plethora of similar databases, incompatible systems, and unconnected networks.

—*Ekspert* magazine³¹

Some of the greatest productivity benefits from IT are derived from networking and sharing information within and between organizations. Yet, according to a 2003 Ministry of Communications survey, an estimated 90 percent of all federal IT-related projects were undertaken without coordination.³²

- The government in Russia still does not have uniform data-collection and management standards, such as those for natural-resource inventories, land surveys, real estate transactions, and vehicle registrations. According to Vladimir Serdyuk, E-Moscow’s deputy general director, the city maintains at least 20 different registries of personal data, including those maintained by the local social security service, tax service, health agencies, and traffic police. The Ministry of Communications survey found that among 41 federal agencies, at least 15 different accounting systems were in use. Consequently, federal authorities are unable to develop a comprehensive picture of IT spending and its effectiveness—not to mention cost-benefit analyses in other areas.
- The nation does not even have uniform, convenient tools for identifying individuals or organizations, such as social security or taxpayer identification numbers. Even within agencies, data-collection and data-management systems are not standardized. When the federal tax service introduced a taxpayer identification number in 2000, it was advertised as a lifetime ID. In fact, the IDs turned out to be a case number filed in a particular tax office: The number must be changed if a taxpayer moves from one tax district to another.
- Russia has no secure integrated data network that allows agencies or different levels of government to exchange information. As agencies develop their own

³⁰ “Russian Oligarchs’ Earnings Become Exposed to the Public Eye,” *Pravda.ru*, May 28, 2005.

³¹ “The Return of Electronic Russia,” *Ekspert*, November 5, 2003.

³² Russian Federation Ministry of Communications and Informatics, 2003.

information systems, they are also setting up proprietary communications networks and security firewalls that impair information sharing.

- Because most federal databases are off-limits to other agencies, municipal and regional governments do not have access to federal databases. Such restrictions thwarted Novosibirsk's effort to better coordinate local vital statistics, residence, and personal ID registries.

Lack of Strategy and Leadership

Detailed analysis indicates that problems [with IT programs] are to a large extent foisted by the lack of an up-to-date government plan for the use of IT in federal agency operations.

—Ministry of Communications³³

Lack of coordination ultimately stems from a lack of a coherent vision of IT in government or a realistic strategy to achieve it. For example:

- Because the integration of information technologies has been seen as a Kremlin-led campaign, there has been a tendency for agencies to throw together ambitious, big-budget IT programs and to attach the prefix “E” to initiatives of all sorts. E-Russia, while awarded the elevated status of a “Federal Targeted Program,” was an amalgamation of initiatives and interests cobbled together without any attempt to establish focused goals or balance costs and benefits. “It’s horrible,” said IBS Chief Executive Officer (CEO) Anatoly Karachinsky of the situation.
- Despite favorable words from the Kremlin, Russia’s e-government has never had a powerful champion. Control over E-Russia from its inception has been contested by the Ministry of Communications (now the Ministry of IT) and the Ministry of Economic Development. A lack of strong leadership has resulted in significant underfunding. E-Russia received only 28 percent of the funds appropriated to the program in 2004, which was up from the less than 20 percent of its appropriated funds it received in 2002 and 2003.
- For most government managers, information technologies are still a novelty. Of 41 federal agencies surveyed in 2003, only 14 reported having a comprehensive IT plan. Eleven agencies still had no IT department. Because IT specialists in the private sector can earn up to four times more than their counterparts in government, most agencies are critically short of know-how.

³³ Russian Federation Ministry of Communications and Informatics, 2003.

- Government managers also are not asking critical questions about how IT will be used to meet agency objectives, discussion participants told RAND. “You will not find any analysis of business processes in the government,” as part of IT projects, said Vladimir Drozhzhinnov, an e-government specialist. This situation led a former official with deep knowledge of IT programs to conclude that information technologies often are approached like “big toys for civil servants.” Because many IT projects lack a focused strategy, they waste a lot of money, said Dmitry Sadkov of IBS. Officials need to ask, said Sadkov, “Why is this being done? and What is the pay-back?”

In Russia’s defense, the absence of an IT vision and strategy in government is a common shortcoming seen in many places around the world. The government’s tentative IT initiatives, and its setbacks, are providing rich learning opportunities. As many RAND-study participants noted, Russia has rich opportunities to learn from decades of experience and missteps in e-government initiatives around the world. This optimistic outlook, however, may be tempered by a darker perspective, which holds that Russian officials have a very clear vision and strategy of how information technologies should be used, but that they are purposefully and deftly acting to restrain public benefits, such as accountability, while advancing their personal objectives, such as extracting payoffs. An even darker, Orwellian view holds that officials are actively using IT to exercise social and political control. The notion of officials using information technologies to assert control is addressed again in the following chapter.

IT in Society

This chapter examines the impact of the Internet—or perhaps more specifically the RuNet, the collection of Russian Web sites—on Russian citizens’ lives and Russian society. In addition to covering the rapid development of public use of the Internet, this chapter explores how the technology is shaping individuals’ private and public lives. The chapter examines the development of online content and e-media; the use of the Internet by individuals and organizations for social, professional, and policy objectives (a key to civil-society development); and the exploitation of the Internet for political objectives. To this last point, the chapter closes with a discussion of the government’s information policy and strategy in the Internet era.

Russians Get Online

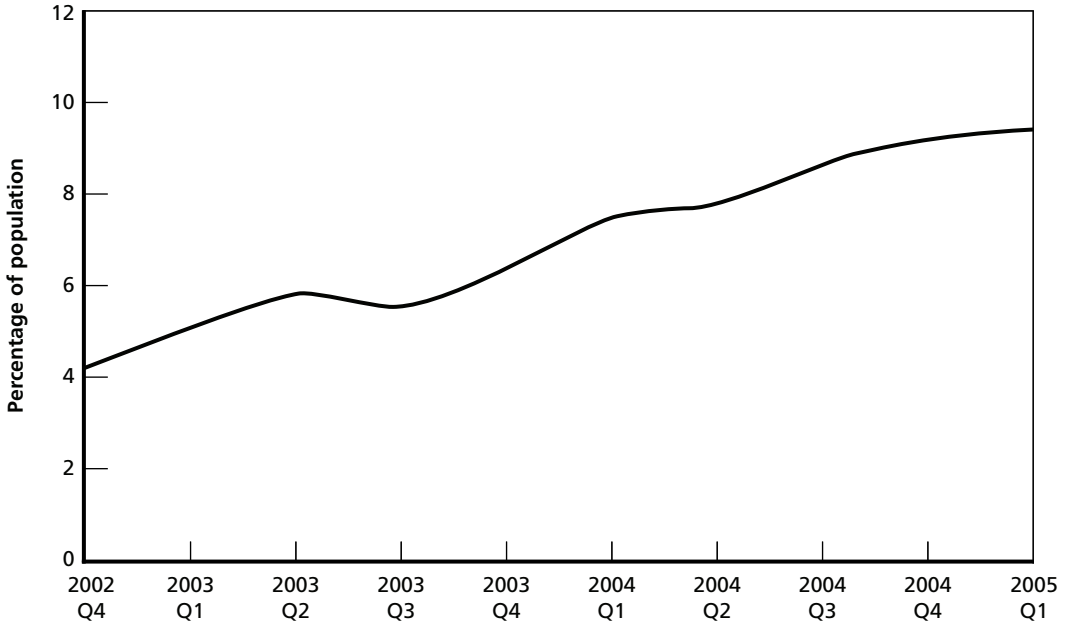
In winter 2005, Russia’s Internet audience—defined as the share of the adult population browsing the Web or using e-mail at least once a week—reached an estimated 10.3 million people, or about 9.4 percent of the adult population.¹ Since 1999, Internet penetration has been rising at about 30–40 percent annually, with a peak of 50 percent growth in 2003, and tapering off to about 25 percent growth in 2004 (see Figure 5.1). The level of activity (e.g., the number of sites visited) has been increasing even faster. Most Internet users report daily or weekly use (see Figure 5.2).

All of these growth trends are the result of several factors:

- The growing number of firms and government offices that have gone online has resulted in more office workers having access to the Internet. In spring 2004,

¹ Estimates of the size of Russia’s Internet audience vary greatly. The Public Opinion Foundation (FOM), which is closely aligned with the government and is widely cited by government officials, uses a liberal definition of “Internet penetration”—use of e-mail or Web browsing at least once in the past six months. Such a definition, however, does not correspond with common notions of Internet use in North America or Western Europe. This report relies on weekly usage data.

Figure 5.1
Growth of Russia’s Adult Internet Audience, 2002–2005



SOURCE: Public Opinion Foundation, *The Internet in Russia Survey*, Issue 10, Moscow, March 22, 2005.

NOTE: Audience is defined as the share of the population over age 18 reporting having used the Internet (including just e-mail) at least once a week.

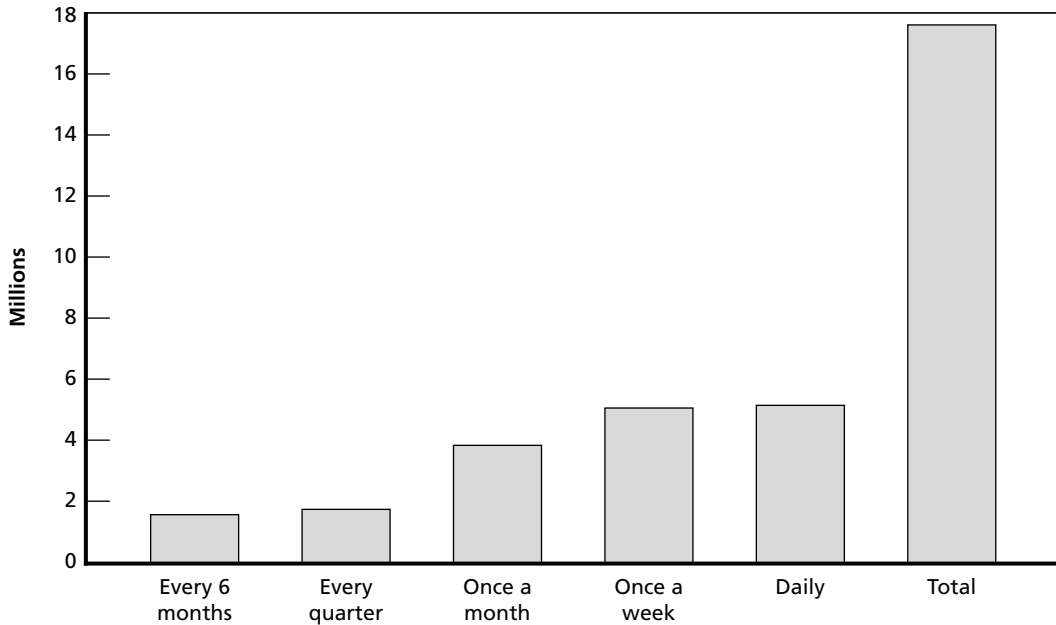
44 percent of Russia’s Internet audience reported that they had accessed the Net at work.²

- Russians increasingly are accessing the Internet at home: Between 2000 and 2004, real disposable incomes rose by more than 60 percent nationwide. At the same time, falling prices for computer hardware, software, and Internet service have brought IT within reach of more Russian households (see the related discussion under “The Cost of Getting Online” later in this chapter). In spring 2004, 41 percent of Russia’s Internet audience reported that they had accessed the Net at home.³
- Internet access and use is rapidly increasing in educational institutions. Between 1996 and 2001, George Soros’s Open Society Institute spent \$100 million to create 33 University Internet Centers across Russia. This effort was bolstered by another \$30 million investment from federal and regional governments to

² Public Opinion Foundation, *The Internet in Russia Survey*, Issue 7, Moscow, June 20, 2004 (<http://bd.fom.ru/>; in Russian; last accessed August 2005).

³ Public Opinion Foundation, 2004.

Figure 5.2
Frequency of Internet Activity by Russian Adults, Winter 2004–2005



SOURCE: Public Opinion Foundation, 2005.

NOTE: Audience is defined as the share of the population over age 18 reporting Internet use, including just e-mail.

support the development of a high-speed satellite- and fiber-optic-based Internet backbone for educational institutions. In 2000, the Putin administration established the goal of having computers and Internet access available in all higher-education institutions by 2005 and in all secondary schools by 2010. As of 2004, the Ministry of Education had purchased more than 160,000 computer workstations and accompanying software, and almost all rural and urban schools in the country had received at least one computer. In 2004 alone, it was expected that more than 10,000 schools would be connected to the Internet.⁴ The computers-in-schools effort has received support from the Federation for Internet Education, a program funded by the Yukos oil company, through which more than 100,000 teachers have received training in how to use IT in their classrooms.⁵ Finally, in 2004, the World Bank approved the first phase of

⁴ For comparison, in the United States, 100 percent of secondary schools and 97 percent of elementary schools had Internet access as of 2000. For more information on the Children of Russia program's computerization efforts, see <http://ccs.mto.ru/> (in Russian; last accessed August 2005).

