



The Russian Reversal

From Developed to Emerging IT

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The year 2017 marks the 100th anniversary of the socialist revolution in Russia that started a project in “alternative” society development. This, together with isolation induced by the Iron Curtain, shaped the particularities of the Soviet IT industry’s advance, which had a number of impressive success stories. This industry’s subsequent westernization was sharp, seemingly making it little more than a large outsourcing appendage for booming dotcom companies in developed countries. However, today, the all-powerful “Russian hackers” have become a world-known brand (even if hyped by the mass media), suggesting a solid basis for such high-tech operations. In this article, I describe the current state of affairs in the Russian IT industry and outline some historical background.

History of IT in Russia

Even before the invention of electronic computing machines, the idea of automation was quite popular in Soviet Russia. Freeing the proletariat (men of labor) from hard, dangerous, uncreative, and

dehumanizing work was a must, and economic efficiency was often considered secondarily, if at all. So, throughout the Soviet period, particular emphasis was placed on automation—of control, production, management in the planned economy, and so on. Until the 1960s, Soviet IT was generally on par with the leading western countries; for instance, Norbert Wiener’s opinion after his visit to the USSR was that “they’re behind us in hardware—not hopelessly, but slightly. They are ahead of us in the theorization of automatization.”¹

However, with the introduction of the second generation—transistor-based machines—the gap started to increase, not just in hardware but also in the scale of application.² In the USSR, computers mostly remained bound to the military and R&D institutions, where clever approaches and algorithms, backed by solid Russian traditions in fundamental mathematics, made up for disadvantages in hardware, at least for a time. In 1985, the number of computers in the USSR was about 80 thousand, while in the US, it was estimated

at 1.5 million—not even including another 17 million PCs.³ The Soviet government has always been well aware of this situation, and had seemingly been losing confidence in its own IT industry. In 1969, it finally decided to deprioritize the development of domestic computing systems and start using hardware produced by IBM and Digital Equipment (US), after adapting it to the Soviet component base. Reportedly, Edsger W. Dijkstra called this decision “the greatest American victory in the Cold War,”⁴ although it is still unclear if there was any good alternative. Understandably, the Soviet space and military sectors didn’t comply with IT westernization and continued to rely on domestic models, achieving impressive results in contexts in which costs and scalability didn’t matter.

Given the chaotic and crisis-ridden economy after the fall of the USSR, informatization was the least of the worries for local companies striving for survival, but strangely, the IT industry didn’t disintegrate. However, it has transformed dramatically. Western

software development companies suddenly discovered a pool of programmers highly trained in fundamentals, but willing to work for minimal pay, and rapidly expanded their outsourcing activities. Correspondingly, the popularity of IT education and the profession itself was reinforced, and many young people turned to this career, even if they often had to enthusiastically rediscover, so to speak, the concept of moving not even the wheel yet. Of course, westernization caused a notable division with the “old timers” who spoke a different language—not of IT project management, but of Soviet methodology and standards—and a near loss of IT knowledge accumulated in pre-1990s Russian books. Again, a notable exception was the defense and space sectors, which were able to keep most of their traditions, given that even in the turmoil of the 1990s, they received state funding or found ways to get money.

The Re-Emergence

The Russian economy more or less stabilized by the early 2000s, nearly perfectly matching the dotcom collapse in the West. The scale of outsourcing activities inevitably decreased, and many Russian IT companies and freelance programmers turned toward working for domestic customers. Although the telecom infrastructure at the time was quite weak, and electronic payments virtually nonexistent, online development became an important economic driver.

At the time, several major web portals and services were founded—the most notable being Yandex, a global search system that remains the most popular one in Russia today. As of 2016, about 49 percent of all searches were sent to Yandex, although Google has almost caught up with its 43 percent share. There are actually few countries in the world with a

dominant, non-Google domestic search engine—basically, Russia, South Korea, and of course China, where Google is restricted. In number of searches worldwide, Yandex successfully competes with Microsoft's Bing for the 4th position, employing unique algorithms and technologies, such as the renowned MatrixNet.

Another example of a domestic IT product being dominant in a sensitive field is the 1C:Enterprise ERP system, which is the de facto standard solution for accounting, inventory management, and so on in all Russian companies, except possibly the largest ones. Interestingly, in other countries, the 1C company is best known as a developer and publisher of video games, many of which are dedicated to World War II. Speaking of management automation, Russia has been making rapid progress in e-government during the last decade, reaching the 27th position worldwide in the UN's e-Government Development Index in 2012, although it has slid to 35th at the time of this writing. The dedicated development program run by the state, “Electronic Russia” (2002–2010), has suffered from chronic underfunding (only US\$2.6 billion in total), and is generally considered a disappointment.

