



INTERNATIONAL INNOVATION CONFERENCE

OpUS SUMMER CAMP

SmartAgro

BRICS+

3 – 8 JULY 2016

HYPERCUBE, SKOLKOVO INNOVATION CENTER

ORGANIZED BY



OPEN UNIVERSITY
Skolkovo
OPEN TO THE FUTURE



Federal Agency for Scientific
Organizations



The Ministry of Education and
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and education

Skoltech
Skolkovo Institute of Science and Technology



HSE — Skolkovo Institute for
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Skolkovo

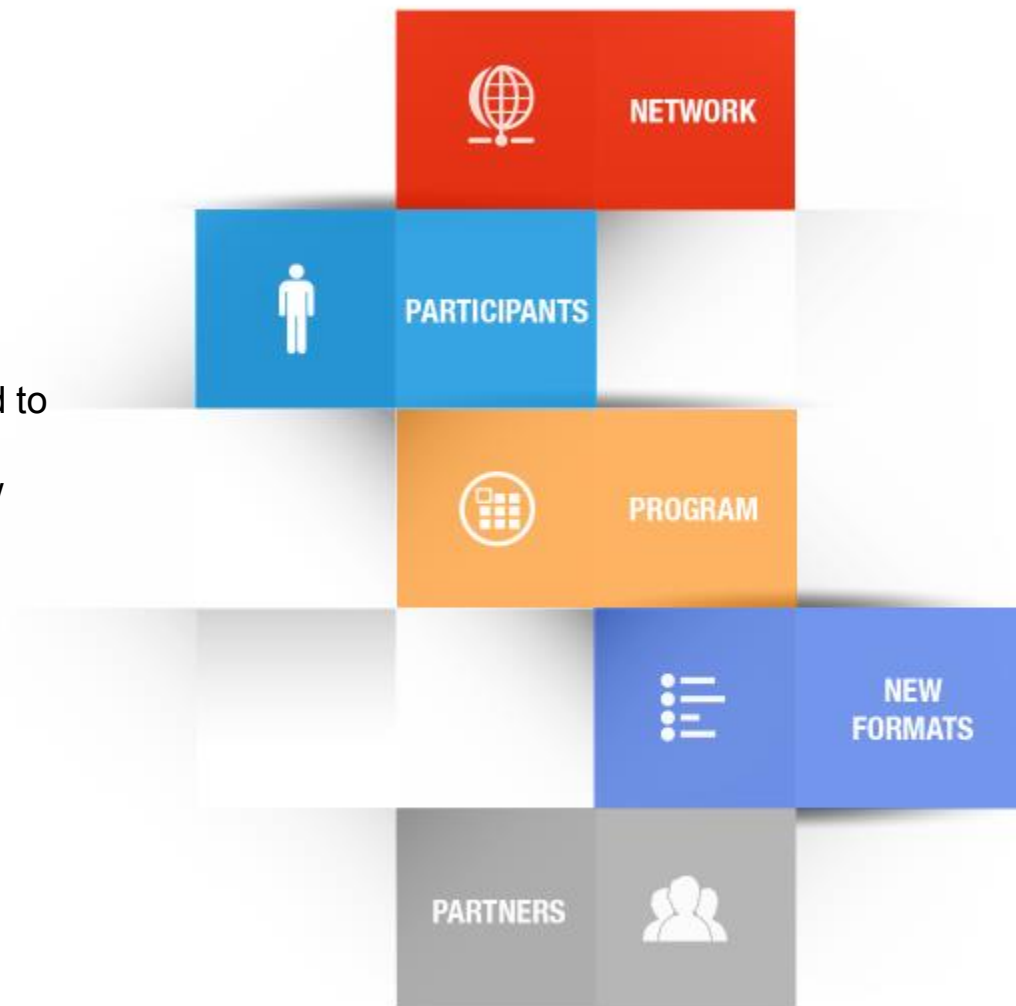
MISSION:

The mission of the Skolkovo Innovation Center and the Skolkovo Foundation, responsible for the creation of the center, is to build up an innovation ecosystem in Russia to promote the favorable conditions for the development of innovation processes, primarily in terms of support for advanced research and development followed by the commercialization of their deliverables in five priority areas of technological development.