⁵ Federation for Internet Education (<http://www.fio.ru/>; in Russian; last accessed August 2005).

The Cost of Getting Online

Accessing the Internet in Russia is a more expensive proposition than it is in the United States, but the cost differential has been decreasing in recent years. In 1997, a basic desktop computer purchased in Moscow cost about \$2,200, or 50–70 percent more than in the United States. (A dollar-for-dollar comparison, it should be noted, is not entirely accurate. Russians typically spend a much smaller portion of their incomes on housing, utilities, education, and taxes, freeing up a much larger portion of their earnings for discretionary spending.) By 2003, a basic desktop system cost only \$1,000, thanks to improvements in computer technology. And, by that time the premium for Moscow had narrowed to about 10 percent due to the development of the local consumer market.

Internet access in Russia also is more expensive than it is in the United States, especially when compared in terms of the volume and speed of information transfers. In Moscow, commercial digital subscriber line (DSL) service had cost about \$100 per month for a limited amount of downloads in early 2004. In neighboring Estonia and the United States, unlimited service costs about one-third as much. According to a 2005 International Telecommunication Union report, in 2003, less than 1 percent of all Internet subscribers in Russia had broadband access, compared with 58 percent in Estonia.

In early 2004, dial-up service from Relcom, a major provider, cost \$29 per month for unlimited night-time service, or 90 cents per hour. In many regions, local telephone companies have switched to per-minute billing, increasing the cost of being online. For those without dial-up service nearby, an Internet connection requires a costly long-distance call. Higher connection costs are due in part to the fact that the telecommunications sector remains heavily regulated, which deters investment, and, despite a break-up of the Soviet telephone monopoly, many regional telephone companies have maintained or rebuilt monopolies in their respective service areas.

Prices for Internet service are starting to fall as alternatives to local telephone companies appear. In February 2004, Tochka.ru, a struggling ISP, slashed its price for limited broadband service in Moscow from \$100 to \$29 a month as it sought to recoup its investment in a local fiber optic network. As a result, its sales offices were swamped and its number of subscribers doubled in just a couple of months. Other ISPs then matched this price. Drawing on the example of mobile telephony, it can be expected that such price-cutting will spread to other metropolitan areas of Russia within one to three years.

a \$300 million loan to support teacher training and the development of materials for e-learning. In spring 2004, 15 percent of Russia's Internet audience reported that they had accessed the Net at school.⁶ About 44 percent of Internet users were under 25 years of age.⁷ "It's already possible to see the results of favorable government policy," concluded Ivan Zassursky of the Rambler Fund for Social Initiatives in 2004.⁸

⁶ Public Opinion Foundation, 2004.

⁷ COMCON, *User-Share of Internet Resources, Fourth Quarter 2003*, Moscow, November 2003.

⁸ Zassursky, Ivan, *Economics of Attention: The Internet in Russia in 2004*, Rambler Foundation for Research and Social Initiatives, Moscow, January 2005.

Russia's Internet audience is likely to grow rapidly in the future, if, as expected, economic growth, investment in telecommunications, and rising personal incomes continue, and more students (and, inter alia, their parents) get exposure to IT in schools.

Digital Divides

Despite efforts to promote Internet access, use, and training, Russia faces several "digital divides." One divide is regional in nature. As already noted, about one-quarter of Moscow's adult population in spring 2004 used the Internet on a regular (at least weekly) basis. In the Northwest Federal District, which includes Russia's second-largest city, St. Petersburg, penetration was 11 percent. For the rest of the country, average weekly Internet penetration rates were in the range of just 4.5 to 6.7 percent (see Figure 5.1).⁹ Because of an improved IT infrastructure and expanded broadband access, Moscow and St. Petersburg accounted for almost one-half of Russia's total Internet traffic in December 2003.¹⁰ The discrepancy in penetration and use is significant: At more than 20 percent penetration, the Internet is considered to be a mass medium by commercial service and content providers, and the Internet starts to become an important element of people's lives, leading them to watch less TV and to read fewer newspapers.¹¹

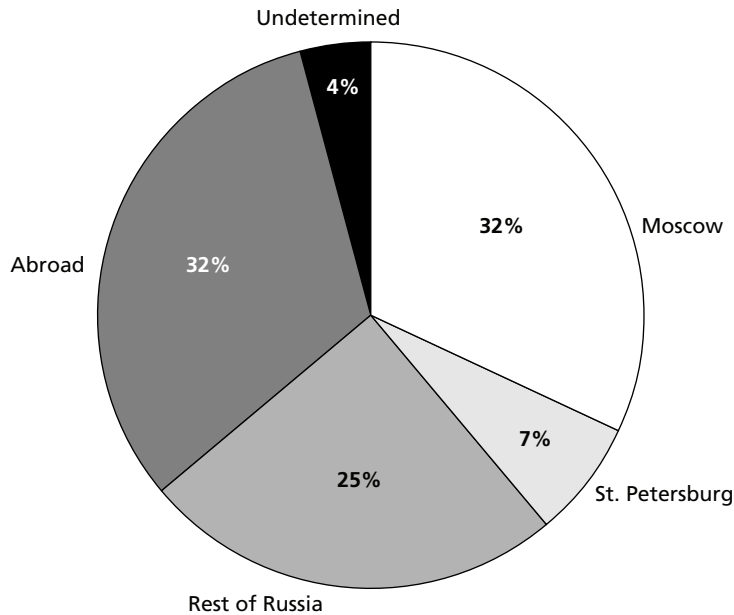
Moscow's distinctive position can be attributed to several factors. As Russia's governmental, business, educational, and cultural capital, the city has the most extensive and reliable communications infrastructure and the most competitive communications markets. IT costs are higher (by about 15–20 percent in the case of computer hardware), and consumers' disposable incomes are significantly lower, in Russia's regions than in the capital. Muscovites generally have more opportunities to access the Internet from their place of work because the banking and services industries, as well as government and most corporate headquarters, are concentrated in the capital. Of note, the gap in penetration rates between Moscow and the other federal districts grew slightly in the 2002–2004 period, perhaps as a result of government investment in IT systems. Because of these factors, users in Moscow accounted for one-third of all RuNet traffic—a share equal to the rest of Russia combined (see Figure 5.3). In the future, however, the difference between Moscow and the provincial centers in

⁹ Public Opinion Foundation, 2004.

¹⁰ Boris Ovchinnikov, *Russian Internet Market Watch*, Moscow: J'son & Partners, March 2004. In December 2003, the ratio of dial-up to broadband users was 55 to 45.

¹¹ Tobias Dengel, Vice President, Business Affairs & Development, America Online, "Russia in the Internet Age: Balancing Freedom and Regulation," presentation at IREX Conference, Moscow, February 2002.

Figure 5.3
Geographic Origin of RuNet Traffic, 2004



SOURCE: Zassursky 2005.

their Internet traffic is likely to narrow: Economic recovery and growth in recent years has become more broadly based, and provincial centers have seen declining hardware prices combined with improved communications services—duplicating a trend also seen in mobile-telephone penetration rates.

A more pronounced and likely enduring disparity in Internet access is that between urban and rural areas. According to data collected by the Rambler Foundation for Research and Social Initiatives in 2002, Internet penetration in the city of St. Petersburg was 7.6 percent versus just 0.2 percent in the adjacent Leningrad region. For the city of Moscow and the adjacent Moscow region, the figures were 21.7 percent and 1.0 percent, respectively.¹² Again, lower personal incomes are a factor but probably as important is the lack of telecommunications infrastructure outside of urban areas. Russia is the world's largest country, and it has one of the lowest population densities, creating a particularly acute "last mile problem," defined as the prohibitive cost of extending communications infrastructure to far-flung homes and businesses. Despite a sharp increase in the number of lines installed in recent years, about two-thirds of all residences in Russia still did not have a telephone in 2004, and those that

¹² Ivan Zassursky, "Collective Consciousness: The Internet in Russia in 2003," mimeo, Rambler Foundation for Research and Social Initiatives, Moscow, April 2003.

did often suffered from poor connections. Tens of thousands of outlying villages and settlements—so-called “deaf places”—have no communications infrastructure and are unlikely to get any in the foreseeable future.¹³

We will get lower [IT] penetration rates than in Western Europe.

—IT services company executive

Finally, there is a disparity in Internet penetration and, perhaps more important, a disparity in usage patterns between Russia and other countries with which it is often compared. In spring 2004, the Internet penetration rate in Russia was much lower than the rate in Northern and Southern Europe, and the Russian rate seemed to be plateauing (see Figure 5.4). Because of the high cost of Internet connections, metered service, slower connection speeds, and frequent interruptions, Internet sessions in Russian tend to be brief and businesslike. Russian users log on to download and upload e-mail and quickly gather whatever information they need. This disparity in Internet usage between Russia and the rest of the West is likely to persist given Russia’s undeveloped infrastructure and lower economic status. Despite improvements in personal income, by 2005, average per capita consumption in Russia will still be less than \$2,000 (about \$4,000 for the top quintile of the population), compared with \$12,000 of average per capita consumption in Spain in 2000.

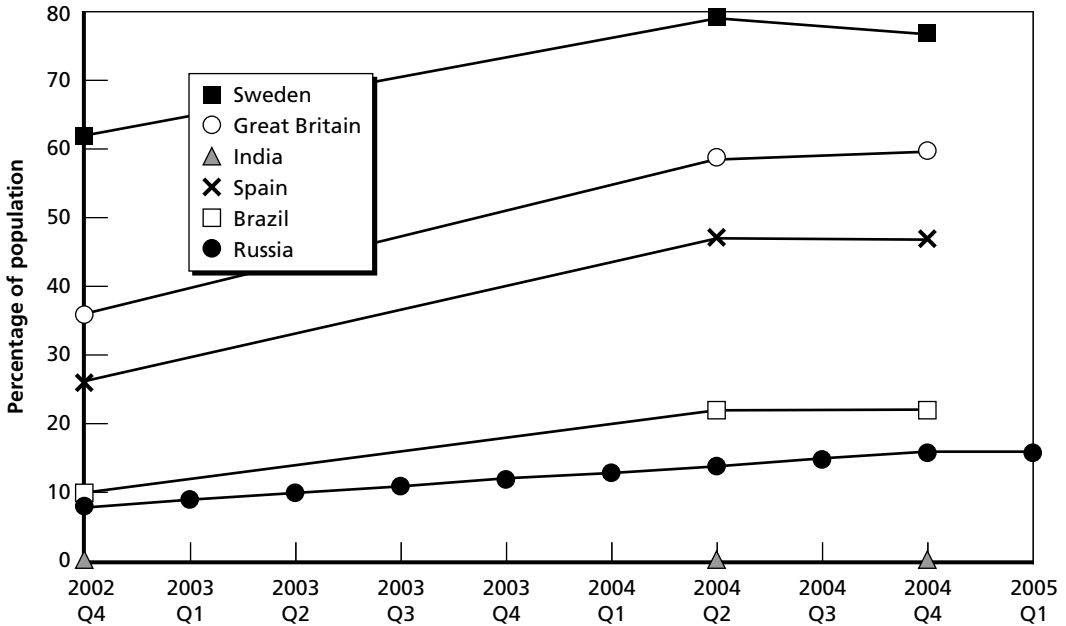
How Citizens Use the Internet

While Internet penetration rates in Russia are still relatively low, this does not mean that the RuNet is underdeveloped. The size of Russia’s Internet population is on par with that of Spain and is significantly larger than that of Australia, the Netherlands, or Sweden. Consequently, the number of sites and the volume of material available on the Internet in Russian that is designed for Russians are appreciable, and the number of sites is growing rapidly. In November 2004, Rambler counted 130,000 active Web sites on the RuNet, up from 106,700 in late 2003.¹⁴

¹³ Technology solutions that may eventually bring the Information Revolution to remote areas of Russia include wireless networks, satellite systems, and data transmission over electric power lines, but these options are likely to take many years to become a reality, given the low population densities in rural Russia.

¹⁴ Zassursky, 2005. An active site is one that attracts at least one hit per week.

