

## **AEB Open Event:**

### **Round Table "AEB-Skolkovo Partnership"**



## **Philippe PEGORIER**

Member of the AEB Board, Chairman of the AEB Committee on Machine Building and Engineering, President Alstom Russia

## **Welcome address**



## **Michael AKIM**

Chairman of the AEB Working Group on Modernization and Innovations, Director for Strategic Development, ABB Russia

## **Welcome address**



# **Vasiliy BELOV**

### Senior Vice-President for Innovations, Skolkovo Foundation

The Results of the Skolkovo Foundation's Work: Current State of the Project Development. Possibilities for Corporate Partners



## Skolkovo Innovation Centre

Opportunities for industrial partners



### Russia has high potential for innovations and R&D



2013

#### **Global Innovation Quotient**

Calculated for 200 countries. They are rated by rate of patent registration, concentration of researches, intensity of R&D, volume of investment in R&D etc.

Bloomberg



2012

#### **Dow Jones VentureSource**

Evaluates venture markets by a number of criteria.

Wall Street Journal, Heritage Foundation



#### **Global Innovation Index**

Compares countries by degree of innovativeness, taking into consideration supporting ecosystem and output of innovative products.

INSEAD, WIPO



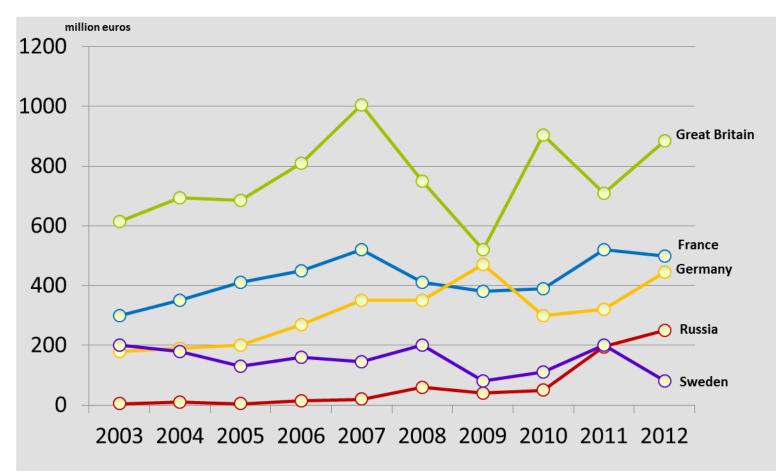
#### Human Development Index

Serves as a comprehensive estimate of life expectancy , literacy, level of education and income



### Venture investments in Russia are growing

### Top 5 European countries by venture investments in high-tech



Note: without semi-conductors. Source: Dow Jones VentureSource 2012.



# Skolkovo is a strategic development institution established the Russian Government



**Skolkovo Mission** 

DIVERSIFY THE RUSSIAN ECONOMY THROUGH INNOVATION AND ENTREPRENEURSHIP

INTEGRATE RUSSIAN SCIENCE AND TECHNOLOGY INTO THE GLOBAL ECONOMY

DEVELOP HUMAN CAPITAL THROUGH WORLD-CLASS RESEARCH

GROW COMPETITIVE KNOWLEDGE-BASED COMPANIES





### Key elements of Skolkovo ecosystem

**Skolkovo Institute of Science and Technology (SkolTech)** – modern research institute created in collaboration with the MIT (Massachusetts Institute of Technology). Is a convenient platform for carrying out research and experiments, considering the concentration of technological and human resources, also serve as a source of personnel for corporate R&D centers and start-ups

**Small and mid-size innovative companies (start-ups)** create innovative technologies that can be used by large industrial companies

### **R&D** centers are of key partners

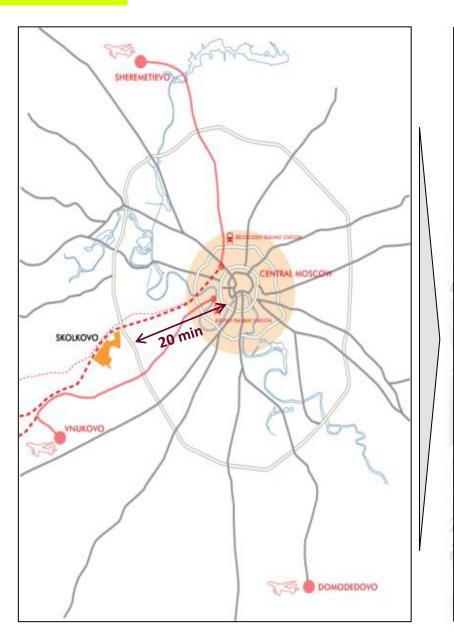
Large corporations interested in the development of innovations, commit to place its own R&D centre in Skolkovo. Target parameters of the R&D center are agreed with Skolkovo Foundation: quantity of personnel, budget and areas of research

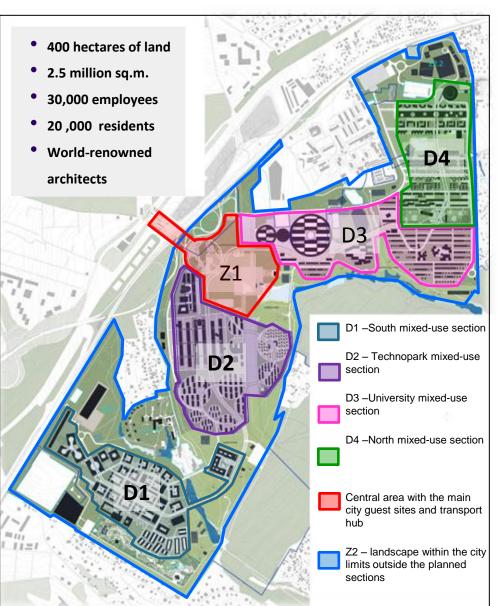
It is possible to locate R&D center in Skolkovo:

- in own building
- in leased office and laboratory centers built by independent investors
  In Skolkovo it planned more than 350 000 m2 of R&D centers