- The Skolkovo Foundation ensures the formation of a full cycle of the innovation center's innovation process, including education and scientific studies, research and development, and the commercialization of their deliverables.
- The Skolkovo Foundation provides a model for the development of an innovative economy on a Russia-wide scale. The innovation center serves as a testing ground that enables advanced scientific ideas originated by Russian institutes of academic and applied sciences to be introduced into the country's economy.

What is OpUS

Open University Skolkovo (OpUS) is a Skolkovo Foundation program designed to attract young people with science and technology skills, recruit them and allow them to develop within the innovation ecosystem in Russia.



International research:

The regulation of the food industry in BRICS countries

For Russia and emerging markets, the production and distribution of food products constitute one of the issues of a top priority. In 2015, the HSE-Skolkovo Institute for Law and Development, in partnership with BRICS countries' expert community, has launched a research project on global food value chains, e.g. on functioning and regulation of the food sector in the developing countries.



The research outcomes will facilitate the development of the most efficient measures for nurturing new competition and innovation policies and removing of barriers to entry for small innovation business of BRICS agricultural sector. These results are of particular importance for the Skolkovo Foundation as its activity recently expanded to agrotechnology sector as well.

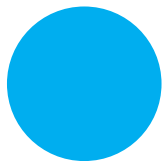
Why BRICS Smart Agriculture?



Finding solution to the problem of hunger in the world is an urgent task for the BRICS countries, who have great potential in the field of agriculture.



«**Smart**» **Agriculture** requires new approaches and innovative solutions to improve efficiency and inspire the development of organic farming.



Russia's BRICS chairmanship program in 2015-2016 assumes extension of humanitarian, social and scientific cooperation in connection with real projects.



Challenges

Currently one billion people suffer from hunger and malnutrition.

The same time the amount of food produced in the world is enough to feed the entire population of the planet, but large differences exist between different countries access to this food.

Food scarcity could stoke political instability, particularly in Asian countries.

Challenges



Furthermore, population is growing and by 2050, 60% more food will need to be produced: an additional one billion tons of cereals and 200 million tons of meat will need to be produced annually.

Tackling the global challenge of hunger is complicated by accompanying problems: harmful influence of technologies improving the productivity on the quality of the food, and food associated problems: epizootic and zoonotic diseases like avian flu, and food related disorders, such as obesity.

Changing diets driven by rising incomes and increasing quality of life, as well as culture integration, globalization, changes in the settlement – all these factors transform agricultural sector.

Opportunities

For BRICS, whose population is almost half of the world's population, the prevention of hunger and agriculture development are among the priorities.

Scientific and technological potential of the countries is enough to solve these problems and the same time to achieve the following goals:

1	To reach economical and political security: to get enough resources and effective technologies
2	To start export the food
3	To maintain and strengthen public health by providing safe, healthy, good food
4	To reach the sustainable development
5	* To extend the possibilities of space exploration and human activity in space through the development of technologies of food production on space stations

A system of the limiting factors

in agriculture

WASTEFULNESS: 1/3 of food is lost or wasted before consumption/ 20% is lost along the supply chain

WATER: Agriculture consumes approx. 70% of world's accessible freshwater

FEED SECURITY vs. FOOD SECURITY:
80% of global agricultural harvest goes to feed livestock.

INFECTION: infectious diseases (foot and mouth disease, etc.) can cause great damage to livestock

CLIMATE: Agriculture yields might be reduced up to 10-25% due to climate change

ENERGY: energy used for cultivation, processing, packing and bringing food to tables accounted for 17% of EU's energy consumption in 2013

MARKET: a number of technologies is not implemented in practice, because of their inability to compete with foreign manufacturers or because of economic inexpediency of application of the technologies and innovations

ECOLOGY: the use of some technologies is limited due to their harmful impact on the environment

LAW: in the areas of genetic engineering and biosecurity, **BIOETHICS**

Technologies

Biotechnologies



- Genetic engineering/modification for transferring desired traits
- Cloning
- In vitro meat
- Soil Microbiology, plants as biofactories
- Biocatalysis and biotransformation
- Metabolic engineering
- Development and optimization of fermentation processes
- Diagnostic test system
- The use of enzymes in industrial and household processes

Nanotechnologies



- Nanocapsules for delivery of pesticides, fertilizer and water
- Food processing: nanoparticles to selectively bind and remove chemicals and pathogens
- Food packaging: Biodegradable nanosensors for monitoring temperature, moisture and time
- Supplements: Nanosize powders to increase absorption of nutrients

