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NEWSLETTER
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Skoltech

Skolkovo Institute of Science and Technology

Edward Crawley
President of Skoltech

Greetings from Skoltech!

As this start-up year comes to a close, we reflect on the rapid growth that Skoltech has undergone this first year.

The Skoltech team has expanded to 70 professionals who along with our experienced partners at MIT have laid the foundations for a world-class university at Skoltech.

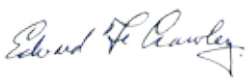
Our first 20 students are already demonstrating their potential by winning the TAPPED hackathon at MIT hosted by Verizon and Samsung.

We have selected our first three CREI and conducted an outreach campaign for the Second Call for Proposals, amassing 143 proposals.

Our Center for Entrepreneurship and Innovation has launched its Innovation Support Program, selecting four Russian research projects and partnering them with "catalyst" experts. These experts will be the guides for each project, accelerating and improving the chances of their ideas reaching the market.

We have also formed bonds with industry to continue focusing on how our actions will have impact on society. Agreements with Uralvagonzavod, Oboronprom and Intel will lead to collaboration in the fields of new materials and IT.

Our foundations are set and we are steadfast in continuing on our journey to Accelerate Innovation in Russia.



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President of Skoltech

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Students@Skoltech

For more information about Skoltech students and admissions, please contact Bram Caplan, Director of Student Affairs at caplan@skolkovotech.ru or visit the student application website http://apply.skolkovotech.ru

Hackathon Victory

Students from Skoltech, Vahe Tahmazyan and Nikita Rodichenko, and MIT Petr Kaplunovich, came in first place in the TAPPED hackathon held on October 27-28 at the Cambridge Innovation Center in Boston.
Nikita, Pyotr and Vahe developed a simple and easy way to enable audiences at lectures and conferences to download the speakers' slides. With their prototype, they received a monetary prize in the sum of $3,000, three Samsung smartphones, a trophy and other useful awards. Following their triumphant victory, we asked the winners a few questions to learn more about the project.

Could you tell us about the hackathon? How did you find out about it?

We read an announcement about it on Eventbrite.com, where announcements of such events are regularly posted. Hackathons are regularly held at the Massacusetts Institute of Technology (MIT), so you can always find something interesting there. A hackathon (from the words“hack” and “marathon”) is a competition among software programmers and developers who are implementing their own ideas. The TAPPED series of hackathons is conducted to promote and popularize the Near Field Communication (NFC) wireless technology similar to RFID but with a much shorter range of several centimeters. Besides people from TAPPED, representatives of the event's sponsors, Verizon and Samsung, also took part in organizing the event, as well as invited designers and programmers. These designers and programmers also consulted the participants throughout the course of the event.

What was your idea for using NFC?

For the hackathon, we chose a problem that everyone who attends lectures and presentations is familiar with. The slides that accompany the speaker's presentation often contain very useful information — formulas, links, graphics, and quotations. You want to save this information but can't write it all down fast enough, and you can't always find the presentation online later. So we came up with a way for the audience to attain the slides during the presentation. To do this, you just need a device with Internet access — any mobile phone — and a small program on the presenter's computer. We developed a prototype that is similar to a metro card with an NFC-tag, which contains information for interacting with our system. By touching an NFC-enabled cellphone to this tag, an audience member sends a signal that he wants to receive the presentation slide that is displayed on the screen. The server part of our system receives the signal, processes the request, and then immediately after the presentation the audience member receives all the slides that he or she “marked” by email. Our system also supports devices without NFC (an iPhone, for example): all the functions of the are accessible via a web page with a short link.

What is NFC?

NFC is a technology for the wireless exchange of data over a short distance. To link two NFC devices, you have to put them practically right next to each another, but the connection gets set up very quickly. NFC devices can be either active, meaning they can store and retrieve information, or passive — when they can only store it. One example of an active device is a mobile phone, which can be used, say, for a wireless payments, while a Moscow metro card would be a passive device.

What did the other teams have to offer?

They had many great ideas, ranging from attaching tags to all products in a store and the creation of a social network for purchases to an application that allows shy people who all happen to be at the same event together to interact over the Internet.

So what are your next steps?

We plan to start implementing our system — first at MIT lectures, then at local conferences. It doesn't require substantial investments, and is highly scalable.
Our current goal is to gather customer feedback, and continue improving the product. We believe that iteration is the best approach for developing this kind of a service, so in the nearest future, we plan to hold test runs at lectures with an audience of around 100 people.