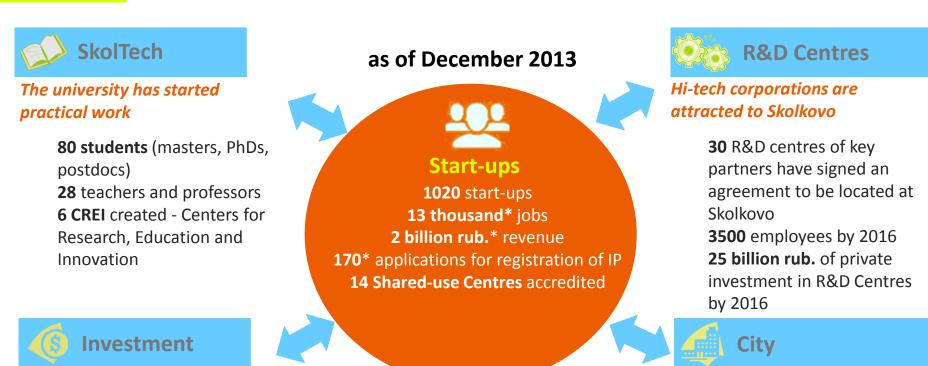
### The City of Skolkovo







### Skolkovo Ecosystem now



### The group of investors is formed and commercial deals were closed

101 resident supported by accredited venture funds

2,5 billion rub. – investment agreements signed

**25 billion rub.** – non-binding commitments of accreditated venture funds

In 2013 investment agreements and construction contracts were signed. Construction works of main buildings for the ecosystem residents began

- Technopark (I and II stage)
- SkolTech
- Residential premises in zone D2 In 2014 will be put into operation:
- Technopark (I stage)
- Renova-Lab
- Skolkovo Business Centre ("Matryoshka")

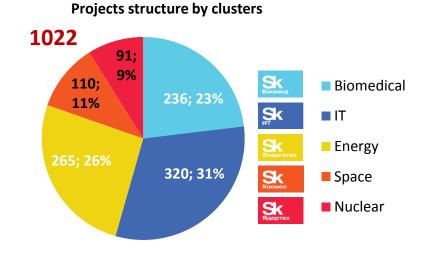
\* - preliminary estimate before formal year-end closing

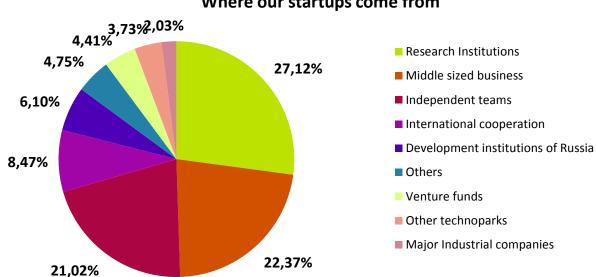


### Skolkovo attracts startups from all over Russia

44 regions. Over 40% od the startups come from cities other then Moscow



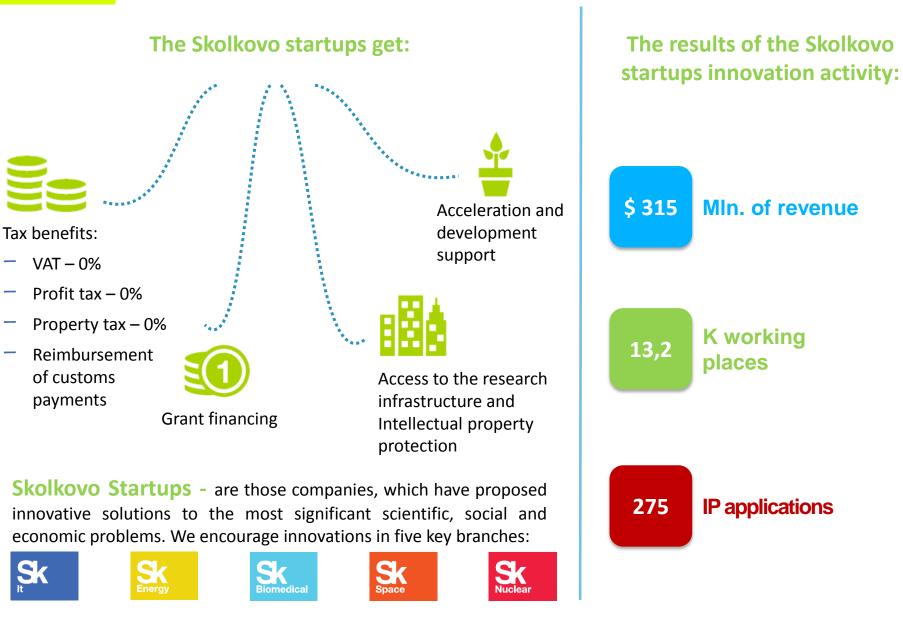




#### Where our startups come from



### Skolkovo startups get the state and administrative support





### **Key Industrial Partners of Skolkovo**





### **Opportunities for industrial partners in Skolkovo**

- Greatest minds Skolkovo is the centre of attraction for to the top scientists and engineers from all over Russia, providing unique source of human resources
- Cost-effective placement of R&D center in Skolkovo Significant tax exemptions (Social taxes 14% instead of regular 30%; 0% - income tax, property tax, custom duties for import of equipment and materials for research). Land for construction of corporate R&D centres is provided almost for free
- Cutting-edge technologies created by startups, which receive substantial financial and mentoring support from Skolkovo Foundation
- Leading scientific expertise Convenient to conduct research and experiments in cooperation with SkolTech (The Skolkovo Institute of Science and Technology) and its partner universities in Russia and worldwide
- Laboratory infrastructure of SkolTech and Technopark
- Access to Russian government and policymakers (legislative initiatives/GR) via your place in Industrial Advisory Board - Skolkovo is developing under the strong support from the federal government, which is actively participating in its development. R&D centre at Skolkovo provides exceptional visibility and access to state authorities
- Comfortable conditions for work and life in the uniqe city infrastructure specially developed to host demanding top professionals
- Locating R&D close to the huge market of Russia



### Unique Tax benefits in Skolkovo

Special Federal Law outlines the terms for the Participants of the Project to create the Skolkovo Innovation Centre



Import of laboratorial equipment			
	<b>Sk</b> сколково		
Custom duties	0%	5-35%	

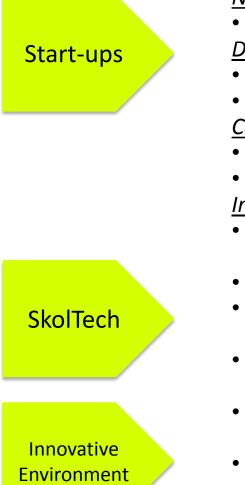
Property and profit taxes				
	<b>Sk</b> Сколково			
Property tax	0%	2,2%		
Income tax	0%	20%		

Construction				
	<b>Sk</b> Сколково			
Land lease	3 USD/m²/year			
<b>Connection to utilities</b>	Minimal			

Tax benefits are provided during a 10 year period if the annual revenue does not exceed 1 billion rub. and profit is less 300 million rub.



