

## To Russia with love

by Suzanne Stevens

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**Tower of talent:**  
Moscow State University

Ask Anya Barski, a Russian immigrant who moved to the U.S. a decade ago, if she ever thought she'd be managing a U.S.-owned research center in her native country and she can only laugh. "Definitely not," she says. Yet today, Barski is senior director of Sun Microsystems Inc.'s St. Petersburg Development Center.

Ask Alan Taub, executive director of research and development at General Motors Corp., if he thought he'd be collaborating with Russian engineers and he reacts similarly. "It's remarkable," he says. Early in his career, Taub worked on Cold War military projects. Today, he says, GM engineers are "working side by side with scientists inside the Russian institutes that decades earlier were developing countermilitary technology."

Barski and Taub may be surprised to find themselves conducting research in Russia, but they are not alone. More and more multinational companies are sending R&D work to the country. As a center for corporate R&D, Russia is not yet on a par with China or India, where dozens of major companies now have substantial R&D centers (see *Corporate Dealmaker*, May-June 2005). In the overlapping market for IT outsourcing, it has had to play to its own particular strengths, since it can't hope to match India in high-volume, long-term services. Still, Russia's world-class science and engineering talent, a legacy of the Soviet-era military and aerospace industries and the educational system that fed them, is proving a significant draw. The country is emerging as a prime destination for software application development, system design, computational modeling and other complex technical work.

"We want the best minds working on our products and technology, and Russia is a place where there is lots of great talent," says Barski, who earned a master's degree in physics from St. Petersburg State Technical University. "There is an infrastructure and education system in place that supports mind work and the exchange of ideas."

Russian universities awarded more than 45,000 engineering and 22,000 math and physics degrees in 2004 alone, according to Auriga Research, a U.S.-Russian software development company. While engineering grads can be tough to count (a frequently cited annual figure of 600,000 for China has been almost as frequently challenged), there's clearly plenty of brainpower in Russia, whose students are perennial high-scorers in international technical competitions. Russian university teams for instance have taken the top prize in the IBM Corp.-sponsored ACM International Collegiate Programming Contest three of the past six years.

Multinational companies are tapping into that talent base through a variety of collaborative arrangements. Some, including Deutsche Bank AG and Citibank as well as mid-sized firms such as Wayne, N.J.-based HVAC contractor Bonland Industries Inc., are offshoring software development work. Others such as General Motors and E.I. du Pont de Nemours and Co. are negotiating their own partnerships with researchers working inside Russian universities and institutes. And a few, including Sun, Intel Corp. and Motorola Inc. are operating their own captive R&D centers in Russia.

Like China, Russia presents plenty of challenges for Western companies. There are bureaucratic barriers, cultural and language differences and infrastructure limitations, particularly outside major cities. Intellectual property laws are unproven, and political uncertainty is an issue — witness the recent temporary halt in production at GM's Russian automobile manufacturing joint venture after a reported clash with the state-owned partner. Finally, identifying a research partner or outsourcing service provider with the right technical capabilities, managerial talent and track record can prove daunting.

Still, the obstacles haven't slowed the number of companies heading to Russia, and the growth is expected to continue. In a 2005 survey conducted by the United Nations Conference on Trade and Development of 69 transnational corporations, Russia placed sixth on a list of the most attractive

countries for R&D spending between 2005 and 2009, behind China, the U.S., India, Japan and the U.K. In addition, 10.3% of respondents cited Russia as the most attractive prospective R&D location.

"Russia is right up there with China and India as a source for collaborative partners," says Randolph Guschl, a 32-year veteran of DuPont's R&D operation who now directs the company's Center for Collaborative Research and Education. "They just don't get considered as frequently as researchers in China and India."

DuPont, Sun, Boeing Co., Pratt & Whitney and Airbus S.A.S. were among the leading wave of multinationals to begin collaborating with Russian scientists and engineers beginning in the early 1990s, soon after the collapse of the Soviet Union. A handful of U.S. government programs, including the Initiatives for Proliferation Prevention (see box), offered incentives to U.S. companies to hire Russian researchers. The idea was to keep unemployed scientists, many of whom had spent their careers developing military and nuclear technology, from taking those skills to countries the U.S. considered dangerous.

What do Russian researchers do best? Complex but short-term technical projects, according to Eugene Goland, a Russian native who in 1997 founded DataArt Inc., a U.S.-based software outsourcing company with a development center in St. Petersburg.

"Russian companies have a much higher success rate on projects that require lots of research and scientific skill, and less on projects that require a high level of documentation and longer-term management skills," explains Goland, who doesn't expect Russia to cut into India's offshore dominance in high-volume IT services. "I'm pretty sure India will remain the destination for general and large-scale outsourcing and Russia will become more and more known for its high-level technical skills."