Figure 5.4
Internet Audience by Nation



NOTE: Audience includes people reporting Internet use (including just e-mail) at least once in the past six months. Data for Russia include users over age 18; data for other countries include users over age 16. Other-country data are from Nielsen/NetRatings, cited by Public Opinion Foundation (2005).

As consumers, Russian citizens everywhere are using the Internet for market research—on mobile phones and service plans; electronics and software; and, increasingly, insurance. In Moscow, where an estimated 1.5 million people used the Internet on a daily basis in 2004, the most popular Web categories tracked by Rambler are business and professional, goods and services, finance, real estate, legal, and construction and building materials.¹⁵ In St. Petersburg, employment sites are most popular. In the provinces, weather and local community sites attract the most traffic. Education sites are also popular, suggesting that the Internet is helping the provinces overcome a lack of access to libraries and other information resources.¹⁶ Nationwide, sites related to art, health, and travel are popular with women. For managers, financial analysts, and journalists, the Internet has become a critical research tool. As such, Web search engines and information portals rank among the most popular sites (see Table 5.1).

¹⁵ Zassursky, 2005.

¹⁶ By far, the most popular sites classified under “education” by Rambler are those offering term papers for downloading, suggesting that educational opportunities offered by the Internet are not all that they might seem at first glance.

Because Russia's Internet users tend to be significantly younger, better educated, and wealthier than the general populace, they can be characterized by what Yelena Koneva, a leading market researcher, described in comments to RAND as an inquisitive state of mind or an "open eyes mentality."¹⁷ Accordingly, the Internet serves as an important channel for "monitoring" current events. The "mass media/periodicals" category tracked by Rambler consistently has been the most popular, accounting for about 15 percent of all hits on the RuNet. Since the break-up of the USSR, regional and local media have risen in popularity, and this phenomenon extends to the Internet, too. For example, Novosibirsk's Internet users rely heavily on local information and media sites to keep track of news and events (see Table 5.2).¹⁸

Table 5.1
Top 20 Internet Sites Accessed from Users' Homes, November 2003

Rank	Site	Principle Service
1	Yandex.ru	Portal/search engine
2	Rambler.ru	Portal/search engine
3	Mail.ru	E-mail service/portal
4	Referat.ru	Student term papers
5	Russia On-Line (www.rol.ru)	Internet service provider
6	Google.com	Search engine
7	Yahoo.com	Portal/search engine
8	Automobiles in Russia (www.auto.ru)	Automobile portal
9	Anekdot.ru	Humor
10	Gazeta.ru	News
11	RosBusinessConsulting (www.rbc.ru)	Business news
12	Lenta.ru	News
13	Fomenko.ru	Pornography
14	Sotovik.ru	Mobile phones
15	Download.ru	Free and pirated software
16	Maxim Moshkov Library (www.lib.ru)	Literary anthology
17	Job.ru	Employment
18	Sport-Ekspress.ru	Sports
19	Freesoft.ru	Free and pirated software
20	Altavista.com	Search engine

NOTE: Users are individuals age 16 and older who access the Internet at least once every three months.
SOURCE: COMCON, 2003.

¹⁷ Unless otherwise noted, the sources for the direct quotes and personal comments in this chapter are the discussions and interviews that RAND conducted with Russian IT stakeholders in January 2003 to November 2004 in Moscow.

¹⁸ One potential driver of this trend is the fact that Web sites from distant servers take longer to load in browsers in Novosibirsk.

Table 5.2
Most-Popular Internet Sites Among Novosibirsk Internet Users, 2003

Site	Type	Share of Internet Users (%)
Novosibirsk City site	Local portal	83
Doska obyavleny	Local bulletin board	64
Novosibirsk.ru	Local portal	48
Vecherny Novosibirsk	Local newspaper	33
Komsomolskaya Pravda v Novosibirske	Local version of national newspaper	23
Kommersant	National newspaper	21
Vedomosti	National newspaper	14
Sovetskaya Sibir	Regional newspaper	4
Computerra	IT news	2
Rossiiskaya gazeta	National newspaper	1
Sport-ekspress	National sports newspaper	1

SOURCE: Novosibirsk Chamber of Commerce and Industry, *IT in Novosibirsk City and Region: Conditions and Trends in 2003*, Novosibirsk, August 2003.

The Internet has provided a lifeline for many of Russia's venerable literary journals, which were a must-read for the Soviet intelligentsia. In the post-Soviet era, virtually all of these periodicals had fallen onto hard times given the escalating costs of production and distribution. Now, online publishing is allowing many journals—such as *Neva*, *Novy Mir*, and *Nash Sovremennik*—to reach younger audiences, readers in the provinces, and Russian speakers abroad.¹⁹

The Internet has played a particularly important role in times of crisis and during other major news events. A critical point in the development of the Internet was the August 1998 financial crisis: As the ruble went into a freefall, RosBusiness Consulting, which published real-time currency data, was overwhelmed with visitors seeking up-to-date information. Subsequently, Internet penetration and traffic have peaked and set records in Russia during major news events such as the fire in the Ostankino TV tower in August 2000; the September 11, 2001, terrorist attacks in the United States; the *Nord-Ost* theater guerrilla attack and hostage crisis in October 2002; the war in Iraq in early 2003; parliamentary and presidential elections in late 2003 and early 2004; and the school hostage crisis and massacre in Beslan in September 2004. During the Beslan incident, the number of unique daily users monitored by Rambler peaked at more than 4.1 million, and the percentage of online traffic going to news media sites more than doubled to 35 percent: In other words, one-third of all RuNet users were viewing online media. Moreover, the number of daily

¹⁹ Paul Goble, "Window on Eurasia: How the Internet Is Saving Russia's 'Thick' Journals," *Johnson's Russia List*, No. 9148, May 13, 2005. Access to a number of journals is available at *The Journal Room* (<http://magazines.russ.ru>; in Russian; last accessed August 2005).

visits to media sites per computer increased from an average of eight visits to 12.²⁰ After each peak event, Internet penetration and activity have tapered but have remained at a higher level than they were before the event, indicating that each major news event introduced more people to the value of having this alternative source of information.

For those with online access, the Internet appears to have emerged as an important source of supplementary or alternative news and information, especially when traditional information channels are seen as inadequate. For example, while Russian television carried live and graphic coverage of the World Trade Center, *Nord-Ost*, and Beslan terrorist incidents, Russians nonetheless flocked to Internet media in record numbers—apparently to get information “behind” the images and messages conveyed by state television. By about mid-2003, the average daily traffic to mainstream media sites (and to a lesser extent, to online-only media sites) peaked at about a half-million viewers each. However, second-tier news sites such as *Utro.ru*, *Dni.ru*, *Grani.ru*, and *Strana.ru* have grown in popularity.²¹

Online access offers Russian citizens not only the RuNet, but also the unlimited information space of the global Internet. Google, Yahoo, and Altavista (U.S.-based, English-language portals and search engines) ranked among the 20 most-popular sites in late 2003. The Russian-language sites of the BBC and Radio Liberty garnered more than a million hits in one month in mid-2004. That said, Russian Internet users tend to rely on domestic Web resources. One reason is the language barrier. The number of English-speakers in Russia is increasing quickly: English-language classes are now mandatory starting in the fifth grade, but instruction often is poor. At the same time, only a handful of international resources publish in Russian.²² Language, therefore, remains a significant barrier when it comes to complex information-gathering. Second, the RuNet is sufficiently comprehensive and reliable that Russian citizens are not compelled to look elsewhere for information. “We don’t feel like we are missing anything,” asserted Internet analyst Yury Ammosov. A third reason is a preference for domestic sources. In a September-October 2003 poll, only 8 percent of respondents reported that they accessed foreign media at all.²³

Conversely, the Internet has become a critical channel helping the Russian diaspora (and other interested individuals) remain in touch with their homeland. On average, one-third of visitors to RuNet sites monitored by Rambler in mid-2004 came from abroad (see Figure 5.3). During the contested presidential elections in Ukraine

²⁰ Zassursky, 2005.

²¹ Zassursky, 2005.

²² The BBC and Radio Liberty are notable exceptions in that they produce content in Russian. Foreign search engines work with Russian words and syntax.

²³ “Russia: Survey Reveals Highly Competitive, TV-Dominated, Media Market,” *BBC Monitoring Research*, July 7, 2004. This figure includes all media consumers regardless of whether they used the Internet.

in November 2004, RuNet traffic from Ukraine was particularly heavy, suggesting great interest in Russian coverage and views of the political drama. Emigrants from Russia tend to gravitate towards data-intensive sites for music, radio, movies, and photos. News and cultural sites are more popular with Russia citizens who are abroad temporarily.²⁴ Judging by their content, regional and local portals and their chat rooms are becoming important means for diaspora Russians to keep in touch with their hometown communities.

While consumer-oriented e-commerce has been slow to get off the ground, Russian consumers are highly adept at exploiting free goods and services on the Internet. Free e-mail servers—both Russian and international—have become a major driver of Internet penetration and use. As was seen in Table 5.1, among popular RuNet sites are those that offer pirated software and games and “crackers”—programs that break copy-protected and use-protected software. Referat.ru, a site containing thousands of student term papers, has surged in popularity and is especially popular in autumn and spring. Sites for sharing music and movie files have steadily grown in popularity, a trend that is likely to continue as more Russians get broadband access. The Moshkov Library is a strikingly low-tech but massive anthology of Russian and foreign literature that dates to 1994. While the site carries some original material, most of its content is published and copyrighted material. All of these sites depend on contributions from the public.

The Internet and Civil Society Development

In addition to gathering information and for entertaining themselves, Russian citizens are using the Internet as a virtual discussion and meeting place. Scanning the RuNet, one can find many opportunities for individuals to join real-time discussions about current events, professional development, hobbies, and consumer goods or to just chat and make acquaintances. Popular political and social themes at discussion sites include Moscow and Russia’s provinces, Russian-Ukrainian relations, and religion. In comments to RAND, Internet analysts Boris Ovchinnikov and Yury Ammosov reported that some Web sites have spawned online communities that are significant for the substance of their content. Examples include the following:

- Polit.ru, an early news site with a forum for discussing its articles, developed a following of readers engaged in discussion of current events. All major news sites now offer similar forums.

²⁴ Zassursky, 2005.

- Sites such Sotovik.ru (mobile phone industry and consumer reports), VIF.ru (military affairs and current politics), and Kuraev.ru (religion) count several thousand registered members each.²⁵ Auto.ru members contribute travel advice and amusing travelogues from their road trips.
- An online forum devoted to marketing (<http://forum.gfk.ru>) enables communications professionals from competing firms to share knowledge and ideas in a discrete manner, and it has spawned offline meetings for socializing and networking.
- Blogging (a blend of news and personal journaling) also has emerged. Subscribers to Livejournal.com grew rapidly in 2001–2003, reaching close to 10,000 members. Because members are recruited by invitation only, Livejournal became a club-type community, with many well-known members from the media and marketing fields. News items raised and discussed in Livejournal now spill over into Russia's mainstream media. Occasionally, members prepare articles with help from the blogging community in an "open source" fashion.

Developing the IT capabilities of NGOs was an early priority of international funding and technical assistance from the European Union's TACIS program, the U.S. Agency for International Development, the Association for Progressive Communications, the Eurasia Foundation, and a number of other NGOs. Since the first 50 e-mail accounts for NGOs were set up in 1990, a variety of IT strategies have been used by social and advocacy organizations for communications, organizing, outreach, and mobilizing constituents.²⁶ Activists in the areas of human rights, women's issues, the environment, and information and media policy have been the most active users, and they have the greatest RuNet presence—largely due to substantial support from the international community (see the related discussion under "IT in the Environmental Movement").

Four Internet ventures illustrate the variety of ways that IT is being used and is serving as a catalyst for the development of a civil society in Russia.

- The Caucasian Knot (<http://kavkaz.memo.ru>) is a site devoted to news and information on Russia's troubled southern tier and beyond—including Chechnya, Dagestan, Ingushetia, South Ossetia, and Abkhazia. Produced by Memorial, Russia's leading human rights group, each day the site relays up to 100 news

²⁵ The number of regular participants in these forums is likely to be much smaller.

²⁶ For more on the use of information technologies by grassroots activists and civic groups across Eurasia, see The Institute for Social Action and Renewal in Eurasia, *Give & Take*, Fall/Winter 1999/2000 (<http://www.isar.org/pubs/GT/GT2-4.pdf>; last accessed September 2005). Catalogs of NGO sites and Web resources for NGOs can be found at <http://www.ngo.ru> (in Russian; last accessed August 2005).