### **Opportunities for partners to interact with the ecosystem**



New ideas search

Holding contests for innovative ideas

<u>Development</u>

- Provision of Acceleration programs and Mentoring
- Organization of Training programs <u>Commercialization</u>
- Ordering research from residents
- Testing and launching pilot projects *Investments*
- Venture investments
- Internship for SkolTech students
- Participation in development and financing of SkolTech CREIs (Centers for Research, Education and Innovation)
- Creation and co-financing of Applied Research Centres
- Open University of Skolkovo (OpUS) promoting innovative entrepreneurship
- Skolkovo Foundation events attracting new residents and partners for the Skolkovo project, stimulating interaction between various elements of the ecosystem



### Examples of new ideas search







**The "I-Prize" contest** – an open contest "Innovations Award of Skolkovo " aimed to support the Russian startups working in development and application of network and cloud technologies in the fields of energy saving, health care and education – took place in 2013. The contest's final in September, 2013, named three winners who received awards in the form of grants from Cisco in the total amount of 5,25 million rubles.

**"Favor-IT"** is a competitive selection of the best investment projects together with the key partners (SAP, EMS), venture fund (Maxfield Capital) and "Bortnik's Fund". The best projects will have a chance to apply for mentorship and financial support from the organizers. The selection final is in June, 2014.



**"IBM Smart Camp"** contest is a search of the strongest startup in the field of innovative technologies potentially interesting to IBM. In June 2013 the Skolkovo resident (JSC STEK) won the contest and was granted by IBM the access to a 3-month mentoring program and assistance in entering the market.



**"SAP Big Data"** is a search of the strongest startup in the field of Big Data. In October 2013 the Skolkovo resident (Vision Labs) became the winner with an opportunity to develop its project on the basis of SAP labs for 6 months and be trained at SAP.



**Competitive selection of innovative projects in power-engineering** – Energy Efficiency Cluster carried out in March-December 2013 in co-operation with the large industrial and energy companies. The companies set up particular technical parameters to be reached and took part in the jury in fields of their professional interest. The winners will be granted up to 5 million rubles by the Skolkovo Foundation. Industrial partners will have access to the results of R&D.







centre

### **Route for new partner**

**Foundation Board** Cluster Company Defines the format of Initially determines the Takes a decision on the setting up an R&D Centre appropriateness and possibility of signing the at Skolkovo: the format of setting up Agreement and granting - Areas of R&D the R&D Centre at Partner status - Staff number Skolkovo, prepares a draft agreement and - Investments recommends the Board Prepares presentation

### **Foundation Council**

Takes a decision on the possibility of signing the land leasing agreement (in case of own building for R&D Centre construction)

• Tax concessions are provided on the Partner's application on condition that the signed agreement for partnership is observed

#### Land Leasing Agreement

Land "for free" for the construction of an R&D Centre building is provided

### for the future R&D to provide Partner **Agreement on Establishing** status an R&D Centre Status of Partner (Key Partner) = • the right to set up an R&D Centre at Skolkovo



### **Vasily Belov**

Senior Vice-President on Innovations vbelov@sk.ru +7 (495) 967 01 48

### Mikhail Tykuchinskiy

Head of Intercluster Group for Cooperation with Industrial Partners Development Director, Energy Cluster <u>mtykuchinskiy@sk.ru</u> +7 (910) 434 1930



## **Martin GITSELS**

Head of Corporate Technology Department, Siemens Russia

## **Experiences of the Companies-Residents of Skolkovo**



## **Dmitry SHULGA**

# Vice-President, Governmental Affairs & External Relations, Schneider Electric

## **Experiences of the Companies-Residents of Skolkovo**



## **Alexey PONOMAREV**

Vice-President for Industrial Cooperation and Public Programs, Skoltech

Skolkovo Institute of Science and Technology (Skoltech): Possibilities for Industrial Cooperation



### AEB Open Event: Round Table "AEB-Skolkovo Partnership"



January 30, 2014

### Skoltech – Opportunities for Collaboration with Industry



**Alexey Ponomarev** 

**Skolkovo Institute for Science and Technology** Vice-president for industrial cooperation and public programs



**SKOLTECH – OPPORTUNITIES FOR COLLABPRATION WITH INDUSTRY** 



### **CONTENTS**







### SKOLTECH INDUSTRIAL PROJECTS



**SKOLTECH – OPPORTUNITIES FOR COLLABPRATION WITH INDUSTRY** 



### **PART I**

# Skoltech

Сколковский институт науки и технологий



ABOUT SKOLKOVO INSTITUTE OF SCIENCE AND TECHNOLOGY (SKOLTECH)





### **General Description**

### **Skoltech at a Glance:**

- → A new Russian institution in an **international context**.
- → 200 faculty, 300 post-docs, 1200 graduate students by 2020.
- → On a **new campus** to be built in Skolkovo.

### **Skoltech's Mission:**

- → Become a gate to the best world research and science groups.
- → To keep the balance between **basic research** and **advanced** research aimed at being transferred into Russian companies.

### **Skoltech's Support:**

- → Considerable **start-up support** from the Government.
- → Financial support from the Russian industry:
  - ➔ Endowment filling.
  - Co-funding within Skoltech research projects.





### **General Description**

### **Governmental Expectations from Skoltech:**

- Developing educational programs in top-priority directions for industry.
- Providing industry with research according to the new technological industry needs.
- Setting-up new effective mechanisms of collaboration between education, science and industry as a new issue of post-soviet culture in education and science.
- Easing the access to international research and educational network to exchange knowledge and competences in science and education with the world's top players.



