SKOLKOVO ROBOTICS CENTER: RUSSIA'S LEADING COMMERCIALIZATION HUB FOR CIVILIAN ROBOTICS
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SKOLKOVO ROBOTICS CENTER: BRIEF INTRODUCTION
On Sept. 28, 2010, Russian President Dmitry Medvedev signed a law “On the Skolkovo Innovation Center,” giving rise to the not-for-profit Skolkovo Foundation. Charged with providing the catalyst for the diversification of the Russian economy, the Skolkovo Foundation’s overarching goal is to create a sustainable ecosystem of entrepreneurship and innovation, engendering a startup culture and encouraging venture capitalism. There are five key areas of potential growth: energy efficiency, strategic IT and computer technologies, biomedicine, nuclear technologies and space technologies.

To achieve this ambitious goal the Foundation is overseeing the creation of the Skolkovo Innovation Center, a federal development institution composed of high-tech companies and startups (currently numbering more than 1,000), the Skolkovo Technopark, the Skolkovo Institute of Science and Technology (Skoltech) - a new graduate research University established in collaboration with the Massachusetts Institute of Technology - and Skolkovo city, located near Moscow. Together these entities will establish a vibrant ecosystem of technology innovation and entrepreneurship. More than 30 of the world’s most successful corporations, including
Boeing, Cisco Systems, EADS, Johnson & Johnson, IBM, Intel, Microsoft, Siemens, Nokia, Samsung and Panasonic have signed partnership agreements in recognition of the opportunity that Skolkovo presents.

An independent panel of experts decides which startups to grant resident status to using a set of objective criteria. Surveys have shown that Skolkovo startups are three times more likely to attract investment than non-member startups.

Skolkovo is a part of the Russian government’s “Economic Development and Innovation Economy” program, with total budget of 3.5 billion rubles earmarked for the project through 2020.

The interdisciplinary Skolkovo Robotics Center was established in the summer of 2014 and currently has 40 startups that research industrial and service robotics, commercializing robotics products. That accounts for around a third of Russia’s robotics startups. Among the Center’s most prominent startups are Wicron (autonomous telepresence robots), KB Avrora (autonomous light commercial vehicle), RoboCV (autonomous ground vehicles for smart logistics) and Vist Mining Technology (autonomous mining heavy
Summer 2015 has seen the start of clinical trials on Russia’s first medical-use exoskeleton, ExoAtlet. This startup won the nationwide pitch contest at Startup Village 2014, Russia and Eastern Europe’s biggest innovations conference, and became a Skolkovo resident. The ExoAtlet team went on to forge its first prototype, and now patients at one of Moscow’s most advanced hospitals are putting it through its paces. By 2017, the Skolkovo Robotics Center should become the largest and most powerful commercialization hub for civil robotics in Russia. Wicron – telepresence robot supplied videoconferencing during CEBIT 2014 in Hannover.
MISSION

THE SKOLKOVO ROBOTICS CENTER (NICKNAMED ‘ROBO-CENTER’) IS PURSUING THE FOLLOWING STRATEGIC GOALS:

• Supporting Russia’s modernization drive and efforts to revive the country’s technical and technological potential through the stimulation of a high-tech robotics industry.

• Increasing public awareness on a national and international level of Skolkovo, the Skolkovo Institute of Science and Technology and the Russian robotics industry as a whole.

• Engaging opinion leaders and global experts to support the growth of the Russian robotics industry.

• Accelerating the commercialization of small knowledge-intensive enterprises in the robotics industry.

• Popularizing emerging robotics in Russia.
RESEARCH PRIORITIES
IN FALL OF 2014, THE SKOLKOVO SCIENTIFIC ADVISORY COUNCIL APPROVED THE ADDITION OF “INTELLIGENT ROBOTICS AND AUTONOMOUS VEHICLES” TO THE LIST OF RESEARCH PRIORITIES AT THE SKOLKOVO IT CLUSTER, OR, MORE PRECISELY:

• Improvement of perception, cognition, autonomous navigation, tele- and supervisory control and planning of robotics systems in dynamic non-deterministic environment of all kinds (underwater, underground, surface, air and space).

KB Avrora starts its winning round of in autonomous vehicle competition.

• New hardware or software for human-machine interaction and collaborate behaviour of robots, cloud robotics, natural control interfaces and machine learning for robots, including industrial or service applications.
Various projects for research and development of neuro-interfaces are done in Skolkovo

- Human augmentation systems including industrial or rehabilitation exoskeletons, intelligent prostheses.

ExoAtlet pilot, Yaroslav, plays football during Startup Village 2015 match.