IT in the Environmental Movement

Environmental advocates were among the first and remain some of the most active users of information technologies in Russia's emerging civil society. According to Yevgeny Shvarts, a leader in the nature conservation movement, "The Internet helps us overcome huge gaps in development." E-mail has helped to mobilize activists in the West on issues in Russia. One example is a letter-writing campaign by Sakhalin Environmental Watch, a grassroots organization, against the activities of the Sakhalin Energy oil and gas development in the Sea of Okhotsk. By applying pressure in firms' home countries, local grassroots environmentalists can overcome their geographic isolation and small numbers to effect changes in corporate and government policies.

Victoria Kolesnikova of the Social-Ecological Union (SEU) said that e-mail and the Internet have become "one of the main tools for getting information," especially in regions without well-developed and independent media. The SEU maintains an online "Eco-port," which is updated daily and which carries a news digest targeted at journalists. It has become a trusted source of information on such topics as nuclear and food safety. Shvarts concurred, he said, adding that that when an environmentalist or other interested person gets Internet access, he or she immediately becomes a member of a knowledgeable and powerful global community. To this end, Biodat.ru is a nature-conservation Web site for specialists, students, and the media, which is run by a group of ten volunteers. The site seeks to overcome Russia's historical information deficit and the high costs of scientific publications by using an "open source" model that encourages specialists to generate and share information and knowledge.

For Valery Menshikov of the Center for Russian Environmental Policy, IT has facilitated collaboration between advocates in Moscow and those in the regions. Sixty-four specialists from all over the country collaborated via e-mail to produce an authoritative report detailing the "violation of citizens' environmental rights." Communications with government, such as comments on draft laws, are all handled by e-mail. While the journalist Gregory Pasko was jailed in the Far East for his documentation of radioactive waste problems in the navy, the SEU and others spurred a letter-writing campaign and demonstrations on his behalf in cities around the country. (After a long detention, criminal investigation, and trial, Pasko was exonerated.) Perhaps the most notable instance of mass mobilization on a policy issue occurred in 2000 when activists used e-mail to organize a petition calling for a national referendum opposing the Putin administration's efforts to lift a federal ban on import of nuclear waste. They needed two million signatures to trigger a vote. They gathered more than 2.5 million signatures in what was Russia's first nationwide citizen-driven political campaign. (The regime, through the Central Election Commission, found ways to invalidate 600,000 signatures—just enough to get the referendum petition on nuclear waste imports dismissed.)

While he argued that the advent of IT represented a "revolution" for the environmental community, Vladimir Zakharov, also of the Center for Russian Environmental Policy, added that, in many ways, "nothing has changed." While the Ministry of Natural Resources maintains an elaborate Web site that solicits public input, in reality the agency is effectively closed to outside input. And, despite a much more open information environment, many of the environmentalists' most important accomplishments since the late 1980s—creating new nature reserves, shutting down nuclear facilities, and the establishment of an independent environmental protection agency—have been reversed.

items compiled from its network of local correspondents and from other news organizations. Also available are ethnographic, geographic, and historical data; newsmaker profiles; official documents; book reviews; and political and policy analysis. According to Caucasian Knot Director Grigory Shvedov, his objective is to provide an alternative to the official media and “information wars” by offering balanced and constructive perspectives. Shvedov also produces a hard-copy digest of the Web site to broaden its reach.

- In 2002, the Civic Club for the Advancement of Civil Society Institutions, a Moscow-based political think tank, launched GlobalRus.ru to advocate a free market, civil libertarian, and pro-Russian policy agenda. Globalrus recruited a core team of young staff writers, most of whom had experience in political campaigns and the media and who could write knowledgeably and creatively on policy issues. Despite its very low budget and lack of advertising, the Web site’s ideological consistency, political independence, interactivity (it accepted unsolicited submissions), and informal style soon earned it an estimated 10,000–15,000 readers per day, putting it on par with *Izvestiya*, *Gazeta.ru*, and RBC. In turn, the Web site became regular reading among Russian political elites, and its policy proposals often made it into official discourse, including pronouncements by President Putin.
- According to Russian researcher Olga Vendina, the Internet itself has been a catalyst for civil-society development in Moscow.²⁷ Although the capital has a good high-speed data infrastructure, the development of a residential broadband market has been slow due to bureaucratic barriers and the high cost of connections and service. In the mid-1990s, IT enthusiasts started tapping into data lines passing through neighborhoods to hook their apartments and those of their neighbors into the Internet. As these “home networks” grew, they formed cooperatives and businesses that charged modest fees to cover operating expenses and technical support. In 2002, 320 such organizations served more than 30,000 clients. Many have created associations, merged with local NGOs, and evolved into commercial Internet service providers that cover entire districts and have thousands of customers.²⁸
- Sem40.ru, a commercial venture, is Russia’s most popular site serving the Jewish community. Founded in 2001, the site is visited by 16,000 people a day, approximately 60 percent of whom are from abroad. The site offers many services, including news from around the world, chat, and online dating. According to

²⁷ Olga Vendina, “The Internet as a Catalyst for the Development of a Civil Society in Moscow,” mimeo, Moscow, 2003.

²⁸ Examples of the home networks that Vendina (2003) studied include Northnet (<http://www.northnet.ru>), with 1,500 subscribers in 2002, and Hamovniki Network (<http://www.hamovniki.net>), which had just 14 members in 2002. Both have since upgraded their offerings and enlarged their service areas.

its founder and editor Boris Giller, Sem40.ru's most important function is connecting people. The site helps émigrés reconnect with friends from home. Youths use the Internet to network, create groups, and arrange meetings at school, camp, or in cafes. On the other hand, the anonymity of the site facilitates virtual meetings and information-sharing among the large segment of the community that, for various reasons, shies away from outward displays of their Jewish identity.

The fact that quickly increasing numbers of Russian citizens have access to these admittedly modest fragments of civil society is a testament to the great strides the country has taken since the Soviet era, when the state dominated all aspects of social life, and private communications were limited to tight-knit circles of family and friends.

Political Activity on the Internet

While the Internet often is associated with progressive civil-society objectives, such as promoting transparency and democracy, the RuNet, reflecting Russia's current political culture, also is an avenue for less-ethical and reactionary objectives. Political discourse and activism on the RuNet as it concerns Russia's social elite is dominated by scandal-mongering, observed Yury Ammosov. Starting in late 1999, a number of popular sites emerged that specialized in *kompromat* (compromising materials) and "information laundering"—posting rumors or gossip, which then would be picked up by the mainstream broadcast and print media as legitimate stories. The first and probably the most notorious example of online *kompromat* was an anonymous site, Kogot (Claw), which published transcripts of intercepted mobile conversations of leading politicians and businesspeople. The Web site was temporarily shut down by the authorities, but this only contributed to the popularity of the information published there. Kompromat.ru, whose motto is "All the trash in one hut," publishes negative information about elites obtained from the media and informal sources. The site's owner apparently makes a living by publishing or withholding material for a fee, and he has defended himself against lawsuits arguing that Kompromat.ru is merely an archive and not subject to rules governing media and online publications.²⁹

Internet freedom in Russia extends to countless Web sites purveying hate, violence, and extremist thought from both the left and the right. When Interfax, one of

²⁹ In similar circumstances, in 2002, compact disks containing individuals' telephone numbers, addresses, and driver's license information from the database of the Ministry of Interior and the traffic police database began appearing for sale on Moscow's streets.

Russia's most reputable news agencies, reported in October 2003 that Mikhail Khodorkovsky, a Russian Jewish businessman and one of the wealthiest men in the world, had been arrested, the first contribution to the site's discussion forum was an aggressively anti-Semitic celebration of the event. Religious sites often broadcast messages fomenting intolerance and xenophobia.³⁰ While the global Internet is similarly afflicted, anecdotal evidence suggests that the prevalence and visibility of "hate" messages are significantly greater on the RuNet. According to the Center for the Analysis of Conflict Situations, as of 2003 more than 900 Russian-language Web sites advocated hate, while the number of such sites in England and the United States numbered 1,000 and 1,400, respectively.³¹ The Internet has served as a particularly powerful tool for appealing to idle and disaffected youths who often spend their days in Internet cafes playing violent online games. The first political party on the Russian Internet was the National Bolshevik Party (www.nbp-info.ru), a leftist-nationalist group consisting mostly of teenagers who engage in pranks and spectacles-often with an extremist bent.

The RuNet also is a marketplace for more-mainstream political ideas, parties, factions, and causes. Social democratic and free-market-oriented parties, such as the Union of Right Forces (<http://www.sps.ru>) and Yabloko (<http://www.yabloko.ru>), and their leaders have sought to use the RuNet for political communications. One reason for this development, according to polling data, is that Internet users overwhelmingly support these parties compared with the Communist Party and pro-Putin parties, and the medium is seen as a good way for liberals to connect with their base of support. The Internet also is seen by public relations specialists as a valuable tool for communications, especially since they have increasingly been denied TV, radio, and newspaper coverage for their clients as the media have grown more monolithic under Putin.

Boris Nemtsov, a well-known liberal politician and cofounder of the Union of Rightist Forces party, was one of the first to develop a personal Web site for public relations purposes, which quickly set "attendance records" for the RuNet in early 1998. According to Alexei Chadaev, the developer of Nemtsov.ru, the site was very low-cost, but it sought to build an audience by providing exclusive information on political and governmental affairs based on the politician's insider status. The site also represented the first limited attempt at using the Internet as a two-way communication tool between a politician and his supporters from around the country. During the 1999 parliamentary campaign, the Union of Right Forces used the Inter-

³⁰ Nikolai Mitrokhin, "The Internet: A Hunting Ground for Missionaries or a Zone for Interfaith Conflict," in Ilya Semenov, ed., *The Internet and Russian Society*, Moscow: Moscow Carnegie Center, 2002 (<http://pubs.carnegie.ru/books/2002/08is/>; in Russian; last accessed September 2005).

³¹ Natalia Konygina, "Tolerance.ru," *Izvestiya*, February 3, 2004 (<http://main.izvestia.ru/community/03-02-04/article43832>; in Russian; last accessed August 2005).

net to recruit several thousand members to create “support groups” and to staff regional SPS offices in Central Russia and Western Siberia. A number of those Internet responders eventually became politicians in their own right. In 1999, Sergey Kiriienko, another Union of Right Forces founder, actively used the Internet to promote his candidacy for the Moscow mayoralty against incumbent Yury Luzhkov, who enjoyed wide popularity and dominated the local mass media. Meanwhile, another opposition group, Moscow Alternative, created an amusing Web site (<http://www.msk.ru>) with an address similar to that of the city government and encouraged citizens to complain about shortcomings in city services and in their quality of life. Despite an offline media blockade, Kirienko was able to garner 11 percent of the vote, which Vendina attributed to the Internet and the mobilization of its young demographic, in particular. “Considering the starting point, this was a huge success,” she concluded.³²

In the run-up to the 2003–2004 parliamentary and presidential elections, initial expectations were that the Internet would play a more important role. While the Kremlin had tightened its control of national broadcast media and had imposed strict regulations on political coverage, the Internet remained largely independent and unregulated. Given this situation, the Internet initially was viewed as a natural outlet for opposition parties to air their news and to promote their causes.³³ In contrast with general public opinion, online straw polls strongly favored the Union of Right Forces and Yabloko; so, the Internet in theory could be used to shore up their base of support. For the Communists, the Internet also was seen as way of reaching new voters. “We have to look to other methods” of communication, said Gennady Zyuganov, the party’s leader. “The main thing we need funding for is the Internet.”³⁴ The Communist Party revamped its Web site (<http://www.kprf.ru>) to include more-detailed information about its platform and activities. The party also devoted scarce resources to building its IT capabilities to enable the party headquarters in Moscow to better coordinate the activities of organizations and activists in the provinces—where its principal base of support is located.

³² Vendina, 2003.

³³ In spring 2003, for example, the Central Election Commission issued a rule barring the media from carrying news stories or photos of a candidate without his consent. Many such regulations did not extend to the Internet or to many Internet outlets.

³⁴ Simon Saradzhan and Larisa Naumenko, “Campaign Kicks Off with Online Tricks,” *Moscow News*, April 21, 2003.

Downloading pictures? Vote Sunday! Or Monday you will be unloading rail cars.