# Main goals - stakeholder's view

→ To bring new competences to support industrial programs ("bridge")

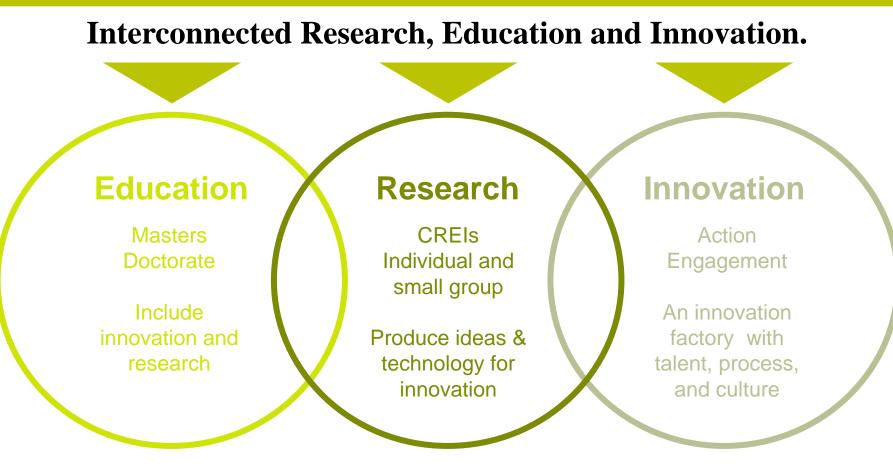
- → To be a model to support changes if Russian R&D and Education ("model")
- → To be an intellectual part of Skolkovo Innovation Center ("core")





**SKOLTECH – OPPORTUNITIES FOR COLLABPRATION WITH INDUSTRY** 

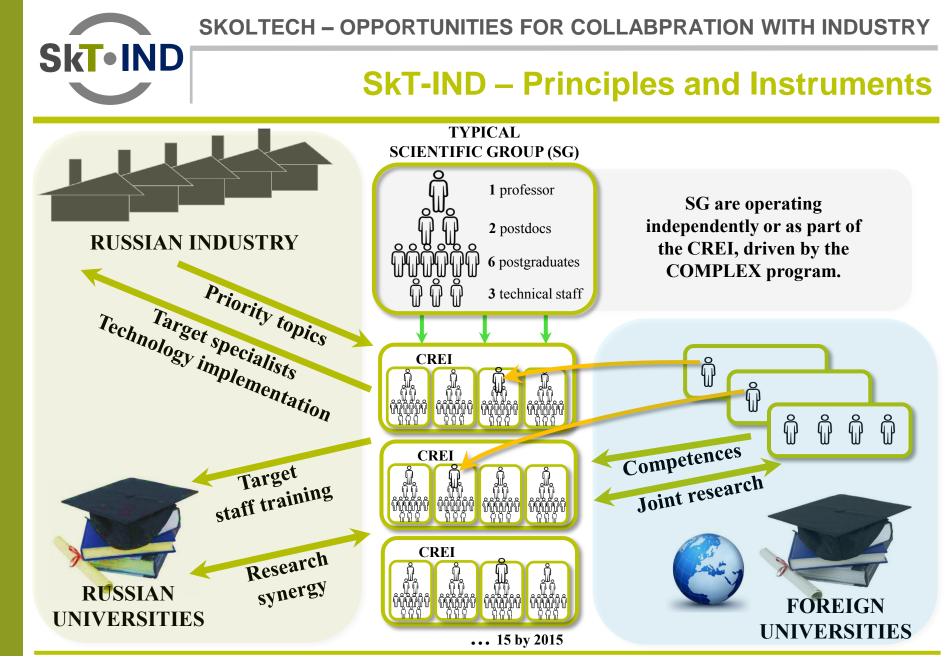
### **General Description**



→ Mission: To have educational, scholarly and economic impact in the Russian Federation and around the world



January 30, 2014 | Page 30



Skoltech

**SKOLTECH – OPPORTUNITIES FOR COLLABPRATION WITH INDUSTRY** 



### PART II



### **COLLABORATION** WITH INDUSTRY –

GENERAL PRINCIPLES AND INSTRUMENTS



January 30, 2014 | Page 32



### **SkT-IND – Principles and Instruments**

### **Different Types of Joint Projects:**

- → Research long-term and short-term projects.
- → Educational programs for industrial experts.
- → Faculty sabbaticals in industry and vice versa.
- → MIT designed students' internship program "Industrial Immersion".



### **Open Form of Interactions**

- ➔ Industry is welcome to interact with any Skoltech faculty or any Skoltech office on any issue.
- Industrial Partnership Office (IPO) is in charge of long-term projects and Consortia-based projects.

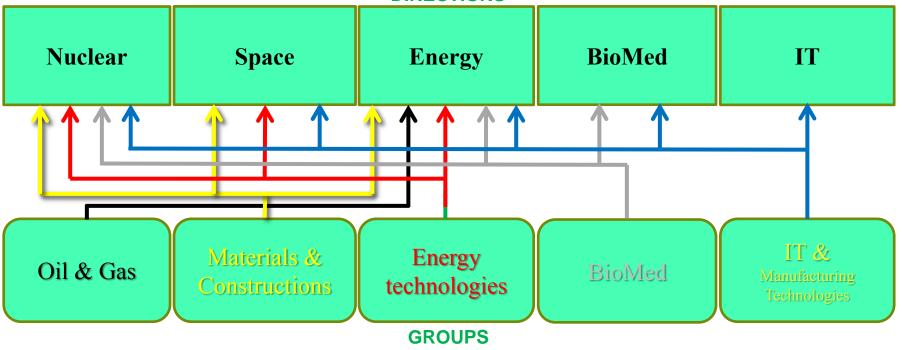




**SKOLTECH – OPPORTUNITIES FOR COLLABPRATION WITH INDUSTRY** 

### **SkT-IND – Principles and Instruments**

### **Skoltech Industrial Advisory Groups**



DIRECTIONS

- → Advisory Group a platform for coordination of industrial issues.
- → Members of Advisory Groups R&D and technological experts.





### **SkT-IND – Principles and Instruments**

Oil & Gas	Gazprom Neft	Rosneft Zaru	begneft Tatneft	Novatek	
	Lukoil	Salym Petroleum	Transneft	Ttovutok	
	Russian Railways	<b>United Aircraft Cor</b>	poration U	ralvagonzavod	
Materials & Constructions	Russian Highways Rocket and Space Corporation "Energia"				
	<b>Russian Helicopters</b>	<b>Oboronprom</b>	Rosatom	ApATeCh	
Energy technologies	<b>Russian Grids</b>	INTER RAO En-	VNIPIenergop	rom RAO ES	
	RusHydro UE	S System Operator	Energy Forecas	ting Agency	
	R-Pharm	GosNIIgenetika	Biocad		
BioMed	Chemrar Pharm-cluster of Kal	PetrovaxPharm uga	BioPharm-cluster	InterLabService "Severnij"	
ΙΤ	ABBYY Mic	rosoft Rus Techno	Serv Ros	stelekom	
	IDC	Intel	EMC	IBS 1C	
	Association of Softwa	re Developers "Domestic	c software"	and many others	





### **PART III**



### SKOLTECH INDUSTRIAL PROJECTS

**IPO-LED PROJECTS** 



January 30, 2014 | Page 36





## **General Description**

## **Summary of Skoltech High Priority Directions:**

(generated by the science community and by the industry)