Bonland Industries outsourced an upgrade of the sales and estimating module of its management information system to Russia in 2004. The module was initially developed by a service provider in India, but when it came time for an upgrade, the price increased dramatically, and the results were disappointing, says Nick Scheidel, vice president for information systems. He turned to DataArt, which sent the project to its R&D facility in St. Petersburg.

"The previous graphics were kind of crude, almost like they had been scanned in," Scheidel says. "The Russian team cleaned it up and made the user interface much more refined." Throughout the six-week project, Bonland's lead programmer was in daily contact with the Russian team, using instant messaging and voice over Internet protocol. The hourly rate was slightly higher than in India, but according to Scheidel, the quality and technical capabilities of the Russian team more than made up for the difference in price.

According to Gartner Research, rates for Russian technical workers are about 10% higher than in India. Russian programmers in Moscow and St. Petersburg make between \$12,000 and \$14,000 a year, and offshore service rates in the country range from \$19 to \$35 per hour for application development and \$25 to \$60 for packaged software implementation.

The Russian IT outsourcing industry has greatly expanded over the past decade with providers including Luxoft, EPAM Systems, Reksoft and Auriga battling for Western business. Russian-based providers have had a tendency to oversell their capabilities in their zeal to land contracts, according to Ian Marriott, who leads Gartner's offshore research practice, making a thorough investigation of a potential partner a must.

Companies should look at an IT service provider's attrition rate, the critical skill set of employees and how scalable the operation is, says Marriott. "Do they have the right certifications, and are their project managers well versed in English? Is there a degree of understanding of your competitive situation? Are they completely open with you?"

For multinationals with broader R&D needs, working with an outsourcing service provider in Russia isn't always the best option. Companies like GM and DuPont are choosing instead to build their own partnership networks by negotiating directly with researchers in Russian universities and institutes. In the process, they encounter a range of challenges from identifying partners to overcoming cultural differences.

GM began working on research projects in Russia in 2002, collaborating with scientists at Moscow State University and St. Petersburg State Institute of Information Technologies. Today, GM is working with Russian teams on ways to make more efficient and environmentally friendly high-speed machining tools and to develop hydrogen storage systems to enable hydrogen fuel cells to power cars for longer distances.

With five projects under way by 2003 and the Russian teams consistently delivering what GM's Taub calls "world-class results," the company decided to open a Russia science office to get more collaborative partnerships in the pipeline. GM hired Alexey Ushakov as its local chief scientist and opened the office inside its Moscow manufacturing and sales headquarters in October 2005. Educated in Russia but with significant experience working in the U.S., Ushakov spends his time playing matchmaker between GM technological needs and Russian scientists. That involves identifying the most capable partners and leading sometimes tricky negotiations with Russian universities and institutions.

"Most Russian research institutes do not have experience estimating and protecting their intellectual property," says Ushakov, "resulting in complex procedures and varying interpretations of technology transfer agreements. It involves a lot of meeting time, interaction and negotiation. Even then, there are usually several iterations before a common understanding and agreement is reached."

Having a Russian native lead the effort to identify partners and negotiate deals is a recurring theme for companies such as GM, Sun and DuPont.

"You need to have a focused individual or two on both ends of the program, not simply a technical liaison on our side to work with a lab director over there," says DuPont's Guschl. "You need someone who knows the culture, speaks the language and knows how to put together a proposal that will deliver what both [partners] want it to do."

Guschl found that someone in Igor Breger, who emigrated from Russia to the U.S. in 1977 and worked for DuPont for 30 years before retiring in 2004. Ten years ago, people lost considerable sums of money trying to apply Western-style business practices — from brainstorming to compiling weekly progress reports — to Eastern bloc countries that had no experience with such models, says Breger, who now runs a consulting company that helps U.S. businesses establish partnerships in Russia.

Breger recalls working with a Russian scientist who believed he owned the patent on a technology DuPont was interested in acquiring. It was only after considerable time and energy was spent vetting the deal, including two trans-Atlantic flights, that Breger learned the patent was actually owned by the scientist's university employer.

Leo Lev, a Russian native and staff research engineer in GM's Warren, Mich., Materials & Processes Lab, helped negotiate some of GM's early deals in Russia and fended off more than one misunderstanding. He remembers sitting in a meeting with a Russian team and hearing his GM leader politely reject an idea, saying, "We would be interested in this idea' if such and such a result were shown. Next, I hear the interpreter say, 'We would be interested in this idea,' period. Russian language is much more direct than English," says Lev, "and sometimes a person knows just enough English to be dangerous."