How do you intend to finance your idea?

We've worked out several options for commercialization. For now, we mainly consider selling subscriptions to schools and owners of conference halls. The NFC-tags can just be attached to tables, and they will always be in the same place. As for the short-link non-NFC version of the service – it can be used without prior deployment at the venue, so we will be targeting individual presenters, again with a subscription model.

Petr Kaplunovich (MIT), Vahe Tahmazyan (Skoltech) and Nikita Rodichenko (Skoltech) presenting their prototype at the TAPPED hackathon in Boston.

Research@Skoltech

First Centers for Research Skoltech

Throughout the second half of 2012, Skoltech has conducted a number of negotiations to establish its first three Centers for Research, Education and Innovation (CREIs).

CREIs are ambitious research initiatives that will build our university while addressing critical problems facing industry and society, particularly in a Russian context. A CREI can receive up to $12 million worth of funding, depending on the scope and represents a key component in building capacity at the university, including establishing world-class research teams at Skolkovo, acquiring instruments, and creating facilities.

"These first three CREIs are an investment in Skoltech's future and addressing challenges facing the Russian Federation. Each center has been meticulously evaluated and we are very happy with the results," said Mats Nordlund Vice President of Research. "We expect to continue improving the process as we begin select the next group of CREIs in the Second Round Call for Proposals."

Upon final approval by the Skoltech Board of Trustees, the following centers will be formed:

For more information about Skoltech's CREI Program, please contact Ivan Sherstov, Director of Research, at sherstov@skolkovotech.ru. Further information can be found at the Skoltech website: http://skoltech.ru/research

Center for Stem Cell Research

In this CREI, world-leading stem cell scientists with a track record of original contributions and innovations have come together with the best stem cell researchers in the Russian Federation to jointly address the most important questions in the stem cell field. These include how to make transplantable (stem) cells from induced pluripotent cells and how to develop patient-specific cellular systems for the development of novel pharmaceuticals.

This CREI will identify, isolate and characterize adult stem cells from various tissues and organs to further knowledge on how these cells can contribute to solving health-related challenges.

As part of its mission, this CREI will develop capacity at Skoltech by building the infrastructure required for high-level biomedical science at Skolkovo, forming educational programs and providing opportunities for students and postdocs to research in the partnered facilities.

The team comprises world leading stem cell researchers from some of the best universities in Russia, Europe and the USA, including the Vavilov Institute of General Geneticts, Russia; University Medical Center Groningen, Netherlands; Hubrecht Institute, Netherlands; and the Whitehead Institute, USA.

Senior VP of Research and Innovation Ed Seidel presenting at the Hong Kong University of Science and Technology during an outreach campaign for the 2nd Round Call for Proposals in November.

The rapid advance of genomics

The rapid advance of genomics has provided new insight on the molecular basis of disease. However, the validation of therapeutic targets from this enormous collection of information has been limited by the slow pace of in vivo biological tools. Furthermore, conventional therapeutics, such as small molecules and antibodies, can access less than 30% of these new targets. The discovery of RNA interference has revolutionized molecular biology. It has also become clear that the combination of modern drug delivery systems and RNA interference will similarly revolutionize drug therapy and the study of biology.

The section for infectious diseases will provide a greater understanding of infectious disease mechanisms, identify novel preventative strategies, develop more sensitive and specific diagnostic techniques, and design novel therapeutic interventions for infectious diseases including tuberculosis, influenza and viral hepatitis.

The RNA portion will focus on 1) developing clinically suitable, safe and effective siRNA delivery vehicles, 2) applying RNA delivery toward vivo biology, in particular towards liver disease and cancer, and 3) establishing a multidisciplinary educational program in nanomedicine and RNA therapeutics.
The team comprises members from Lomonosov Moscow State University, Pirogov Russian National Research Medical University, Serbsky State Research Center for Social and Forensic Psychiatry, the Massachusetts Institute of Technology, Harvard Medical School, and the University of Texas Southwestern.

Center for Electrochemical Energy

The Center for Electrochemical Energy (CEE) will combine Lomonosov Moscow State University (MSU) expertise in theory, electrochemistry, and materials synthesis, with the skills in materials and device design of the Massachusetts Institute of Technology (MIT), to focus on technologies that go beyond Lithium-ion batteries in performance, cost, reliability and safety.