#### **Energy:**

- Hydrocarbon fuel production and transportation
- → Hydrocarbon processing
- Electrical power systems generation and distribution
- → Electrical energy storage

## **Biomedicine:**

- → Computational and systems biology
- → Immunology and infectious disease
- → Gene- and nano-medicine
- → Regenerative medicine

## Nuclear:

- → Nuclear energy safety
- → Materials for extreme environments
- Non-energy applications

## IT:

- Machine learning and AI
- Advanced computing systems
- → Big Data
- Electronics materials and device
- Quantum physics/technology

#### **Space:**

- Supporting humans in long term space exploration
- → Small satellites
- Utilization of space data

## **Cross-cutting:**

- Advanced materials
- Computational and data-intensive science & engineering
- Human engineering and cognition





## **Research at Skoltech**

## → 3 CREIs based on the best selected proposals of the round 1:



- STEM CELLS CENTER
  - → Director appointed (Prof. Anton Berns)
  - Start operating in June



- INFECTIOUS DISEASES AND HUMAN HEALTH CENTER
  - → Finalizing procedures of director appointment
  - Finalizing operational plans



## ELECTROCHEMISTRY ENERGY CENTRE

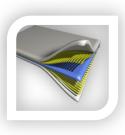
- → Director search negotiating with two main candidates
  - Working on operational plans





## **Skoltech IPO Industrial Projects**

**3 projects are being designed in close cooperation with industry:** 



## **ADVANCED MATERIALS AND STRUCTURES**

Director Prof. Zafer Gurdal





## **COMPLEX ENERGY SYSTEMS DESIGNING**

→ Director Prof. Janusz Bialek



#### HYDROCARBON RECOVERY

➔ Director Prof. Iskander Akhatov









## **Skoltech IPO Industrial Projects**



## ADVANCED MATERIALS AND STRUCTURES

Physical mechanics of metal-, ceramics- and polymer-based materials and composites of structural parts for designs with a multimodal structure.

- Materials, composites, coatings and structures capable of adapting to external forces (force, temperature, radiation, frequency, etc.).
- → Physical mechanics of organic binding agents.
- Tribology, friction, and wear in critical parts of complex structures.













## **Skoltech IPO Industrial Projects**



## **ENERGY SYSTEMS**

## Focus on smart grids, energy markets, joint infrastructures, energy hardware:

- Theories, methods and algorithms of intellectual energy management systems.
- Complex socio-economic, cyber-physical models of future energy systems.
- Energy infrastructure fragility/resiliency, market structures and interdependence.
- Alternative renewable energy (wind, solar, geothermal, etc.).
- Superconductivity, technological solutions based on superconductivity.



Skolte

kolkovo Institute of Science and Techn

## **Skoltech IPO Industrial Projects**



SkT•IND

## HYDROCARBON RECOVERY

Focus on new knowledge and new solutions for "hard to recover" resources, unconventional hydrocarbons and production at harsh conditions:

- Brown oil fields, carbonate, fractured and anisotropic reservoirs.
- → Tight oil (Achimov and other low permeable formations).
- → Shale oil (Bazhenov formation).
- $\rightarrow$  Heavy oil and natural bitumen .
- → Gas condensate fields, unconventional gas, gas hydrates.
- $\rightarrow$  Arctic shelf and polar regions.
- → Geothermal systems.















## The end

## **THANK YOU FOR YOUR TIME!**



January 30, 2014 | Page 43



# **Alexander ADADUROV**

**Chief Investment Officer of OOO ODAS** "Skolkovo"

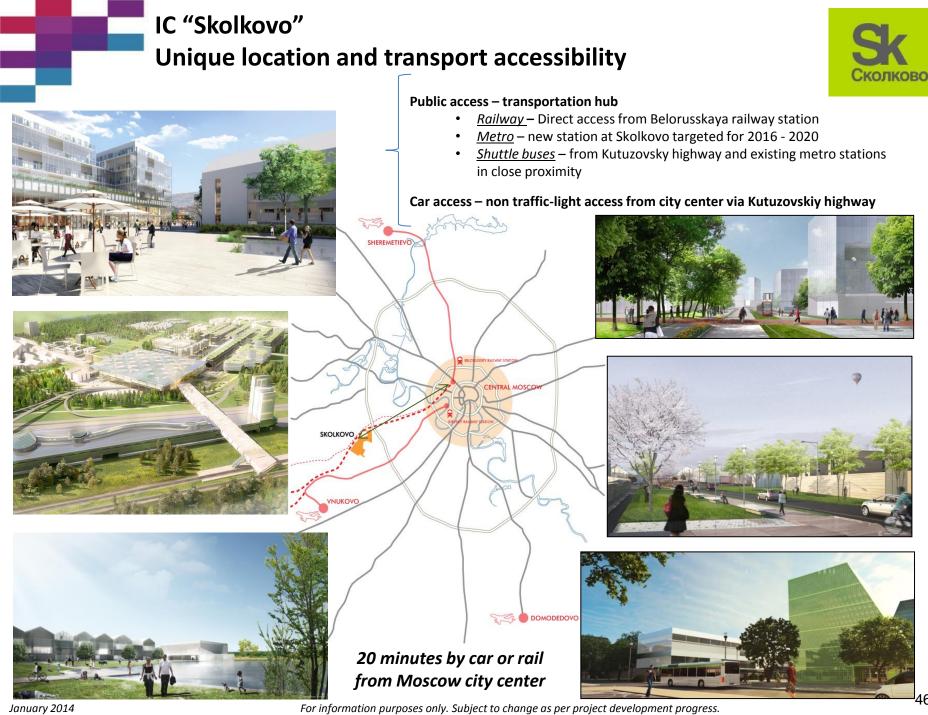
**Perspectives of the Infrastructure Development of the Skolkovo Innovation Center** 