While the threat of intellectual property theft isn't as severe as it is in China, IP laws in Russia are still evolving. The country has had laws on the books to protect trademarks, patents and other IP for more than a decade, and those laws have been updated as recently as 2003, but in a country where legally protecting ideas is still relatively new, enforcing IP laws isn't always a priority.

"In the beginning, there was a substantial level of mistrust and misunderstanding with our teams and the Russian teams, particularly when it came to IP: Who pays for what, who owns what?" says Lev. "We were able to overcome those difficulties by explaining and negotiating."

Both GM and DuPont say they may eventually open their own R&D centers in Russia as their project portfolios grow and if local demand for their products increases. Early in 2006, DuPont's performance coating automotive business bought a Russian automotive paint company. "As we work to incorporate that into our corporation," says Guschl, "we could very well open an automotive paint tech service lab, which would in some cases warrant higher technical capability."

At GM, the results derived from the company's new science office will dictate whether it ultimately employs its own Russian researchers. So far, the company's R&D experience in the country mirrors that in China, India, Israel, South Korea and Sweden, where other GM science and technology offices are located.

"When the portfolio of projects starts growing, we move from collaboration to a science office, where we hire someone in the country to help facilitate the collaboration," says Taub. "Russia has just made the transition from a virtual science office to an actual science office. We'll see where it goes."

If the companies do open bricks-and-mortar R&D centers in Russia, they'll be following the path taken by Sun, which first contracted with a Russian engineering firm in 1992 to work on Sun compilers, the development tool needed to adapt code to different systems. There were 50 contractors on the project. Today, Sun employs 350 scientists at its St. Petersburg research center, where much of the development for its Java standard and mobile editions is taking place, says Sun's Barski, who led the effort to establish the center.

There were and still are plenty of bureaucratic hurdles — related to getting equipment through customs, obtaining work permits for non-Russian citizens, and complying with labor code and tax regulations — Barski says. The technical and communication infrastructure, while immensely improved from even five years ago, is not on par with Western standards. It took more than a year for Sun to find a permanent building for its R&D center, which it moved into in February. Perhaps the more daunting challenge has been finding senior-level employees with not only the technical capabilities but also the management skills to oversee projects.

"The available pool of managers that are thinking in the same terms and operating in the same context that our company is used to is indeed small," Barski says. There are qualified managers out there, she adds, but the competition for them is growing. "We're not the only ones looking."

It takes time for new hires to become comfortable operating within Sun's free-thinking environment and informal management structure. "We want the right balance of creative and process, but we don't want hierarchy to make us less creative," Barski says. "This is not something common for Russian culture. Historically it's been more disciplined."

It's certainly easier to do business in Russia today than it was when Sun first entered the market 14 years ago, Barski says. Russian universities have added management courses and M.B.A. programs to nurture a generation of managerial talent, and Russian scientists are becoming more familiar with Western business practices and deal terms.

If companies such as Sun, GM, DuPont and Bonland experience continued success in their Russian ventures, it's a good bet that more Western companies will follow their lead. CD

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## **Nonproliferation through R&D collaboration**

The federal government is doing its part to encourage collaboration between U.S. companies and Russian scientists through programs such as Initiatives to Prevent Proliferation. The IPP program was launched in 1994 to promote commercial research partnerships between U.S. companies and Russian weapons scientists left unemployed by the collapse of the Soviet Union. Today, IPP spends \$26 million a year supporting 130 active projects and, according to its Web site, is responsible for creating 2,300 high-tech jobs in Russia, Kazakhstan and Ukraine.

E.I. du Pont de Nemours and Co. was one of the first companies to utilize IPP; and today approximately 25% of its R&D partnerships in Russia make use of IPP grants. Here's how the program works: DuPont submits a research proposal to IPP, including possible research partners. If approved, an IPP grant will typically cover the salaries of the Russian scientists. DuPont matches that amount with cash or in-kind contributions.

DuPont owns any intellectual property that results from a collaboration, and gets the right to use that property anywhere in the world except Russia. "If we're going to use it in Russia, then the university or

individual researcher gets a piece of the action," says Randy Guschl, director of the DuPont Center for Collaborative Research and Education.

An added bonus is the help the U.S. government provides to identify capable Russian partners. "When the wall came down, there were 1.5 million scientists and engineers in Russia. It was a nonpeer reviewed infrastructure, which meant that a good third of them were not serious candidates for doing R&D," Guschl says. "The government explained that to us and directed us to where the good research was going on."

For more information on IPP, visit [www.nnsa.doe.gov/na-20/rti.shtml](http://www.nnsa.doe.gov/na-20/rti.shtml).