- New equipment, sensors and software for medical robotics, robots for surgery including micro- and nano robotics. Any robotics projects hoping to receive Skolkovo resident status should base their innovation on at least one of the above areas.
- Deep Learning also important for future development of robotics and artificial intelligence. We seek projects in application of artificial intelligence technologies, including deep learning neural networks to create products and solutions that provide intelligent support for humans in relation to computer and robotic systems.
ROBOCENTER SUPPORT
THE ROBOCENTER IS PART OF THE SKOLKOVO INNOVATION CENTER, AND THEREFORE ITS STARTUPS ENJOY ALL THE BENEFITS AND OPPORTUNITIES THAT OTHER RESIDENTS GET.

TAX AND CUSTOMS BENEFITS:
• Unified Social Tax — 14%
• Profit tax — 0%
• VAT — 0%
• Property tax — 0%
• Customs duties for imported research equipment — 0%

SUPPORT FOR ATTRACTING FINANCING AND ACCELERATION:
Certified venture investors and business angels
• Mentoring and business acceleration programs
• Access to widest network of recognized international experts in Russia

ACCESS TO INFRASTRUCTURE AND CONSULTING:
• R&D infrastructure and Common Use Centers
• Consulting for applicants for the status of Skolkovo Participant
• Lease of office premises
• International and national events such as Skolkovo Robotics, Startup Village, Tech Park Olympics
• Education and mentorship

GRANT SUPPORT:
• 0% interest financing
• Different types of grants: Micro-grants (up to 1.5 million rubles), mini-grants (up to 5 million rubles) for initial stages of project and grants (from 5 to 300 million rubles), grants for scientific research activities with co-financing from 25% to 100% depending on the project phase and total amount of financing.

POSSIBILITY TO LIVE AND WORK FOR ENTIRE TEAM IN SKOLKOVO:
• Comfortable accommodation
• Education for children
• Health care
ADDITIONALLY, THE SKOLKOVO ROBOTICS CENTER PROVIDES THE FOLLOWING SUPPORT FOR PARTICIPANTS WHO HAVE SKOLKOVO RESIDENT STATUS:

- Availability of co-working space and electronics/mechatronics FabLab in Robotics Hackspace. Work spaces are provided free of charge for a period of 6 to 9 months for prototype development of commercialized robotics product.

Skolkovo Robotics Center hackspace was opened summer 2015

- Educational acceleration programs in design, production and commercialization of robotics with numerous partners such as Russian Startup Tour and partner programs such as Generation S.
- Privileged access to software from Skolkovo partners (Microsoft, Softline, Parallels, National Instruments, Autodesk, Kuka, Festo, etc.), corresponding Common Use Centers.
- Tech competitions to select promising projects together with Robocenter partners such as the Federal Agency for Scientific Organizations, the Advanced Research Foundation, Russian universities and partner Federal and regional development institutes.
- Mentor support provided by top entrepreneurs and scientists with the Skolkovo Mentorship Program (mentors.sk.ru).
MAIN ACTIVITIES AND SERVICES
SKOLKOVO ROBOTICS CONFERENCE

The inaugural Skolkovo Robotics Conference was held in spring 2013 and was immediately recognized as a huge success, as well as a powerful brand. It is specially designed to connect all the main players of robotics industry – venture capital, engineering talent and science and all exposed to highest possible media coverage in Russia. The Skolkovo Robotics Conference has already become a flagship Skolkovo event. It includes plenary sessions with prominent international robotics industry figures like Steven Dubowsky (MIT), Gary Bradsky (Industrial Perception), Francesco Ferro (Pal Robotics), Giulio Sandini (Istituto Italiano di Tecnologia), Frank Tobe (The Robot Report), Hallie Siegel (Robohub), Giorgio Metta (Istituto Italiano di Tecnologia), Frank Schneider (Fraunhofer Institute) and many others. Major Russian government, industrial and venture organizations participate in Skolkovo Robotics with great enthusiasm. There are also talks and lectures, plus the startups pitch sessions, hackathons, master classes from industrial partners and a robotics exhibition. More than 2,000 professionals attend the conference every year, and the figure is growing. Fourth Skolkovo Robotics Conference will be held 15-16 April 2016.

Opening of Skolkovo Robotics 2014
ROBOTICS INDUSTRIAL DESIGN HACKATHON

An industrial design hackathon was held for the first time in Russia as part of the third international Skolkovo Robotics Conference. In three days of competition, teams of young designers - both students and freelancers - created their concepts based on existing robots available on the market today. The jury noted the quality of submitted work was very high, and five robotic residents startups will implement the design concepts created at the hackathon in their products.

ENGINEERING HACKATHON

An engineering robohack, which is a competition among young engineers, programmers and just fans of robotics, was held as part of the international Skolkovo Robotics conference. The goal of the competition to develop prototypes of useful devices and services related to robotics. The teams were tasked with finding solutions to for people with sensory-perceptual dysfunction. The competitors were allowed to use any robotics platforms, 3D printers and accessories provided by organizers.
DeepHack Q & A, which is the International hackathon on deeper learning and machine intellect, took place on January 31- February 5 at MIPT. The participants tried their hand at solving the fundamental scientific problem – finding intellectual answers to questions about the world around.