## IC "Skolkovo"

**Current status** 



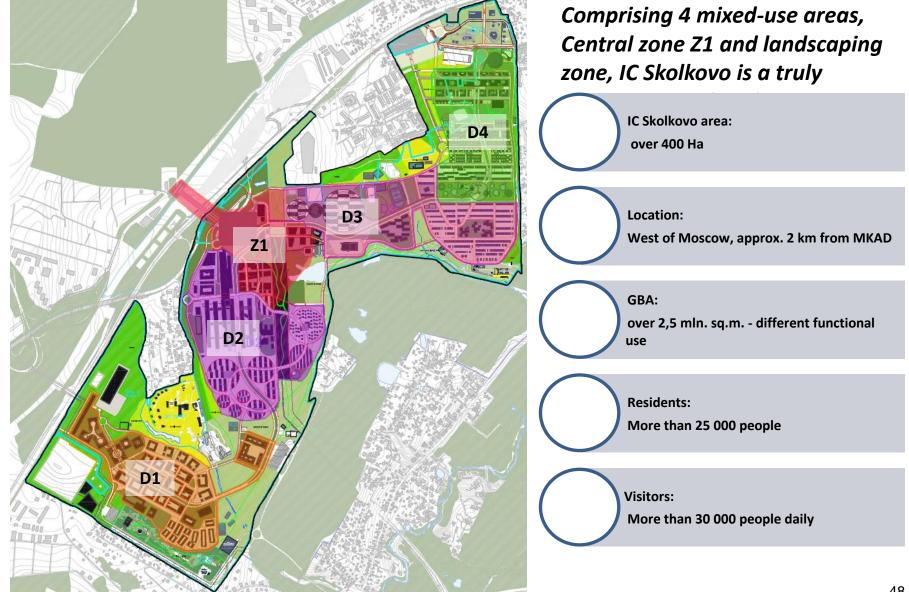


January 2014

For information purposes only. Subject to change as per project development progress.







For information purposes only. Subject to change as per project development progress.

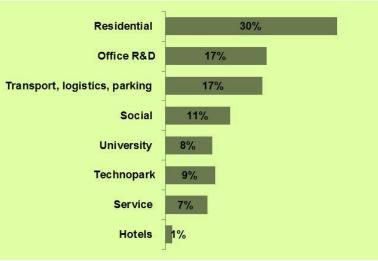
## IC "Skolkovo" Unique city planning principles – robust city structure





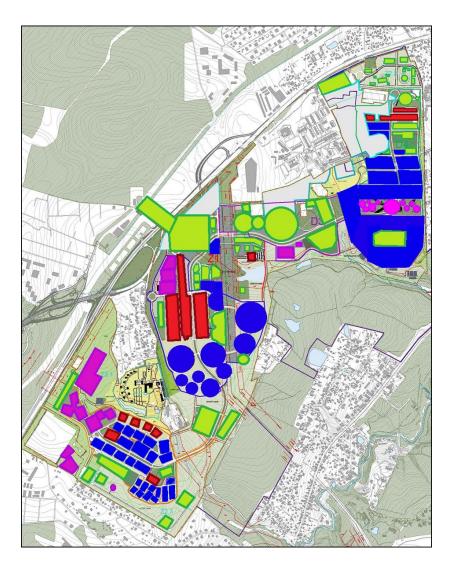


#### IC Skolkovo – functional composition









- Apartments, townhouses,
  - ତ୍ୟୁ ତ୍ୟୁମିକ୍ଷିକ୍ରି cial areas: Key partner
- 3 Offinansercial areas: Skolkovo
  - residents innovation companies Social and transport

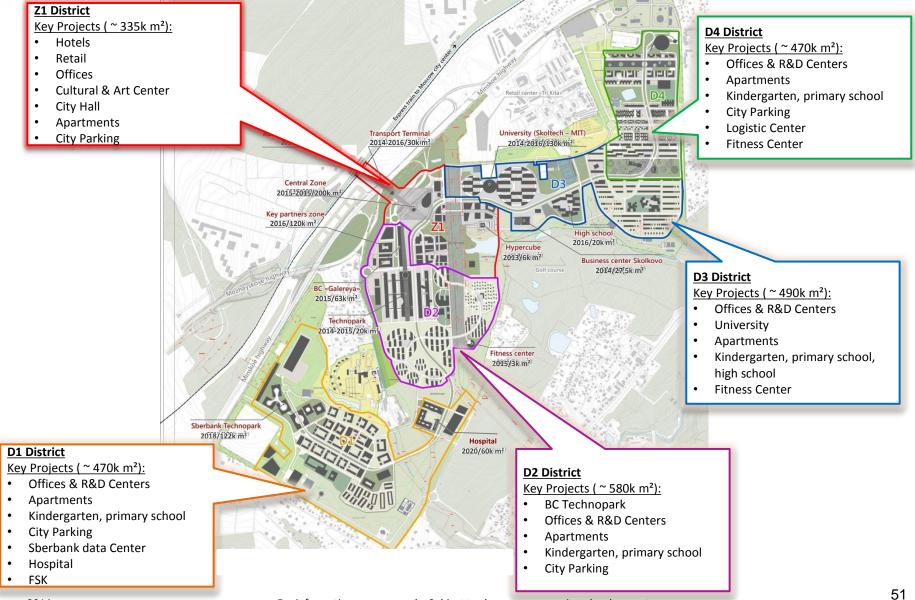
#### infraspoteture!

4

- Underground parkings
- ✓ Above ground parkings
- ✓ Skolkovo Skoltech-MIT university
- ✓ High and secondary school
- ✓ Primary school
- Kindergartens
- ✓ Sport centers
- ✓ Retail facilities
- Museum
- ✓ Theater
- Exhibition center
- ✓ Medical centers
- ✓ Police station
- ✓ Post office
- ✓ Hotels
- ✓ etc.



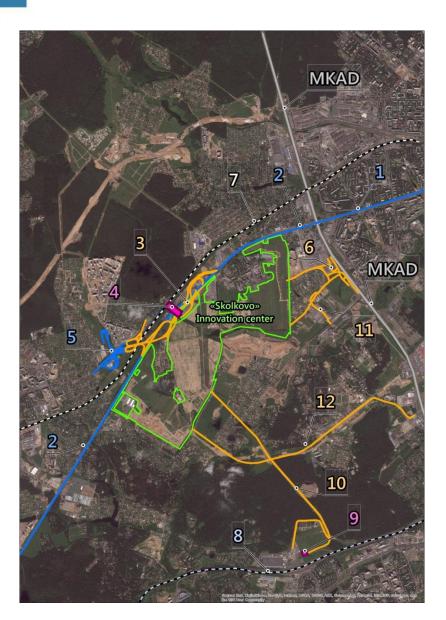




For information purposes only. Subject to change as per project development progress.