Sensors



- Air & soil sensors for real time monitoring of farm, forest or water conditions
- Equipment telematics
- Biometrics and RFID for information on livestock
- Crop sensors: Optical sensors to inform equipment on the amounts needed by plants
- Infrastructural health sensors to monitor infrastructure

Technologies

Automation



- Geolocation technologies
- Precision agriculture for more efficient management and decision making
- Internet of things
- Agricultural robots & swarms to automate processes, prediction, application and monitoring

Engineering technologies



- Closed ecological systems to transform waste products into oxygen, food and water
- Packaging technologies
- Control of product quality and safety
- Food storage
- 3d-printing, Synthetic biology with expansion of biotechnology to design, build and remediate engineered biological systems
- Vertical farming for urban agriculture
- Drones for increasing yields and reducing crop damage

Technologies

New materials



- Multifunctional bioplastics for packaging (biobased, compostable and biodegradable)
- Nanomaterials
- New services

Resource-efficient agricultural practices



- Restoration and preservation of natural capital
- Developing peri-urban and urban farming
- Developing digital supply chains
- Aquaponics, airponics applications

Consumer inquiries

affecting on market and technology development

Food as social practice,

Food as an element of life-style: fashion and traditions, food aesthetics, national cuisine as cultural project, changes in diets, reconstruction of markets.

Personalized products

functional foods

Consumer inquiries:

diversity, tasty, simple/difficult to cook

Superstitions about food:

Superstitions against genetically modified food, faith, that all farm-products are better than GM-food, etc.



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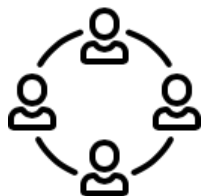
Summer Camp – 2016 is one of the key programs of Open University Skolkovo and Skolkovo Innovation Centre dedicated to development of young talents in the field of science and technology and formation of the channels of international cooperation between representatives of science and innovation systems of Russia and BRICS countries.

Goals

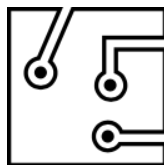
To create area of cooperation and confidence between the representatives of innovation and research systems of Russia and the BRICS countries on the platform of Skolkovo Innovation Center

To give impulse to the technological development of the Russian agricultural sector due to the international scientific and technological cooperation

Tasks



To build strong connection between Russian young researchers and entrepreneurs from the agricultural sector with BRICS community in spheres of science, research and entrepreneurship.



To outline advanced areas of scientific research in agriculture and possible ways of its commercialization.



To demonstrate opportunities of scientific and technological cooperation on the platform of Skolkovo and the prospects for the formation of competence center in the field of SmartAgro.

Key activities



Use of services based on satellites and UAV for precision farming (navigation, remote sensing, weather prediction)



Internet of Things technological solutions for agriculture



Plant agriculture (Innovations in crop breeding and selection, technologies for effective planting and precise land use, plants as biofactories).



Livestock and aquaculture innovations (cellular and genetic engineering biotechnologies; livestock reproduction; veterinary and livestock monitoring; feeding and nutrition)



New materials for agriculture



Automation and control systems in the livestock, poultry and crop production



Industrial microbiology and biotechnology (biocatalysis and biotransformation; metabolic engineering; development and optimization of fermentations)

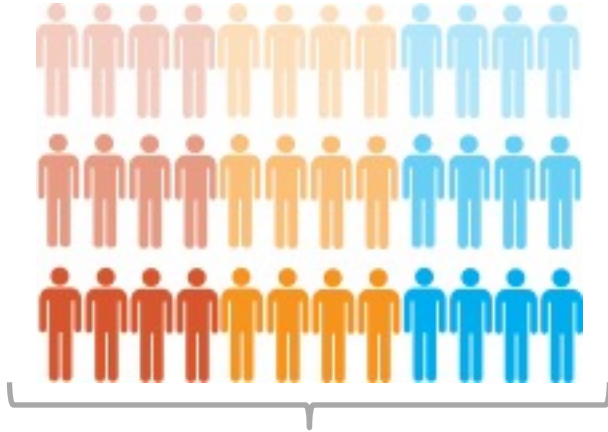


Innovations in processing of agricultural products (processing and production of products and drinks; packaging technologies; control for product quality and safety; storage)



Forestry and forest technologies (development of molecular mapping for genetic monitoring of forest's genetic resources, development of effective and ecologically clean methods of waste utilization in forest industry)