The main objective of the hackathon was to gather talented students, PhD students, young scientists and IT industry professionals for brainstorming over one of the most complex issuing – intellectual answer to questions using the classical methods of working with natural language and algorithms for deep learning. The results of research obtained in recent years have shown that the neural algorithms of deep learning significantly exceed the classical methods of working with natural language in tasks such as speech recognition, machine translation, definition of tones in sentences and parts of speech. But in the field of dialogue and question & answer systems, many problems still remain unsolved.
ROBOCENTER COMPETITIONS

FROM 2013, THE SKOLKOVO ROBOTICS CENTER HAS BEEN REGULARLY HOLDING ROBOTICS COMPETITIONS, TRIALS AND CHALLENGES. THE COMPETITIONS GIVE YOUNG PEOPLE A FORUM TO EXHIBIT THEIR TALENTS, TO RAISE STARTUP FINANCING AND TO FIND A MENTOR

2013

DECEMBER – First Robotics and Autonomous Transport Systems competition. Robotics Community in Skolkovo was born.

2014

JULY – Skolkovo resident, KB Aurora, won first prize in All-Russia Autonomous Vehicles Challenge

JUNE – The first Turing Test in the Russian Language was held jointly by Skolkovo and Nanosemantics

2015

JULY – Skolkovo residents, KB Aurora and Le Talo won first prizes in All-Russia Autonomous Ground and Arial Vehicles Trials

2016

MARCH – Competition on best project in Marine, Arial and Ground Robotics run by Skolkovo Robotics Center and Russian Academy of Science. 40 start-ups applied

MAY – Design Hackaton aimed at improving perception of Russian Robotics run during Skolkovo Robotics Conference, on 20th May

JULY – All-Russian Challenge on Arial and Ground Vehicles run by Skolkovo Robotics and GAZ Group

SEPTEMBER – IASP Olympiad visitors are greeted by Skolkovo Robotics Exhibition
ALAN TURING RESURRECTED ON STARTUP VILLAGE 2015

2014 JULY

SMART HOME ROBOT-GUARDIAN "KEEPY" 2013

2015 JULY
SUCCESS STORIES
EXOATLET
The developer of Russia’s first medical exoskeleton, ExoAtlet, started out on its road to success by winning the pitch sessions at Startup Village 2014. The team used its prize to create an improved version of the medical exoskeleton, ExoAtlet Albert, which after four months became the first pilot projects of the company. Nine months on, the company launched the first clinical studies of a medical exoskeleton at the Pirogov Russian National Research Medical University in Moscow. The first sales of the exoskeleton are expected in 2017.
VISIONLABS
This young and ambitious company was founded by graduates of Skoltech and Bauman Moscow State Technical University. Aleksey Nekhaev and Aleksandr Khanin have developed face-recognition technology known as VisionLabs Luna based on Deep Learning Methods. The innovation is a unique algorithm for the compact description of signatures of images of objects, which ensures the highest quality of recognition and response time, surpassing competing solutions by an order of magnitude. Currently, the technology is one of the top three solutions of its kind in the world. The commercial product has already been released: Customers include the largest banks and retailers of Russia and CIS, which use VL Luna for customer identification and anti-fraud work. Strategic partnership agreements have been signed with SAS and Equifax.
PROMOBOT
The Promobot team, hailing from Perm, arrived on the scene in the fall of 2014, when it won the all-Russian competition Generation S. In spring 2015 it became a resident of the Skolkovo Robotics Center.
Promobot is a universal support robot for crowded areas that provides navigation support, consulting services for customers, identifies goods, broadcasts promotional materials, promotes sales and collects context information on customers. Promobot carries out the following tasks: Personalization; facial recognition; voice identification; dialogue (self-learning); biometry; navigation; person detection.
Promobot can currently be encountered in supermarkets, business centers, and even in a university: Promobot Alantim in January 2015 took the position of Deputy Chair of the Robotics Department at the Moscow Institute of Technology.
Promobot was featured robot in Innorobo exhibition in Lyon (France) 2015. A full list of Skolkovo Robotics Center startups can be found here: http://robotics.sk.ru
Russia has all the prerequisites for the development of robotics: a small population facilitating demand for labour-saving technologies, a high level of engineering and technical education, and many years of R&D in this and related fields. According to the estimates of the Skolkovo Robotics Center, there are around 130-150 startup companies in Russia that implement projects or conduct activities related to intellectual robotics and base technologies. It is important that the personnel potential of Russian startups is based on the large number of graduates from engineering universities with specializations in mechatronics and robotics - around 1,000 engineers per year. This is well complemented by the expectation of future breakthroughs in robotics, namely in the field of cognitive functions of robots, which essentially represent mathematical, algorithmic and software support. These competencies are well developed in Russia, which enhances the labor potential the field of robotics for our country.