#### IC "Skolkovo" External transport infrastructure development





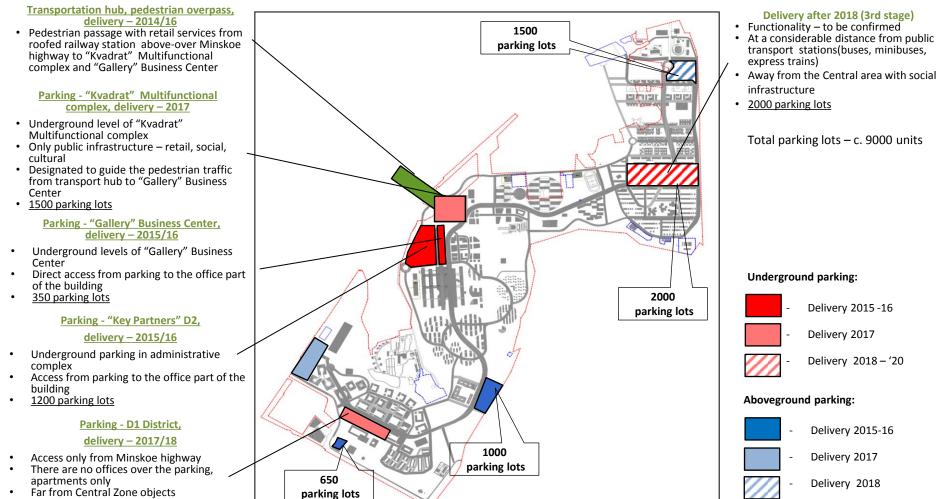
	Class of work	Delivery	Contractor
1	Reconstruction of road network from intersection "Garden Ring/Noviy Arbat" to intersection "Mozhayskoye highway/MKAD"	2014	Moscow City Government
2	Reconstruction of M-1 highway from 16th to 27th km	2015	Government company "Avtodor"
3	Construction of road junction at 19th km of M-1 highway	2014	Government company "Avtodor"
4	Construction of Skolkovo transportation hub	2015	LLC "Finmarkt"
5	Reconstruction of road junction at 19th km of Mozhayskoye highway	2014	Moscow Region Government
6	Ingress/egress point construction from 52nd km MKAD to Skolkovo (D3 and D4 districts)	2014	Moscow Region Government
7	Construction of railroad from Belorussky Railway station to Skolkovo transportation hub	2015	OJSC "RZD"
8	High-speed train "Aeroexpress" from Moscow to "Novoperedelkino" station	2014	OJSC "RZD"
9	Construction of IC "Skolkovo" public transport station nearly "Solnechnaya" railway station	2015*	Moscow City Government
10	Road construction from public transport station of "Solnechnaya" railway station to Skolkovo	2015*	Moscow Region Government
11	Road construction from Skolkovskoe highway to D3 District at Skolkovo	2014*	Moscow Region Government
12	Road construction from 50th km MKAD to Skolkovo through Bakovsky forest	2015*	Moscow Region Government

\* Construction and installation work has not commenced yet

#### IC "Skolkovo" Transport-parking infrastructure



Built-in parking areas, allowing for drive-in of personal cars with gasoline engines and with direct access from parking to the buildings, are located only in 5 areas of IC "Skolkovo". Additionally, 4 aboveground city intercepting parking's are envisaged.



- <u>650 parking lots</u>
- January 2014

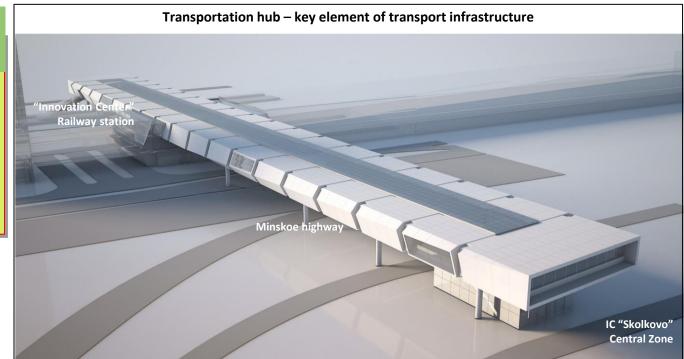


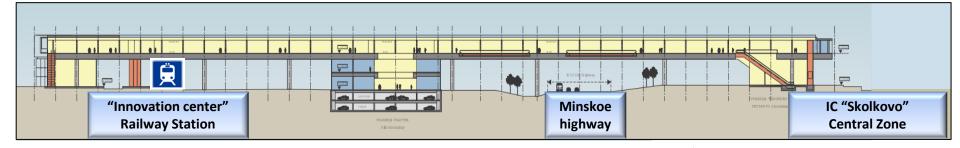


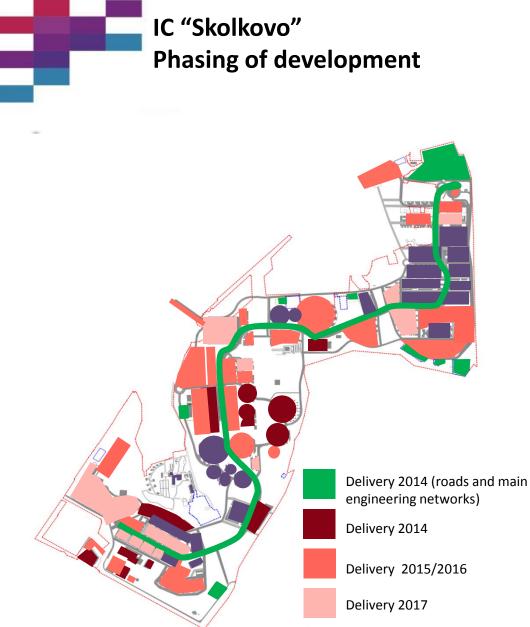
#### Transportation hub provides

and bus station to multifunctional complex "Kvadrat" in IC "Skolkovo"

- Foot-bridge with retail facilities from railway station to Skolkovo above Minskoe highway
- Convenient travel throughout the Transportation hub – via escalators and travelators