The center's research will largely concentrate on creating a new generation of batteries with intercalation electrodes, including high-voltage and high-capacity lithium ion systems, highly rechargeable metal-air batteries and fuel cells primarily for electric vehicles; and the development of technologies for high-performance storage devices at low costs.

New tools for in-situ real-time experimental investigations will be developed at Skoltech as well as MSU and MIT to help overcome the challenges associated with fossil fuels. Small-batch manufacture of prototype devices will also be carried out in facilities at Skoltech. By focusing on development of new tools and methodologies, the CEE will provide a unique resource for existing and new RF enterprises in the rapidly growing energy storage market sector.

Director of Research Ivan Sherstov and Professor Gabrielle Allen explaining the concept for the CREIs during a visit to Hong Kong in November.

Skoltech: A Year in Review@Skoltech

CEI Round Table at Open Innovations Jose Estabil, Director of Entrepreneurship and Innovation (MIT/Skoltech Initiative) (left) and Ilia Dubinsky, Skoltech Director of CEI (right).

From left to right: Victor Vekselberg, President Skolkovo Foundation; Vladislav Surkov, Russian Federation Deputy Prime Minister; and Edward Crawley, Skoltech President discuss a point during the October Board of Trustees meeting.

Students speaking candidly with US Amb. Michael McFaul in July at his residence in Moscow.

Over 600 scientists and researchers from across the world learned about the Centers for Research, Education and Innovation at the 2nd Call for Proposals Conference in Moscow, Russia in July.

From left to right: Skoltech Master's students Vahe Tahmazyan, Alexey Boyko and Rustem Feyzkhanov participating in the 4-week Innovation Workshop at MIT in August.

Duane Boning, Faculty Lead of the MIT/Skoltech Initiative answering questions at the Second Proposers Conference at Skolkovo, Russia in July.

Tatyana Shubina, Skoltech Director of HR, Mats Nordlund, Vice President of Research; and Ivan Sherstov, Director of Research discussing future activities at the May Reporting and Planning Meeting at MIT.

Innovation@Skoltech

From the Lab to the Market

For further details about activities by the Center for Entrepreneurship and Innovation (CEI), please contact Ilia Dubinsky, Director of CEI, at dubinsky@skolkovotech.ru

In February, Skoltech's Center for Entrepreneurship and Innovation (CEI) launched the Innovation Support Program (ISP) to identify research concepts with a high potential for commercialization and provide the necessary conditions to accelerate them to the market.

An expert panel was specially formed to evaluate 83 applications from Russian research groups and to select the winning teams. They announced their decision in May 2012, identifying four teams from Moscow State University, the Institute of Organoelement Compounds of the Russian Academy of Sciences, Ioffe Physical Technical Institute, and the Institute of General Pathology and Pathophysiology. The areas of focus widely varied from team to team, comprising:

- Developing new materials (two groups)
- Creating optical electronic sources for modeling radio signals with a millimeter diapason
- Identifying new and effective biomarkers

The ISP is far more than a project financing research; it unites each project with a group of mentors and links the teams with both industrial companies and the international innovation ecosystem. This defining aspect of the Program — the mentors also known as "Catalysts"— will be the key component to realizing its success.

The CEI has taken the term "Catalyst" from the Massachusetts Institute of Technology (MIT), where it has been used to describe expert-mentors who are not a part of a project, but possess extensive experience in the project's field, entrepreneurship and commercializing similar high-tech ideas. MIT is also working closely with the CEI to organize and implement the Program.

A similar program at MIT's Deshpande Center demonstrated the effectiveness of Catalysts assisting researchers. They also connected the projects with industrial companies and helped to transfer their ideas from the lab to the market.

In all, eight Russian and international catalysts were chosen to participate in the Program based upon their high-level of technical competence in the specific areas corresponding with the projects.

The Program's participants, Catalysts, and the CEI's leadership gathered for their first conference in October. During the conference, the participants created a framework for effective collaboration among all of the Program's participating parties. The framework included: identifying an action plan for the Program's duration, defining the most important milestones, and a discussion on how to develop the regulating structure of the partnerships among the Program's participants. The Catalysts also visited the laboratories of the participating research teams, personally evaluating their potential.

The ISP unites catalysts with Russian researchers to share their experience with them in their efforts to transfer technology to the market.