—SPS online political ad

Despite expectations of active political campaigning on the RuNet, the medium did not play a prominent role. A comparison of citations in major broadcast, print, and online media in July 2003 revealed no significant difference in the number of times the various parties or political topics were mentioned, suggesting that parties were not tailoring a message for the online audience.³⁵ In addition, liberal-party Web sites seemed less engaging than they had been four years earlier, and they did not feature opportunities to interact with politicians. Political advertising online, too, was light all around. The Internet was used to a limited extent for political advertising, spamming, and “black PR.” In contrast with earlier campaigns, the conservative and nationalist Motherland bloc did try to use the Internet to demonstrate that the bloc was up-to-date, said Boris Ovchinnikov. In general, however, the Internet seemed to be subject to the leadership’s strategy of creating a “managed democracy” by fostering a sense of the inevitability of United Russia and President Putin’s victories and of discouraging meaningful political activity of any type.

During the campaign, the share of RuNet traffic to political sites monitored by Rambler remained unchanged, at about 5 percent. An elections Web site called “Click on the Duma” developed jointly by a number of news organization for the parliamentary elections had “almost zero impact,” concluded Ivan Zassursky of Rambler.³⁶ The liberals’ decision to rely on traditional media and tactics instead of the Internet, despite their strong online support and pitches to “the New Generation,” asserted Zassursky, contributed their debilitating loss of power in the Duma.

Constraints on Internet Activity

Despite the potential offered by IT, many civil-society organizations and activists do not consider developing their IT capabilities to be a priority, for several reasons.

First, developing and maintaining IT capability is a complex, time-consuming, and costly enterprise. The press service of the SEU, Russia’s largest environmental group, has just one phone line to access the Internet *and* handle phone calls. Most NGOs and political parties do not have the know-how or the resources to set up and

³⁵ Center for Mass Media Analysis and Monitoring, *The Electoral Campaign for the Russian Federation State Duma: Mathematical Study of Materials in the Mass Media*, Moscow, July 2003. Analysis of the content of media coverage was not conducted.

³⁶ Zassursky, 2005.

sustain an Internet presence. For a Web site to be effective, it must be attractive (especially to automated search engines), user friendly, and relevant. “Activists have put lots of material on the Internet, but it still feels very specialized,” said Sarah Mendelson of the Washington, D.C., Center for Strategic and International Studies. To maintain viewership, Web sites must be updated on a regular basis. Olga Vendina noted that Web sites developed with Western donor support have often withered when that support ended. GlobalRus scaled back its operations in mid-2004 when its local patron withdrew his support.

Second, the incentive to exploit IT for outreach, networking, and fundraising is limited. Internet use remains relatively limited, which constrains its power as a channel of communications. Using the Internet for fundraising—a prime motivation for developing an online presence in the West—is not productive in Russia. As noted above, credit and debit cards are not widespread, and online transaction systems are not yet well-developed or convenient. Furthermore, Russian culture places great value in personal relationships established through trusted references and common formative experiences, such as attending the same school or membership in the *Komsomol*. Consequently, philanthropy, volunteering, and collaboration are largely relationship-based or locally oriented. Also, many community groups are “old style,” said Vendina. When they need material or political support, they turn to those “in power,” not the public.

The popularity of Internet mass media depends not so much on Internet users' demand for political news as on the functional nature of Internet sites themselves: They enable their readers to stay current with minimum effort.

—Boris Ovchinnikov, Internet analyst³⁷

Third, an important reason for the limited influence of the Internet on politics and mass mobilization is that Russian Internet users have become adept at selecting and filtering the information they view. After their enforced exposure for decades to Soviet propaganda and the political upheavals and ideological battles for control of Russia in the 1980s and 1990s, RuNet users seek raw information with which they can form their own views, observed market researcher Yelena Koneva. Accordingly, the volume of traffic going to sites dedicated to politics and policy remained steady during the 1999–2004 period, while traffic to news and business sites skyrocketed—a trend Zassursky attributed to the shift of the RuNet from being an instrument of the elite to a mainstream phenomenon. Sem40.ru's founder Boris Giller reiterated this point, saying his readers have a hunger for objective information, so Sem40.ru

³⁷ Boris V. Ovchinnikov, “Virtual Hopes: The State and Prospects of the Russian Internet's Political Sites,” *Russian Soviet Science Review*, September/October 2003, p. 87.

eschewed editorializing and advocacy. “People don’t like ideology rammed down their throats,” Giller said. If they do want commentary, Web users in Russia, like their counterparts around the world, tend to migrate towards those sites, which reinforce their views, not challenge them. The Caucasian Knot seeks to emerge as an exception to this rule. “I don’t want to influence people who know about human rights,” said Grigory Shvedov, the Web site’s developer. “I want to influence 100,000 people who don’t know what human rights are.”

Internet Policy

Given the relatively small share of Russian citizens that regularly use the Internet and the challenges for NGOs and political organizations in exploiting the technology, it is clear that the Information Revolution has a long way to go before it has a significant globalizing or democratizing impact on the country’s civic and political life. Nonetheless, Putin administration political operatives (and their counterparts at the regional and local levels) appear to be taking these nascent developments very seriously, and they have become engaged in the Information Revolution at many levels.

One indication of the Putin administration’s becoming engaged in using the technology is its aggressive competition for attention and support online. Shortly after Putin was elected to the presidency, Gleb Pavlovsky, a “political technologies” spin doctor known for political dirty tricks, launched Strana.ru with financial and political backing from the Kremlin and its friends in the business community. As a quasi-official media outlet of the Kremlin, Strana.ru’s potential influence lay in its privileged access to information and officials and as a means for the Kremlin to test ideas and “launder information”—that is, plant rumors or gossip that would then be picked up by the mainstream broadcast and print media as legitimate stories. Despite its dry style and cumbersome user interface, Strana.ru drew a lot of attention. Nevertheless, the operation hemorrhaged money and, being marginally independent, was seen as suspect by the Kremlin. In early 2002, the state television company VGRTK, which was more closely aligned with the Kremlin’s views, acquired Strana.ru. “The idea is to support the Russian authorities and the Russian president,” said Marina Litvinovich, Strana.ru’s general director for news.³⁸

The Kremlin has direct and indirect control of a number of other sites. After the Strana.ru acquisition, VGRTK acquired several other media sites: Smi.ru, Vesti.ru, Hartia.ru, and Inopress.ru. Two other news and information sites—Regions.ru and Regnum.ru—court audiences in the provinces and abroad, often with pro-Russia,

³⁸ Sharon LaFraniere, “On Pro-Kremlin Site, All News is Good News,” *Washington Post*, March 12, 2002a.

patriotic themes.³⁹ Through its control of the TV network, the Kremlin has great sway over sites such as NTV.ru. The Kremlin has aggressively developed, promoted, and supported the official sites Kremlin.ru, Kreml.org, and Learn About the President (<http://www.uznai-prezidenta.ru>)—a throwback to the Soviet practice of appealing to children. There is a growing number of pro-Putin sites, such as For Putin! (<http://www.zaputina.ru>) and Ours (<http://www.nashi.su>), aimed at students, and there is Putin's personal campaign site (<http://www.putin2004.ru>). This strategy seems to be paying off: Many of these pro-Kremlin outlets frequently rank among the most visited and most-cited media sites. In 2004, Rambler observed a sudden doubling of interest in TV network sites.⁴⁰ And, observed Rambler's Zassursky, among Internet users, "Interest in Putin has remained consistently high."⁴¹

While the government has pursued a successful "soft power" strategy online, the government also has countenanced "hardball" tactics to monitor and restrain activity on the Internet that it does not control. President Putin has authorized a variety of steps to enhance the government's ability to monitor electronic communications and ensure that, in Putin's words, information technologies are used "with particular responsibility."⁴² Shortly after he was appointed Acting President, Putin approved a secret rule permitting the tax police, the Interior Ministry, and the Kremlin and parliamentary security services to intercept electronic communications, such as data and e-mail.⁴³ In July 2000, the government promulgated additional regulations making information about the eavesdropping equipment used to monitor e-mail and Internet activity a state secret and enabling government agencies to monitor communications for up to two days before getting court approval for such eavesdropping, as required by the Russian Constitution.⁴⁴ While Internet service providers do not like these rules, they all have quietly played along to avoid antagonizing officials.⁴⁵

³⁹ In March 2005, President Putin promoted Modest Kolerov, the chief of Regnum and a founder of Regions.ru, to head a new Kremlin public relations department aimed at improving Russia's image abroad and reportedly to head off grassroots revolutions like those in Ukraine and Georgia.

⁴⁰ Zassursky, 2005.

⁴¹ Zassursky, 2005.

⁴² Vladimir Putin, Presidential communication to International Information Congress, Moscow, June 25, 2001.

⁴³ The Putin initiative extended a regulation (System of Operative and Investigative Procedures, or SORM) adopted in 1998 by the Yeltsin Administration, which requires Internet service providers to install, at their own expense, equipment enabling the FSB (Federalnaya Sluzhba Bezopasnosti [Federal Security Service]) to monitor electronic communications. Earlier regulations had applied such measures to voice communications.

⁴⁴ In September 2000, the Russian Supreme Court struck down the Putin administration's last regulatory maneuvers designed to monitor Internet communications in response to a suit brought by a Russian journalist.

⁴⁵ Sharon LaFraniere, "Russian Spies, They've Got Mail: Regulations Allow Security Services to Tap Into Systems of Internet Providers," *Washington Post*, March 7, 2002b.

In September 2000, President Putin signed off on the final version of a national Information Security Doctrine.⁴⁶ The doctrine decries “the increased dependence of the spiritual, economic, and political spheres of Russia’s social life on overseas information entities” and goes on to warn against foreign penetration of Russia’s “scientific-technical space” and subversive efforts of Western governments “to reorient the scientific and technical ties” between Russia and other members of the Commonwealth of Independent States toward the West.⁴⁷ In January 2002, Putin signed legislation on digital signatures that gave another national security organ, the Federal Service for Government Communications and Information, control over online transactions. Comprehensive initiatives during the Yeltsin regime in the 1990s to increase the volume of information available to the public—including legislation and regulation concerning “access to information,” a “right of information,” “information openness,” and “freedom of information”—have been shelved or quietly reversed under Putin, often under the pretext of protecting national security and promoting “decency.”⁴⁸

Much more has been going on behind closed doors. Vladimir Koptev-Dvornikov, a liberal member of parliament until the end of 2003, spoke of various efforts to try to control the Internet, including proposals requiring that Web sites using the .ru domain be located on servers in Russia and that all modems and Web sites be registered with the government. These were stopped thanks to the active involvement of the IT industry and the public, he said. “We made a lot of noise.” In June 2004, it was revealed that two bills were working their way through the Duma (parliament) that would seek to regulate Internet content, ostensibly to thwart terrorism and to promote decency. Speaking on the issue, Ludmila Narusova, a representative from the Tuva republic, described the Internet as a cesspool: “On the Internet, one can find the most incredible rumors, including those that denigrate people’s reputations. . . . While one can sue a newspaper, with the Internet this is virtually impossible.”⁴⁹

⁴⁶ The doctrine had been in the works since 1994. However, according to Vladimir Rubanov, the deputy chairman of the Security Council until 1996, what emerged in 2000 appears to be vastly different from the early drafts (television interview with Vladimir Rubanov, *NTV*, October 23, 2000; personal communication with RAND, Moscow, January 2004).

⁴⁷ Russian Federation Security Council, *Information Security Doctrine of the Russian Federation*, Moscow, September 2000 (http://www.scrf.gov.ru/documents/decree/2000_pr-1895.shtml; in Russian; last accessed September 2005).

⁴⁸ Recent government information-disclosure initiatives promoted by the Ministry of Economic Development have been very limited and do not have enforceable mechanisms to ensure that citizen may access information they deem important.

⁴⁹ Ludmila Narusova in *Novye Izvestiye*, cited in Boris Kagarlitsky, “Cracking Down on the Web,” *Moscow Times*, June 11, 2004.

Curiously, support for various constraints on the Internet increasingly is coming from all corners. The drafters of the aforementioned “decency bills” included both liberal and conservative deputies. Speaking at a conference in Japan in November 2004, Minister of Science and Education Andrey Fursenko, a staunch advocate of the IT sector, asserted, “The state should control the use of scientific technologies, including the Internet.”⁵⁰ The Press and Mass Communications Agency chief, Mikhail Seslavinsky, in early 2005 said, “The state should support the creation of special programs to limit access to Web sites that undermine basic moral values,” and he suggested that filters be implemented to limit searches on words such as “drugs,” “violence,” and “porn.”⁵¹ Pravda.ru editor Vadim Gorshenin has called for censorship, ostensibly to curtail rumor mongering, slander, pornography, and spam.⁵² Polling data indicate that the public also broadly supports media censorship of sex, violence, scandals, and even coverage of such bad news as terrorism and crime.⁵³ Indeed, most of the latest discussion has been about how to control the Internet (e.g., should websites or Internet service providers be targeted?) rather than about whether or not to control it. Few have been willing to challenge these arguments and the slippery slope that such control strategies present.