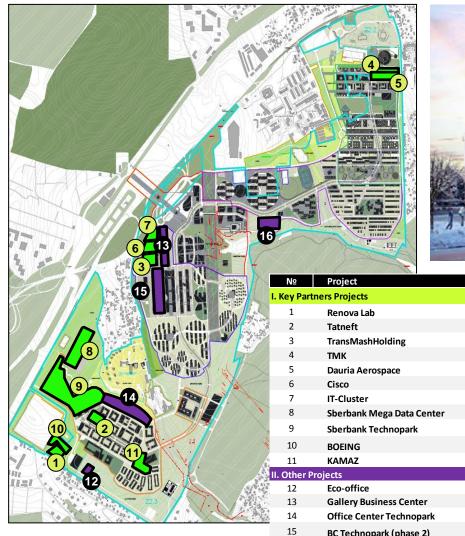
Ducient		GBA, sq.m.	
Project	Delivery –	Total	
Offices & R&D Cer	800 787		
Key Partners	241 372		
	until 2015	43 505	
2016		49 548	
2017		60 300	
	2018-2020	88 019	
Other Offices & Ra	&D Centers	559 415	
	until 2015	228 563	
	2016	139 628	
	2017 г.	13 336	
	2018-2020	177 888	
Apartments, town	houses, cottages	756 586	
	until 2015	177 926	
	2016	83 860	
	2017 г.	84 723	
	2018-2020	410 077	
Transport infrastrucure		440 668	
	until 2015	178 228	
	2016	66 000	
	2017 г.	86 000	
	2018-2020	110 440	
Social infrastructu	540 665		
	until 2015	174 246	
	2016	63 500	
	2017 г.	112 000	
	2018-2020	170 919	
Delivary till 2018	1 561 363		
Phase II (2018-202	957 343		
Total Skolkovo		2 519 000	

Delivery 2018/2020

Сколково









Nº	Project	GBA, sq.m.	Delivery			
Key Partners Projects						
1	Renova Lab	26 500	2014			
2	Tatneft	10 000	2016			
3	TransMashHolding	45 500	2016			
4	тмк	8 000	2015			
5	Dauria Aerospace	15 000	2017			
6	Cisco	42 500	2016			
7	IT-Cluster	32 500	2016			
8	Sberbank Mega Data Center	37 000	2016/2020			
9	Sberbank Technopark	122 000	2017			
10	BOEING	8 000	2015			
11	KAMAZ	12 000	2016			
Other Projects						
12	Eco-office	1 570	2015			
13	Gallery Business Center	63 242	2015			
14	Office Center Technopark	40 000	2014			
15	BC Technopark (phase 2)	63 000	2016			
16	Business Center Skolkovo	40 000	2014			





#### IC "Skolkovo" Social & infrastructure projects under development





10

11

12

Family Campus D3

Family Campus D4

**Logistics Center** 









22 000

60 000

22 000

3 500

30 000

57 000

6 000

75 000

60 000

22 000

42 000

21 700









Apartments (D2 district)

Apartments (D3 district)



Mixed-use (D1 district)



SkolTech University (D3 district)



Technopark complex (D2 district)



Multifunctional complex (Central zone Z1)

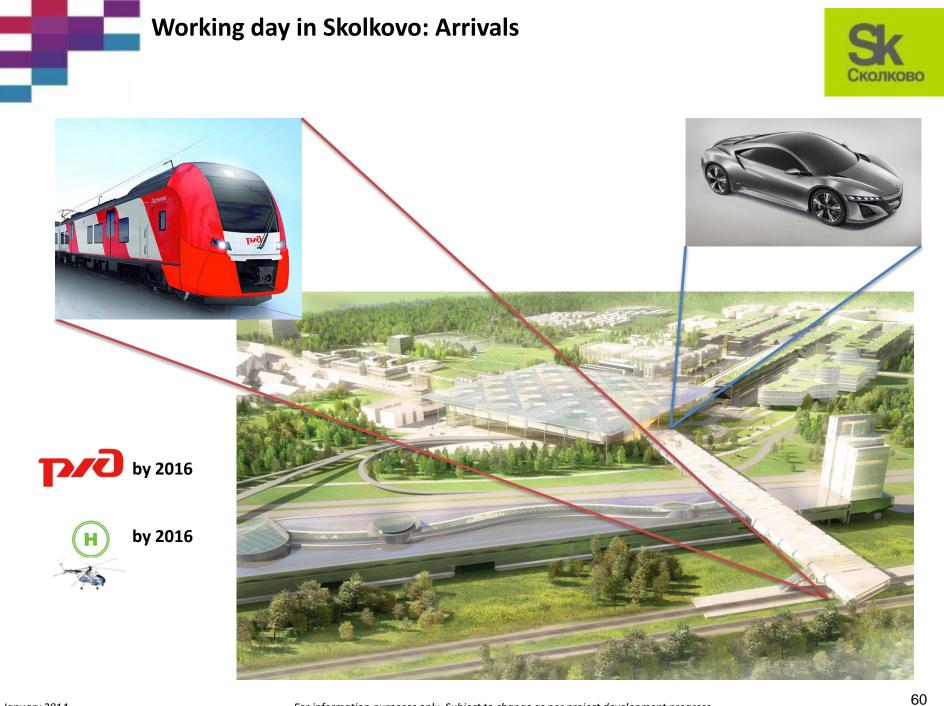
January 2014

For information purposes only. Subject to change as per project development progress.



## IC "Skolkovo":

Working day in Skolkovo



For information purposes only. Subject to change as per project development progress.



### Working day in Skolkovo: Way to the office





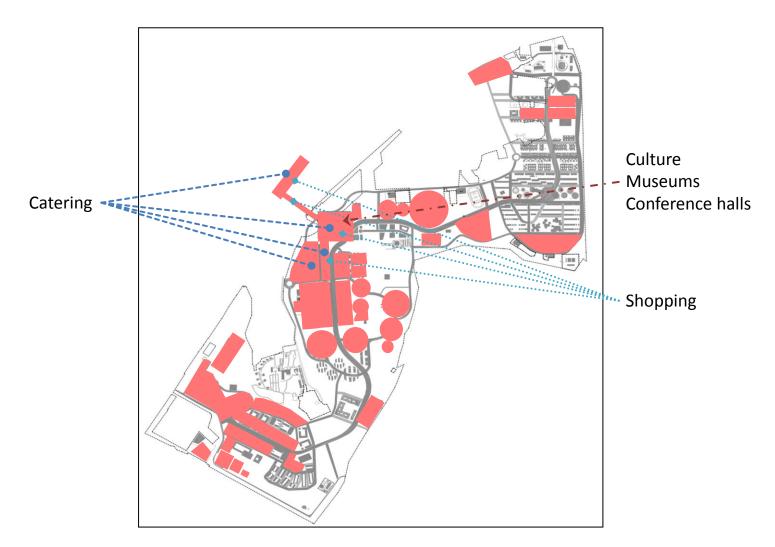


#### Working day in Skolkovo: Arrivals









Сколково



#### Working day in Skolkovo: Lunch Time







#### Working day in Skolkovo: Relaxation







### Working day in Skolkovo: Relaxation







#### Working day in Skolkovo: Shopping







#### Working day in Skolkovo: Evening city







# Q & A