Participants



120

Young scientists, entrepreneurs and young corporate professionals from BRICS countries, focused on creating high-tech solutions in agriculture who are keen on cross-border projects and oriented towards global markets

Focused on creation of popular and competitive solutions and technologies for agriculture

- young scientists
- technology entrepreneurs
- young corporate professionals

The age limit for participants is **18 to 35 years**

Schedule

	July, 3	July, 4	July, 5	July, 6	July, 8	July, 7
10:00 - 10:30		Morning sport activities	Morning sport activities	Morning sport activities	Morning sport activities	Excursion program (to R&D-centers and offices of corporations)
10:30 - 11:00		Laws, rules and standards governing research, development and startup-activities in agricultural field	Global Vision: development priorities for agricultural technologies	Features of commercialization in agricultural field	Teamwork: solving tasks	
11:00 - 11:30						
11:30 - 12:00						
12:00 - 12:30						
12:30 - 13:00		Lunch	Lunch	Lunch	Lunch	
13:00 - 13:30						
13:30 - 14:00		Presentations by camp participants: communities and organizations as an interface for in-country and international cooperation	Presentations by camp participants: research and development in agricultural field	Ways of corporate interaction with teams of startups and young scientists in agricultural field	Teamwork: solving tasks	
14:00 - 14:30						
14:30 - 15:00	Registration. Welcome coffee	Development institutions and foundations: instruction manual	Success Stories: innovative projects in agricultural field	Teamwork: solving tasks	Presentations of teamwork results	
15:00 - 15:30	Greetings from the organizers					
15:30 - 16:00						
16:00 - 16:30	Introduction: Future of food					
16:30 - 17:00						
17:00 - 17:30	Acquaintance	How to interact with Skolkovo Innovation Center?	A series of mini-presentations "Global technology trends"	Teamwork: solving tasks	Summarizing the outcomes of the Summer Camp	
17:30 - 18:00						
18:00 - 18:30	Group Discussion: Possibilities of scientific and technological cooperation at Skolkovo platform					
18:30 - 19:00	Coffee-break					
19:00 - 19:30	Opening ceremony (Day of Russia)	Coffee-break	Coffee-break	Coffee-break	Closing ceremony (Day of India)	
19:30 - 20:00		Social program (Day of China)	Social program (Day of Brazil)	Social program (Day of South Africa)		
20:00 - 20:30						
20:30 - 21:00						

About the Camp

120

young scientists and entrepreneurs:

leaders and active members of the scientific and technological projects in the field of agriculture

7+

countries participating:

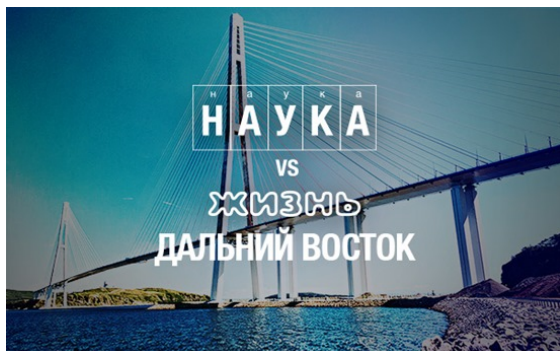
Russia, Belarus, Kazakhstan (young scientists and entrepreneurs are selected at regional stages of Russian Startup Tour), BRICS (Brazil, India, China, South Africa) and others.

50

speakers and mentors from:

- global research and development centers
- BRICS development institutions
- major corporations and holding companies
- successful technological start-ups
- ministries and agencies

OpUS Camps



Все школы на сайте
opus.sk.ru

TEAM



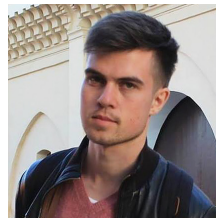
**Andrey
EGOROV**
Global vision



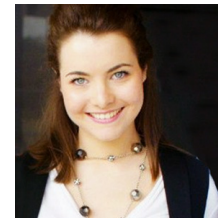
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**Elena
DIRYUGINA**
Program



**Max
GERASIMOV**
Participants



**Euginia
RUSSKIKH**
Project leader



**Roman
KULIKOV**
Technology vision



**Elena
DMITRIEVA**
Documentation



**Nikolay
YAKOVENKO**
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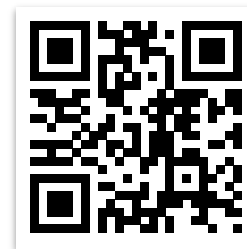
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