The impact that all of these “hard power” efforts and ideas will have is unclear. The Interior Ministry probably lacks sufficient personnel and technical proficiency to monitor e-mail traffic and Web site content effectively. A number of observers expressed the belief that the government is constrained by the technology itself. “As the China example shows,” said Yury Ammosov, “the government can’t firewall the whole country.” Microsoft’s Mikhail Yakushev said the digital-signature legislation can be viewed as an effort by FAPSI to generate revenue and employment for its specialists, rather than as a tool to monitor or regulate e-commerce. Koptev-Dvornikov similarly described Internet control initiatives not just as moves for political control but also efforts at “big business in government.” The Information Security Doctrine, said Yury Baturin, a National Security Council official in the Yeltsin era, was a lower-level priority that evolved over many years. Its final iteration likely was the product of a Kremlin staffer, Baturin said, and not necessarily guided from above. President Putin in July 2001 appeared to distance himself from the Information Security Doctrine, telling journalists: “I will not criticize my colleagues right now, but several items and formulations could probably have appeared differently.”⁵⁴ It has been sug-

⁵⁰ “Andrey Fursenko Speaks for State Control over Internet,” *RIA Novosti*, November 14, 2004.

⁵¹ “Control Over Russian Internet: Wishful Thinking,” *RIA Novosti*, March 4, 2005.

⁵² “Control Over Russian Internet,” 2005.

⁵³ Seventy-one percent of individuals polled by ROMIR Monitoring in 2003 and 2004 supported official censorship (Vladlev Maksimov, “Tired of Sex,” *Novye Izvestiya*, July 28, 2004).

⁵⁴ “Press Conference of the President of the Russian Federation V. V. Putin,” Moscow, July 18, 2001 (<http://president.kremlin.ru/events/264.html>; in Russian; last accessed November 2004).

gested that Putin may also back away from any draconian laws the Duma may adopt, thereby reinstating his credentials as the last defense for media freedom.

The Internet is the most open source of information in a shrinking political space.

—Sarah Mendelson, Center for International and Strategic Studies

Compared with television and to a lesser extent radio, the RuNet remains a relatively free market for ideas. For some, the Internet is seen as somewhat of a refuge for free thought. A leading magazine and newspaper columnist and award-winning writer said that he chooses to post articles online that he views as too controversial for print media. Boris Giller, of Sem40.ru said, “The more Putin pressures the media, the more the Internet will develop.” The leading news site Gazeta.ru, which is controlled by Mikhail Khodorkovsky, has operated relatively unfettered, despite the government’s attacks on Khodorkovsky and his oil company Yukos.

Nevertheless, many Internet activists and publishers noted that while they did not face overt censorship, they diligently monitor what they post, and they have studiously avoided criticizing President Putin directly. For example, the editors of the libertarian political Web site Globalrus were careful to couch their many criticisms of the Putin administration in terms of friendly suggestions. Smaller Web sites tend to be the most free, said Giller. Web sites with an appreciable audience that do venture into outright dissent tend to have an offshore base. The most prominent anti-government news site is Grani.ru, which is backed by the exiled dissident Boris Berezovsky. Berezovsky also sought to discredit the 2004 presidential elections with the Web site Russia without Putin (<http://www.boycott.ru>). The government has sought to stamp out pro-Chechen sites in Russia, leaving the dissident information sources located abroad, such as Prague Watchdog (<http://watchdog.cz>).

In the view of many journalists, publishers, and observers, the Internet has remained relatively unfettered because its audience is relatively small in Russia, so national and regional authorities have devoted their attention to mainstream media. “The Internet is still experimental. . . . Television is what counts,” said a Kremlin press aide in 2001.⁵⁵ “We do not really feel interference,” said Anton Nosik of Lenta.ru in late 2002. “Ever since Mr. Putin has been in the picture, there has been an urge to control the mass media. They are just not ready to come for us yet.”⁵⁶

Given the existence of numerous restrictive laws and regulations—many of which are written in broad and vague language—it is likely that federal and local of-

⁵⁵ Bridget Kendall, “Kremlin Webcast: Behind the Scenes,” *BBC*, March 7, 2001.

⁵⁶ LaFraniere, 2002b.

officials will feel authorized to use them on a selective, tactical basis to harass or attack individuals and organizations they perceive as threatening. Legalistic approaches have been used to repress antinuclear and environmental activists and to bring down the Yukos oil empire. The mere existence of the Information Security Doctrine, said Microsoft's Olga Dergunova, was problematic. Former Security Council official Yury Baturin concurred, adding that, while such documents do not have the force of law, they are often cited in political and bureaucratic discourse to justify action.

Key Findings and Prospects for the Future

A principal conclusion that emerges from this study is that while information technologies in Russia have had a big impact on the lives of many Russian citizens who have access to those technologies, an Information Revolution in Russia's government, economy, or society—such as many of its supporters have anticipated and hoped for—remains off in the distance.

The IT Sector

The clearest evidence of IT's impact on the Russian economy is the emergence and growth of a small but vibrant market-oriented IT sector consisting of hardware assembly, packaged and contract software development, technology development, and services. In 2004, the IT sector's growth rate was estimated at 20–25 percent. Such explosive growth in recent years has been driven principally by three factors:

- a huge increase in public-sector spending on back-office IT systems
- growing demand from private-sector firms, especially in the oil and gas industries and financial services
- skyrocketing growth in telecommunications—especially mobile telephony.

Russian firms, government agencies, and consumers were starting from a very low technological standpoint, so it stands to reason that this growth is likely to continue in the near future. Economic growth and with it increased consumer and business demand are likely to continue in the near future, fueled in part by high prices for natural-resource exports. Russia is also witnessing the rapid growth of IT-intensive services, such as banking and insurance. Finally, the government is likely to continue its IT-spending programs.

As offshore technology and software development activities have grown globally, Russia also has attracted a share of the offshore market, especially for complex and algorithm-intensive software engineering. Many multinational firms have established

advanced R&D operations in Russia, and the notion of "Made in Russia" is emerging as a sign of innovation and quality. Despite these developments, Russia remains a niche offshore destination and is likely to retain this status for the foreseeable future for several reasons:

- Russia's IT entrepreneurs have focused their efforts on elite engineering projects, as opposed to engaging in more-routine code production or the management of call centers and data centers, as is the case in India.
- A strong ruble, supported by massive natural-resources exports, combined with an unfavorable tax policy, lessens the price-competitiveness of Russia's labor-intensive and high value-added goods and services. Because of cost pressures and aggressive marketing in competing nations, Russia firms have had difficulty establishing a broader market share.
- Russia is physically and psychologically removed from the global IT mainstream. Flying into and around the country is inconvenient and unpleasant. Language and cultural barriers and limited market-penetration know-how impede business development internationally. Further, the Russian diaspora has yet to develop into a powerful force for networking with Russians living in Russia.
- Russia's entrepreneurs (of all stripes) lack access to credit and equity markets, are mired in red tape, face barriers to foreign trade, and must deal with corruption, capricious officials, and the absence of the rule of law.

Given this environment, most major Russian IT companies have off-shored important parts of their operations in an effort to attract business and investments and to avoid the hassles of Russia's business environment. This follows the global trend of IT firms locating in "nice places," and it calls into doubt the potential of Russia's offshore industry to contribute to the long-term economic development of the nation.¹

The unfavorable conditions for IT firms in Russia have been cited by policymakers, business leaders, and industry associations for many years. Industry and government have put forth a wide range of proposals to promote IT sector development. Those proposals include creation of technology parks, liberalization of rules governing state-funded intellectual properties, streamlining of the regulatory process, and various tax breaks and financial incentives. Most of these initiatives, while well intentioned, have not been adequately funded and executed in an effective manner. President Putin, starting in 2004, seems to have made technology an economic policy priority. He has spoken of liberalizing the government's policy on intellectual property rights ownership and promoting innovation through the creation of IT "incuba-

¹ Joel Kotkin, *The New Geography: How the Digital Revolution is Reshaping the American Landscape*, New York: Random House, 2000.

tors” and technology investment funds. However, judging from past policy initiatives, it is unlikely that any real breakthroughs in technology policy or in the quality of the innovation environment will occur in Russia in the near future. Ultimately, the pace at which Russia moves forward as an IT innovator and developer in the years to come ultimately will be determined by the direction and rate of change in the overall economy and the Russian business climate. An undue preoccupation with inventing and implementing complex IT development programs may only distract Russian decisionmakers from more fundamental policy needs, such as ensuring that contracts and property rights are protected and enforced in a consistent and transparent manner.

IT in Business

The integration of modern information technologies in business in Russia has been a very recent phenomenon, and in most firms, the process is far from complete. At the same time, many Russian firms (and the Russian economy more broadly) have experienced remarkable turnarounds in their operations and economic fortunes since 1999, raising the question of the extent to which IT integration has played a role in this process.

In the West, investment in information systems is seen as a means to improve productivity and decentralize management decisionmaking. These two goals are not very high priorities in Russia. In larger firms, the first step many executives are taking is to use IT to gain greater control over their companies by improving accounting practices, more closely monitoring operations, and imposing management discipline. Executives are investing in information and communications systems to centralize control and impose vertical hierarchies. Beyond these uses, many managers of Russian firms, especially industrial firms, discount the benefit of IT, citing the need for more-fundamental restructuring and management tasks: trimming payrolls; reducing worker drunkenness, absenteeism, and theft; improving product quality; and upgrading plant and equipment. Other business executives interviewed for this study spoke of misguided and troubled IT implementation projects that failed to adequately consider the need for accompanying organizational and cultural changes to realize the benefits of IT. Some executives even spoke of scaling back or scrapping IT projects.

In the coming years, Russian firms are likely to invest more heavily in IT. The ability of managers to enhance productivity through quick fixes or “low-hanging fruit” tactics, such as layoffs, over the longer term is limited. Increasingly, international firms in industrial sectors ranging from automobile manufacturing to banking and retailing are setting up operations in Russia, and they are bringing their global IT systems and management practices along with them. If Russian firms are to compete

successfully over the long term, they eventually must turn to technology solutions to improve productivity, management, and innovation. This trend already is taking place in many of Russia's newer firms: Russian airlines, financial services firms, retail chains, and the media increasingly are relying on information technologies to manage their growing operations, improve service, and develop new markets. Russian firms seeking to attract foreign and (discerning) domestic investors will have to use IT to improve their internal accounting and governance practices. When they do so, they will be able to benefit from a competent local IT services industry and decades of lessons learned in the West.

IT in Government

IT has contributed to performance improvements in governmental functions at the federal and local levels. Thanks to investments in back-office systems, decisionmakers can now access more refined data and conduct more refined cost-benefit analyses of policy options than ever before. Responsive officials also are in a much better position to monitor policy implementation and identify problems and requirements for midcourse corrections. Thanks to investments in front-office systems and Web site development, the volume of information published by government agencies today compared with in the recent past is striking.

The prospects for consolidating these achievements could be improved if the government follows through on a number of initiatives to which it has committed or is considering. One such initiative is a proposal put forward by the Ministry of Communications in 2004 for the adoption of a comprehensive, governmentwide IT strategy to be designed and implemented under the supervision of a chief information officer who would have control over all federal IT spending.² Although 18 months later this step still had not been taken, the experience of many other countries suggests such an "IT tsar" with real authority can help tap IT's full potential for enhancing governmental operations; therefore, adoption of this proposal could eliminate some of the shortfalls in the Russian government's current IT performance.³ That said, for IT to reach its potential, it is imperative that such an IT tsar not have roots in the security services, otherwise the IT tsar could be viewed as a means to squelch innovative and entrepreneurial initiatives by individual agencies or to assert government control over society.

² Russian Federation Ministry of Communications and Informatics, "Concept of IT use in Federal Government Agencies to 2010," mimeo, Moscow, 2004.

³ In the United States, e-government initially was championed in the early 1990s by Vice President Al Gore. Implementation is coordinated and monitored by the White House and the powerful Office of Management and Budget (see <http://www.whitehouse.gov/omb/egov/>).