Still, many government services have been transferred to online platforms, and a committed citizen now has a chance of overcoming all the “design particulars” of the global e-governmental portal's interface (see gosuslugi.ru) and reaching his or her goals without wasting time in queues. Another particular feature is a rather advanced election-support software system capable of showing the current results in near real time and streaming online video translations from most polling stations, thus ensuring quite high election transparency. Overall, it can be said that e-Russia's strength

is people (a good rating in the UN's Human Capital Index), and its weakness is infrastructure (its Telecommunication Infrastructure Index is poor, particularly broadband penetration).

It should also be said that the direct stimulation of IT by the government is relatively scarce, but some legislation indirectly helps industry development. For example, as of 2016, all governmental bodies must first consider domestic software for purchase from a centralized catalogue (see reestr.minsvyaz.ru), and can only choose a foreign IT product if there are no Russian analogues. This is part of nationwide security enforcement measures that intensified as political tensions with the West increased in 2014. Another law passed at the same time requires storing any Russian citizen's personal data on servers physically located in Russia; LinkedIn was banned in 2016 for not complying with this regulation.

On the whole, however, few foreign e-services are restricted in Russia, and Russian IT companies generally have to openly compete with global players, often succeeding. For example, the most popular social networks as of 2016 are domestic: VKontakte (39 percent) and Odnoklassniki (32 percent), while Facebook rates only third (24 percent).⁵ Worldwide, VKontakte boasts 380 million user accounts, even though some say that its interface and appearance do suspiciously resemble those of Facebook. In terms of e-security, Russia is known in the world because of the antiviral software produced and exported by Kaspersky Lab, which does business in 200 countries and protects 300 million+ customers.⁶ The WinRAR file achiever is yet another example of Russia-made, internationally used software (available in 40+ languages, with 500 million users⁷),

and it's praised for its good compression rate and universal coverage of formats.

Moreover, Russia certainly continues the Soviet traditions of having impressive software and automation solutions in the space and military sectors. The GLONASS global navigation system (www.glonass-iac.ru) started in the USSR, was launched for civilian use in 2009, and is currently the only peer competitor (and sometimes supplement—see the European Geostationary Navigation Overlay Service project) to the US's GPS. Russia also has developed quite advanced robots and drones for military and special-purpose application, and there are even plans to make the newest Armata tank unmanned. The Russian army recently introduced its “scientific squads” system, in which conscripted university graduates serve as researchers and software developers—and nearly half of them decide to remain with this service after their conscription term is over.⁸

As for the disadvantages of Russia's IT industry, first, there's a scarcity of proper legislation in the field, with many software and online-related issues remaining uncovered. Software piracy used to be quite significant in Russia, until the government started taking concrete measures against it about a decade ago, mostly in the business sector. Domestic IT companies generally fight against free copying with low prices, but much foreign software, especially that used by individuals, is nonlicensed. Second, the dependency on foreign hardware remains, again with the exception of the space and military sectors, which use their own developments, such as the native super-scalar (parallel) processor-based machines from the Elbrus series. Finally, some complain that the government doesn't create proper conditions in which IT startups

can flourish, and doesn't facilitate software export.

Still, although most Russian companies have trouble reaching the global level, software exports in 2015 attained \$7 billion—about the same volume as sales inside the country (see ruxpert.ru). Locally, the main consumer of IT services is the finance sector, followed by government organizations and telecom companies, and the market on the whole still remains an emerging one, with companies spending a significantly smaller share on IT than do those in developed countries.⁹ Currently, the economy is turbulent again, so the main focus for companies seems to be not long-term IT strategies, but infrastructure support and cost savings from automation in business, and so on. On the household level, Russia boasts inexpensive and reasonably fast Internet access, so its total online penetration is about 73 percent—making the country's Internet audience the largest in Europe and 6th in the world.

Russia's IT sector has seemingly inherited both positive and negative particularities of the Soviet era, when it matched the respective industry in the West. Its weaknesses are mostly related to hardware, IT infrastructure (understandable, given the country's size), and legislation, whereas its strengths lie in well-educated citizens, strong traditions in fundamental math, automation, and one-of-a-kind projects. Direct government support is scarce for commercial IT and remains largely bound to the space and military sectors, which are their own independent and self-sufficient IT kingdoms, successfully solving quite complex tasks. So, who knows—the stories about those mighty Russian hackers could be true after all. 

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