The participants signed agreements with Skoltech in November, officially launching the year-long Program. By the middle of the next year, the groups will have completed a significant amount of work according to their defined action plans and reunite for a mid-term conference.

During the conference, the Catalysts and research teams will evaluate their accomplishments, and scientific groups will analyze how much their efforts corresponded with the expected results. Based upon this analysis, they will redirect their strategy for the remaining period of the Program.

Catalysts and scientists meeting in Moscow for their first session of the Innovation Support Program (ISP) in October.

Igor Seleznev, the CEI's Director of Research, speaking to the four winning groups in the ISP in Moscow.

Industry@Skoltech

For more information on Industrial Cooperation, please contact industry@skolkovotech.ru or visit the website at http://skoltech.ru/industry

Skoltech Founds Partnerships With Industry

At the Moscow International Forum Open Innovation, Skoltech signed a cooperation agreement in the fields of education, science and technological development with three major Russian corporations: Uralvagonzavod, Oboronprom and Intel.
The agreement foresees joint development of new materials and structures, technologies for biomedicine, information communication and energy, including technology for producing and processing hydrocarbons. In addition, the signing parties agreed on collaboratively developing educational programs for training international specialists.

Edward Crawley, President of Skoltech:
"The Skoltech concept is only successful through active collaboration with industry. Science and technology are our tools to participate in the process of accelerating innovation in Russia. If we are to be successful in this, we must be in constant communication with industrial companies. The advisory groups are key in ascertaining the interests of those companies, which we then take into account while preparing our research and educational programs. We are ready to provide industry access to leading scientists around the world and to the latest achievements of science and technology in cutting-edge areas of research."

Intel will cooperate with Skoltech to develop cutting-edge technologies for the IT industry. Uralvagonzavod and Oboronprom joined Skoltech to research into new materials and structures, as well as research in mechanical engineering.

Kamil Isaev, General Director for Research, Intel:
"We see Skoltech as a fundamentally new starting point within the model of "industry-education." For many, it is clear that educational programs are not always in tune with the times, given the rapidly accumulating knowledge and development of technology. In our view, the purpose of Skoltech is to change the "university" way of thinking and demonstrate how, by supporting practical results, innovative research can be conducted and current educational materials can be "extracted" from them."
Skoltech also announced on November 14 that Rosatom donated 210 million rubles (USD $7 million) to the Institute's endowment. This donation will be directed toward developing collaborative projects between Skoltech and Rosatom.

The November Signing Ceremony marked the beginning of Skoltech's official cooperation with industrial companies.

Education@Skoltech

For more information on Skoltech's educational programs, please contact Mats Hanson, Dean of Education, at hanson@skolkovotech.ru. Further information can be found at the Skoltech website: http://skoltech.ru/education

Education Workshop

From October 8 to 9, about 25 Skoltech professors and administrators, Founding Faculty Fellows and expert educators gathered outside of Stockholm, Sweden to gain a deeper understanding of the educational principles and formulate Skoltech's future academic programs.

At the workshop, a group of experts on reforming the practice of engineering education led by Kristina Edstrom, Skoltech Director of Educational Development, presented an innovative educational framework. The underlying objective was to analyze teaching from the learning outcomes that it generates — seeing teaching from a learning perspective.


Skoltech and its MIT partners working together in Sweden.

"The education workshop was a well spent opportunity to align our thinking on education curricula design at Skoltech and have an opportunity to discuss different perspectives on project based learning," commented Skoltech Professor Alessandro Golkar, who participated in the workshop. "I think the outcomes of the workshop will have an impact in the way Skoltech faculty members and team think and design education, research, and innovation programs at the university."

The workshop was designed drawing on a decade of experience from the CDIO Initiative — which was founded by President Edward Crawley and now engages over 80 universities to produce the next generation of engineers. Speakers came from KTH Royal Institute of Technology in Stockholm, Chalmers in Gothenburg, and from Aalborg University in Denmark.


Professor Yuri Shprits and VP of Education Mikhail Myagkov discuss Skoltech's educational principles in October at the Education Workshop in Sweden.

Accelerating Innovation!

Skoltech

Applications to join Skoltech's MSc programs are due January 21, 2013.
To find out more and submit your application:

http://apply.skolkovotech.ru/

For all press related inquiries and to learn more about Skoltech, please contact Justin Varilek at varilek@skolkovotech.ru

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