A second sign of possible progress is the development by the Ministry of Economic Development and Trade of draft legislation in 2004 “making information on the operation of state agencies and local government accessible to individuals and organizations.”⁴ It explicitly requires that all unclassified governmental information “automatically” be made available to the public. Another bill that the ministry drafted significantly narrowed the range of materials subject to classification. Perhaps anticipating this, President Putin declassified some information about platinum and diamond production and use in March 2005. In June 2005, the cabinet of ministers endorsed the draft legislation on information availability. Unfortunately, there is a high probability that these efforts will be modified and diluted in implementation. It is clear that most government agencies do not subscribe to the belief in the public’s right to know and that the Kremlin’s own attitude toward freedom of information is, at best, highly ambivalent. To this point, a media commentator noted in mid-2005 that despite the proliferation of government Web sites, “the amount of useful information available has shrunk.”⁵

Finally, evidence from around the world suggests that investments in information technologies must be matched by fundamental changes in organizational structure, procedures, and culture (the organizational software) for the IT hardware to be effective.⁶ President Putin has raised the need for far-reaching “administrative reform” to restructure and reengineer a bureaucracy left over from the Soviet era that all recognize is deeply corrupt, disdainful of the society it is supposed to serve, and cannot possibly cope with its role in a market-oriented or democratically oriented society. Major personnel changes and organizational realignments that Putin unveiled in March 2004, while simplifying the government structure at the top, created widespread uncertainty and upset long-term planning below, including planning for IT investments. Moreover, no steps undertaken or being contemplated show any sign of fundamentally changing the bureaucratic culture of government, thereby ensuring that the billions of dollars to be spent on IT in the coming years will not achieve the stated goals of improving productivity, responsiveness, or accountability for business or the public. Ultimately, the threat is that short-term successes from the “automation” of existing government processes may divert attention from the need for fundamental organizational reform and cultural change and, thus, reinforce the government’s dysfunctional character.

⁴ “Russian Ministry Drafting Information Openness Bill,” Interfax, August 3, 2004.

⁵ Commission on the Freedom of Access to Information survey, cited by Vasily Kononenko in “Government Pushing Information Transparency,” *RIA Novosti*, June 27, 2005.

⁶ See, for example, James X. Dempsey, “How E-Government Interacts with Its Citizens,” *Transition*, January–March, 2003 (<http://www.worldbank.org/transitionnewsletter/janfebmar03/pgs39-41.htm>; last accessed August 2005); Jane E. Fountain, *Building the Virtual State: Information Technology and Institutional Change*, Washington, D.C.: Brookings Institution Press, 2001; and James S. L. Yong, ed., *E-Government in Asia: Enabling Public Service Innovation in the 21st Century*, Singapore: Times Media, 2003.

IT in Society

In 2005, regular Internet users in Russia accounted for about 10 percent of the population. Access to the Internet is likely to continue to grow in Russia—especially among Russia's youth and in Russia's provincial centers. Several factors contribute to this growth:

- Russia's near-term prospects for continued economic growth
- The rapid evolution of information technologies and falling prices for equipment and Internet access
- The accomplishments of the government's Computers in Schools program, together with foundation and private-sector educational initiatives.

Should access continue to grow at about 20–25 percent annually (slightly slower than the 2004 rate), the Internet audience may exceed 20 percent of the population by 2009. At that point, the Internet may be considered to have attained mass-media status on a nationwide scale.

For those able to obtain access, the Internet can be seen as a powerful enabling technology in a country in which individuals were once highly atomized, starved for information, and cut off from the international mainstream. The Internet has become an important source of alternative information, especially in crisis situations—both domestic and international. Intellectually curious citizens—particularly students in cities and towns—have the capability to be plugged into and at the forefront of national and global knowledge, culture, and business trends. As Internet and e-mail access and use increase, they are playing a larger role in bringing together individuals and organizations both in local communities and across Russia's far-flung regions, who have common professions, recreational interests, political affiliation, social advocacy goals, and cultural heritage. Thus, e-mail and the Internet are helping to bind the nation and support civil-society development.

At the same time, due to persisting poverty, certain cultural factors, and infrastructure impediments, for the foreseeable future perhaps as many as two-thirds of Russia's population will not have access to the Internet or be a part of the revolution in information gathering, knowledge building, and self-actualization that the Internet offers. In this respect, the advent of the World Wide Web has contributed to greater socioeconomic stratification between rural and urban areas and within each community. This trend is likely to persist in the future.

Given Russia's long tradition of heavy-handed, top-down government and given the current administration in which former and current secret police and intelligence officers occupy key positions, it can be expected that officials at all levels of government will continue to attempt to actively influence the development of the Internet and its content. Many provisions curtailing freedom of information and pri-

vacy in general have been written into federal laws, codes, and policy. The existence of many vague but restrictive laws and regulations creates easy opportunities for interference and abuse by enterprising officials at all levels of government. Moreover, in recent years, a growing number of laws and other acts have been proposed and discussed (but not widely criticized) in Russia that are aimed at restricting Internet freedoms specifically.⁷

As of mid-2005, the Putin administration has not made a deliberate push to control Internet content, as it has with television and the print media. This may be because it has not felt compelled to do so: Due to its limited reach and muted voice, the Internet has yet not had an impact on the domestic political environment. Many in Russia and abroad, however, anticipate more-active “hardball” efforts to clamp down on the Internet. Russia’s leaders are well aware that a freewheeling Information Revolution under the auspices of *glasnost* in the 1980s mobilized the Soviet public, undermined regime support, and ultimately helped bring down the Soviet government. Judging by past events and trends in Russia, the growing prevalence and use of information technologies could prove to be an influential factor during key moments in the near future, such as during a national crisis or political upheaval. Should the government seek to deny the public accurate information during such events, the Internet could become a politically charged alternative channel for information gathering, discussion, and mass mobilization. The potential role of IT is heightened when one considers the fact that Russians are particularly talented IT developers and users. Up to one-third of Muscovites already use the Internet to some extent and four-fifths have access to a mobile phones and text messaging.

The successful revolts against the ruling regimes in Georgia, Ukraine, and Kyrgyzstan, which played out in those countries’ capitals in 2004 and 2005, not to mention IT-enabled protests in Serbia, China, and elsewhere clearly have unsettled the Kremlin. In April 2005, Dmitry Frolov, an official from the FSB’s Information Security Center, citing Georgia and Ukraine, told legislators at a Duma roundtable that the Internet was “becoming a serious player on the information field capable of shaping public opinion,” and it had the capability “to mobilize political forces against the authorities in their state.” He concluded that the jurisdiction of Russia’s *siloviki* to monitor electronic communications “should be substantially expanded.”⁸

⁷ For more theoretical discussion of the Russian government’s options and strategies for appropriation and control of the Internet, see Marcus Alexander, “The Internet in Putin’s Russia: Reinventing a Technology of Authoritarianism,” paper presented at Political Studies Association Annual Conference, Leicester, UK, April 2003 (<http://www.psa.ac.uk/cps/2003/Marcus%20Alexander.pdf>; last accessed August 2005).

⁸ Sergey Varshavchik, “Resistance on the Web,” *Nezavisimaya Gazaeta*, June 3, 2005; Aleksandra Zaytseva and Aliya Samigullina, “Checkists Suffer from Internet Dependence,” *Gazeta.ru*, April 29, 2005. In Ukraine, the student group Pora and its Web site (www.pora.org.ua) and text-messaging skills were central in mobilizing opposition to the regime’s favored presidential candidate (Julie Corwin, “FSB Hoping to Put Revolution on Hold?” *Radio Free Europe/Radio Liberty*, May 2, 2005).

Political developments abroad also appear to have modestly invigorated IT-enabled activism in Russia. A number of clever, antigovernment, and politically oriented sites produced by students, such as No to Putin (www.putina.net), recently have gone online. The site Say No (www.skaji.net) documents protests around the country in early 2005 against the government's social security reforms. Public protests against local authorities' efforts to ban cars with steering wheels on the right-hand side grew out of chat on auto enthusiast sites. Consequently, officials' long-term preoccupation with controlling online slander and pornography may be evolving into outright concern about domestic tranquility. The ability of the regime to firmly control access and content for a long period of time—especially given Russia's large pool of highly talented IT specialists and enthusiasts—is unclear. Like the regime's selective attacks on business, any such attack on Internet freedom is likely to further erode the country's and the regime's image and further remove Russia from the global social, political, and technology mainstream.

To conclude, instead of catalyzing change, information technologies—for better or worse—largely have mirrored or reinforced ongoing business, government, social, and political developments in Russia. This situation is not unlike that in other countries: It has taken decades of investment, integration, use, and learning for institutions and individuals in the West and elsewhere to realize and recognize the impact of the Information Revolution. Given Russia's late start, it likely will take many years, though probably not decades, for information technologies to become widely utilized and deeply embedded in the Russian governmental, political, and social landscape before the impact of IT is fully realized. Until then, IT's impact will be debated in Russia, as it is around the world, by techno-optimists and techno-pessimists. Perhaps in this way, the Information Revolution in Russia is proceeding apace.

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Bibliography

- Agamirzian, Igor, "Russia on the World IT Services Market: Current Situation and Perspectives," presentation at Software Outsourcing Summit 2001, St. Petersburg, June 2001.
- Alexander, Marcus, "The Internet in Putin's Russia: Reinventing a Technology of Authoritarianism," paper presented at Political Studies Association Annual Conference, Leicester, UK, April 2003 (<http://www.psa.ac.uk/cps/2003/Marcus%20Alexander.pdf>; last accessed August 2005).
- Ammosov, Yury, "California's Counting on Us," *Ekspert*, September 4, 2003 (available at <http://www.outsourcing-russia.com/kb/docs/outsourcing/o04093-02.html>; last accessed August 2005).
- "Andrey Fursenko Speaks for State Control over Internet," *RIA Novosti*, November 14, 2004.
- Batarshin, Edward, et al., *IT in Russian Government Agencies 2005*, Moscow: CNews Analytics, 2005 (<http://www.cnews.ru/reviews/free/gov2005>; last accessed August 2005).
- BBC Monitoring Service, "Text of Russian President's Annual Address to Federal Assembly," transcribed from a Moscow television station broadcast, April 3, 2001.
- Budnikova, Ludmila, "The Role of Russia's Internet in Attracting Foreign Investment," in Ilya Semenov, ed., *The Internet and Russian Society*, Moscow Carnegie Center, 2002 (<http://pubs.carnegie.ru/books/2002/08is/>; last accessed August 2005).
- Burkhart, Grey E., and Susan Older, *The Information Revolution in the Middle East and North Africa*, Santa Monica, Calif.: RAND Corporation, MR-1653, 2003 (<http://www.org/publications/MR/MR1653/>).
- Center for Mass Media Analysis and Monitoring, *The Electoral Campaign for the Russian Federation State Duma: Mathematical Study of Materials in the Mass Media*, Moscow, July 2003.
- Central Intelligence Agency, *World Factbook*, Langley, Va., 2005.
- Chase, Michael S., and James C. Mulvenon, *You've Got Dissent! Chinese Dissident Use of the Internet and Beijing's Counter-Strategies*, Santa Monica, Calif.: RAND Corporation, MR-1543, 2002 (<http://www.rand.org/publications/MR/MR1543/>).

- COMCON, *User-Share of Internet Resources, Fourth Quarter 2003*, Moscow, November 2003.
- Commission on the Freedom of Access to Information survey, cited by Vasily Kononenko in "Government Pushing Information Transparency," *RIA Novosti*, June 27, 2005.
- "Control over Russian Internet: Wishful Thinking," *RIA Novosti*, March 4, 2005.
- Corwin, Julie, "FSB Hoping to Put Revolution on Hold?" *Radio Free Europe/Radio Liberty*, May 2, 2005.
- Dempsey, James X., "How E-Government Interacts with Its Citizens," *Transition*, January–March, 2003 (<http://www.worldbank.org/transitionnewsletter/janfebmar03/pgs39-41.htm>; last accessed August 2005).
- Dengel, Tobias, Vice President, Business Affairs & Development, America Online, "Russia in the Internet Age: Balancing Freedom and Regulation," presentation at IREX Conference, Moscow, February 2002.
- Dezhina, Irina, and Loren Graham, *Russian Basic Science After Ten Years of Transition and Foreign Support*, Washington, D.C.: Carnegie Endowment for International Peace, Working Paper No. 24, February 2002.
- Douglass, Maria, and Peter Falatyn, *More Than Money: Small Technology Spin-Offs of the WMD Complex*, Moscow: International Science and Technology Center, 2002.
- Dyson, Esther, "Russia Rolls Out Thriving Program Skill," *South China Morning Post*, May 1, 2001.
- Economist Intelligence Unit, "2004 E-Readiness Ranking," London, UK, 2004.
- European Bank for Reconstruction and Development, *Transition Report 1999: Ten Years of Transition*, London, UK, 1999.
- Farell, Diana et al., *The Global Labor Market*, San Francisco: McKinsey Global Institute, June 2005 (<http://www.mckinsey.com/mgi/publications/emerginggloballabormarket>; last accessed August 2005).
- Fitzpatrick, Catherine A., "A Conversation with Media Activist Oleg Panfilov," *RFE/RL Media Matters*, August 2, 2004.
- Fort Ross Consortium and CNews Analytics, *Software Export Market in Russia*, Moscow, 2004 (<http://fort-ross.ru/offshore/>; last accessed August 2005).
- Fountain, Jane E., *Building the Virtual State: Information Technology and Institutional Change*, Washington, D.C.: Brookings Institution Press, 2001.
- Friedman, Thomas L., *The World Is Flat: A Brief History of the Twenty-First Century*, New York: Farrar, Straus, and Giroux, 2005.
- Gaddy, Clifford, and Barry Ickes, "Russia's Virtual Economy," *Foreign Affairs*, September/October 1998.
- Gelb, Alan, *Oil Windfalls: Blessing or Curse?* New York: Oxford University Press, 1988.

- Gladkov, Sergey, "Municipal Informatization: Dreams and Reality," *Direktor informatsionnoi sluzhby*, January 2003.
- Global Entrepreneurship Monitor, cited in "One-Yen Wonders," *Economist*, June 28, 2003.
- Goble, Paul, "Window on Eurasia: How the Internet Is Saving Russia's 'Thick' Journals," *Johnson's Russia List*, No. 9148, May 13, 2005.
- Grazhdankin, Aleksei I., et al., *Computerization and the Internet in Russia in the 2000s*, Moscow: Yury Levada Analytic Center, 2003.
- Grishankov, Dmitry, and Larisa Krashchenko, "Virtual Sector," *Ekspert*, July 23, 2003.
- Hachigian, Nina, and Lily Wu, *The Information Revolution in Asia*, Santa Monica, Calif.: RAND Corporation, MR-1719-NIC, 2003 (<http://www.rand.org/publications/MR/MR1719/>).
- "High-Technology Industries, Applied Research Must Enjoy Tax Benefits—Putin," *Interfax*, October 26, 2004.
- Hundley, Richard O., Robert H. Anderson, Tora K. Bikson, and C. R. Neu, *The Global Course of the Information Revolution: Recurring Themes and Regional Variations*, Santa Monica, Calif.: RAND Corporation, MR-1680-NIC, 2003 (<http://www.rand.org/publications/MR/MR1680/>).
- Ihlwan, Moon, "Want Innovation? Hire a Russian," *Business Week*, March 8, 2004.
- Illarionov, Andrei, advisor to the President of the Russian Federation, as quoted by *Ekho Moskvy*, January 30, 2004.
- INDEM Foundation, *Russia and Corruption: Who's Who*, Moscow, 1998, (<http://www.indem.ru/indemfond/projects.html>; last accessed August 2005).
- Institute for Social Action and Renewal in Eurasia, *Give & Take*, Fall/Winter 1999/2000 (<http://www.isar.org/pubs/GT/GT2-4.pdf>; last accessed August 2005).
- International Business Systems, briefing on the Russian IT industry, mimeo, Moscow, October 2002.
- International Planning and Research Corporation, cited in "Software Piracy Rises to 89% in 2002," *Interfax*, June 5, 2003.
- International Telecommunication Union, *Europe's Telecommunication/ICT Markets and Trends, 2003–2004*, Geneva, 2005.
- "Internet Audience Growing Fast in Russia," *Izvestiya*, April 6, 2005.
- "The IT Market Believes in Reiman," *CNews*, November 25, 2004.
- "Joe Mach Shares the Secrets of His Success," *Yukos Review*, January 2003.
- Kagarlitsky, Boris, "Cracking Down on the Web," *Moscow Times*, June 11, 2004.
- Kalathil, Shanthi, and Taylor C. Boas, *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule*, Washington, D.C.: Carnegie Endowment for International Peace, 2003.

- Kedzie, Christopher R., *Communication and Democracy: Coincident Revolutions and the Emergent Dictator's Dilemma*, Santa Monica, Calif.: RAND Corporation, RGSD-127, 1997 (<http://www.rand.org/publications/RGSD/RGSD127/>).
- Kendall, Bridget, "Kremlin Webcast: Behind the Scenes," *BBC*, March 7, 2001.
- Kharif, Olga, "Russia: Playing Catch-Up in Tech," *BusinessWeek Online*, March 2003.
- Konygina, Natalia, "Tolerance.ru," *Izvestiya*, February 3, 2004 (<http://main.izvestia.ru/community/03-02-04/article43832>; in Russian; last accessed August 2005).
- Kotkin, Joel, *The New Geography: How the Digital Revolution is Reshaping the American Landscape*, New York: Random House, 2000.
- Krasnov, Mikhail, "Time to Intervene," *Ekspert*, June 2, 2003.
- LaFraniere, Sharon, "On Pro-Kremlin Site, All News Is Good News," *Washington Post*, March 12, 2002a.
- , "Russian Spies, They've Got Mail: Regulations Allow Security Services to Tap into Systems of Internet Providers," *Washington Post*, March 7, 2002b.
- Mack, Laura, "Will Russian VC's Invest in Russian Start-Ups or Will Russian Start-Ups Move to America?" *Johnson's Russia List*, February 1, 2004.
- Maksimov, Vladlev, "Tired of Sex," *Novye Izvestiya*, July 28, 2004.
- McKinsey Global Institute, *Unlocking Economic Growth in Russia*, Moscow, 1999 (<http://www.mckinsey.com/knowledge/mgi/Russia/>; last accessed August 2005).
- Mitrokhin, Nikolai, "The Internet: A Hunting Ground for Missionaries or a Zone for Inter-faith Conflict," in Ilya Semenov, ed., *The Internet and Russian Society*, Moscow: Moscow Carnegie Center, 2002 (<http://pubs.carnegie.ru/books/2002/08is/>; last accessed August 2005).
- Moscow City Government, *Electronic Moscow Municipal Priority Program*, program documentation, Moscow, May 2003 (<http://www.el-mos.ru/2003-05-22/contents.html>; last accessed August 2005).
- Narusova, Ludmila, in *Novye Izvestiye*, cited in Boris Kagarlitsky, "Cracking Down on the Web," *Moscow Times*, June 11, 2004.
- Naumenko, Larissa, "Strana.ru Takes Pulse of Government Openness," *Moscow Times*, April 17, 2002.
- Nesterov, Yury, "Institutions of State Power of the Russian Federation on the Internet: Show-Case or Information?" *The Internet and Modern Society*, conference proceedings, St. Petersburg, November 2000 (<http://ims2000.nw.ru/src/TEXT83.HTML>; last accessed August 2005).
- Novosibirsk Chamber of Commerce and Industry, *IT in Novosibirsk City and Region: Conditions and Trends in 2003*, Novosibirsk, August 2003.
- Ostrovsky, Arkady, "High-Tech Designer Who Prefers a Low Profile," *Financial Times*, October 2, 2000.

- Ovchinnikov, Boris, *Russian Internet Market Watch*, Moscow: J'son & Partners, March 2004.
- , "Virtual Hopes: The State and Prospects of the Russian Internet's Political Sites," *Russian Social Science Review*, September/October 2003.
- "Over 1,000 Periodicals Registered in Russian Internet," *RIA Novosti*, September 30, 2004.
- Peterson, D. J., Tom LaTourette, and James T. Bartis, *New Forces at Work in Mining: Industry Views of Critical Technologies*, Santa Monica, Calif.: RAND Corporation, MR-1324-OSTP, 2001 (<http://www.rand.org/publications/MR/MR1324/MR-1324>).
- Peterson, D. J., and Sergej Mahnovsky, *New Forces at Work in Refining: Industry Views of Critical Business and Operations Trends*, Santa Monica, Calif.: RAND Corporation, 2003 (<http://www.rand.org/publications/MR/MR1707/>).
- Popova, Maria, *Telecoms in Russia 2004*, Moscow: C-News Analytics, 2005.
- "Press Conference of the President of the Russian Federation V. V. Putin," Kremlin, Moscow, July 18, 2001 (http://president.kremlin.ru/appears/2001/07/18/0000_type63380_28591.shtml; in Russian; last accessed August 2005).
- Public Opinion Foundation, *The Internet in Russia Survey*, Issue 7, Moscow, June 20, 2004 (<http://bd.fom.ru/>; last accessed August 2005).
- , *The Internet in Russia Survey*, Issue 10, Moscow, March 22, 2005.
- Putin, Vladimir, Presidential communication to International Information Congress, Moscow, June 25, 2001.
- "Putin Sets Hi-Tech Priorities," *Interfax*, April 13, 2001.
- "The Return of Electronic Russia," *Ekspert*, November 5, 2003.
- "Russia Loses Half of High-Tech Exports Within Decade," *Interfax*, January 30, 2003.
- "Russia: Survey Reveals Highly Competitive, TV-Dominated, Media Market," BBC Monitoring Research, July 7, 2004.
- Russian Federation Ministry of Communications and Informatics, "Concept of IT Use in Federal Government Agencies to 2010," mimeo, Moscow, 2004.
- , *Electronic Russia: Briefly About a Complex Program*, Moscow, no date.
- Russian Federation Ministry of Communications and Informatics, "On the Use of Modern Information Technologies in the Activities of Federal Government Agencies," mimeo, Moscow, September 2003.
- Russian Federation Security Council, *Information Security Doctrine of the Russian Federation*, Moscow, September 2000 (http://www.scrf.gov.ru/documents/decrees/2000_pr-1895.shtml; last accessed August 2005).
- "Russian Ministry Drafting Information Openness Bill," *Interfax*, August 3, 2004.
- "Russian Oligarchs' Earnings Become Exposed to the Public Eye," *Pravda.ru*, May 28, 2005.
- Saradzhan, Simon, and Larisa Naumenko, "Campaign Kicks Off with Online Tricks," *Moscow News*, April 21, 2003.

- Semenov, Ilya, ed., *The Internet and Russian Society*, Moscow: Moscow Carnegie Center, 2002 (<http://pubs.carnegie.ru/books/2002/08is>; last accessed August 2005).
- Sitnina, Vera, "Going over to an Electronic Database," *Vremya Novostei*, March 13, 2005.
- Solonin, Vitaly, et al., *The IT Market: 2004 Results*, Moscow: CNews Analytics, 2005 (<http://www.cnews.ru/reviews/free/2004/>; last accessed August 2005).
- Startseva, Alla, "Russian Railways Co. Ready to Roll," *Moscow Times*, July 28, 2003.
- "Submissions to the Government of the Russian Federation" Government of the Russian Federation (http://www.government.ru/intserv2/asks/index.html?he_id=458; in Russian; last accessed August 2005).
- Trudolyubov, Maksim, "Everything on Display: The Government Is Exhibiting Itself on the Internet," *Vedomosti*, July 27, 2001.
- Varshavchik, Sergey, "Resistance on the Web," *Nezavisimaya Gazaeta*, June 3, 2005.
- Vendina, Olga, "The Internet as a Catalyst for the Development of a Civil Society in Moscow," Institute of Geography, Russian Academy of Sciences, mimeo, Moscow, 2003.
- Verbitz, Max (pseud.), "New Russia in an Old Trap," *Perspective*, Boston University Institute for the Study of Conflict, Ideology, and Policy, March/April 2004.
- "What Do Russians Read?" *Pravda.ru*, March 26, 2003.
- "Whitepaper on Offshore *Software Development in Russia*," Information Technologies and Telecommunications Committee, American Chamber of Commerce in Russia, Moscow, March 21, 2001 (http://russiansoftwaredev.esolutions.ru/en/amcham_whitepaper.doc; last accessed August 2005).
- Yong, James S. L., ed., *E-Government in Asia: Enabling Public Service Innovation in the 21st Century*, Singapore: Times Media, 2003.
- Zassursky, Ivan, "Collective Consciousness: The Internet in Russia in 2003," mimeo, Rambler Foundation for Research and Social Initiatives, Moscow, April 2003.
- , *Economics of Attention: The Internet in Russia in 2004*, Rambler Foundation for Research and Social Initiatives, Moscow, January 2005.
- Zaytseva, Aleksandra, and Aliya Samigullina, "Checkists Suffer from Internet Dependence," *Gazeta.ru*, April 29, 2005.