Innopolis:
The Russian SE Ecosystem

2014
CEE-SEC(R)
Software Engineering
Conference in Russia

Dr. Sergey V. Zykov, PhD.
Higher School of Economics

Moscow, Russia, Oct.23-24, 2014

Innopolis: The IT City
to Live, Learn, Work & Play

Innopolis = Special Economic Zone + IT University + Comfortable and affordable housing + Developed social, medical, sports and entertainment infrastructure + Recreation areas

Innopolis University is the brain power of **Innopolis** – a satellite city of **Kazan**, the capital of the Republic of Tatarstan, Russia (35 km distance)

Great riverside location, unique historical significance

IT Federal Project

1,200 Ha

155,000 people (2021)

60,000 IT specialists (2021)

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Innopolis: Location / Connections

Innopolis: Russian IT University #1

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Innopolis Project
Key Activities

- **trainings for high-end IT people**
- **IT & interdisciplinary research**
- **entrepreneurship and innovation**
- **IT for children and youth**

Innopolis Project

Synergy

- IT+SE focused

- Top universities curricula

- Best teaching/learning techniques

- Case-based education

- Business integration

- Gifted students + outstanding scientists

- World class research

- Best entrepreneurship practices

- Technology transfer

- State-of-the-art infrastructure

Multi-level education
Programs

- **B SE+IT**

- **M SE+IT**

- **PhD**

- **STEM-Robotics**

- **Teaching Excellence**

- **Executive Education**

- **Certifications in SW Development**

Integrated Educational Ecosystem

Synergy of Government, Industry & Education

- Continous, progressive education

- Republic & Federal levels

- Pipeline of high & higher education

- Research & practice

- Teaching Excellence & Executive Education

- Rigorous standards + innovation

Current state: Activities

Project Team

Development Strategy-2020

Roadmap-2016

Tuition License from Tatar Education Ministry

Federal Innovation Platform status

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Current state: Education & Research

3 STEM-centers
- 838 students
- 63 teachers
-

4 Bachelor programs

10 CMU Masters @ Kazan'

IT Center for Breakthrough Technologies

Current state: Collaboration

Key IT & Telecom companies:
- **Nvision,**
- **Mail.Ru,**
- **Parallels,**
- **Megafon,**
- **Acronis**

Universities:
- **CMU**
- **National U of Singapore**
- **Lappeenranta U of Technology (Finland)**
- **Institute of Physics and Technology**

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Collaboration: why CMU?

1. IT leadership (PsyTech = #1 in Russia)

2. Strong focus on robotics
 of INO and CMU

3. Learning by doing approach

Current status. Key facts

The main building

Brain power of the new city

Project Timeline: Past (2013-2014)

MSIT-SE Program

- **– 10 CMU Masters — IU employees**

- **STEM-Robotics Program**

- **Seminars of leading IT-scientists and IT-industry representatives from all over the world**

- **Determining research areas**

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Project Timeline: Present (2014-2015)

- Bachelor's Degree Program in Computer Science

- +1 Master's Program annually

- PhD Program

- STEM-Robotics Programme all over Russia

- World class seminars and conferences hosted by IU

- Faculty training at leading world universities

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Project Timeline: Future (2016-2020)

- **300 Bachelor + 100 Master graduates annually**

- **1000 IT-specialists trained annually**

- **Rate of international students - 20%**

- **Research teams: 5-7 students/professor**

- **Transition to self-repayment**

- **Better academic rankings**

International Academic Cooperation

Goals:

Enrich home-grown experience with the world's best practices	Train world-class experts; Create/commercialize breakthrough technologies	Integrate into global educational and research community

International Academic Cooperation

Primary Areas:

- BSC&MSC program development/delivery

- Research labs

- Faculty recruitment and training

- Academic exchange (faculty and students)

- International events

University location
Kazan, The Third Capital of Russia

- **Capital of the Tatarstan Republic**

- **Gateway between East and West**

- **1,2 mln people**

- **#8 of Russian cities**

The Location

Kazan, The Third Capital of Russia

Kazan Kremlin - World Heritage Sight

1000 year history

X-cultural :

- **115 nationalities, 5 confessions**

Cultural:

- **34 museums, 9 theatres, large libraries**

Sports:

- **64 venues (30 of them – newly erected)**

Big sport events:

- **27th Summer Universiade (2013),**
- **World Championship in Aquatics (2015),**
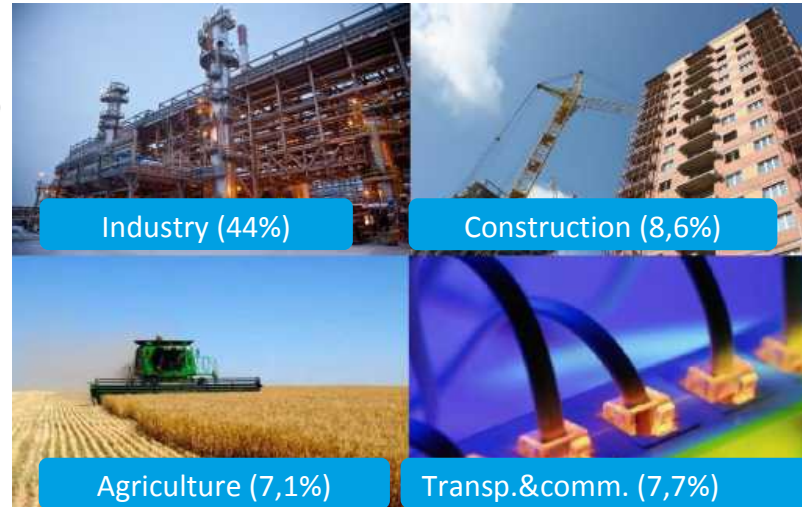- **FIFA World Cup (2018)**

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Republic of Tatarstan: Economics

Well-developed Russian region

- **Gross Regional Product – 39.3 bln USD (#5 in Russia)**

- **Volume of industrial production: 7% growth**

- **Developed Innovation Infrastructure**

Key sectors:

Industry (44%)

Construction (8,6%)

Agriculture (7,1%)

Transp.&comm. (7,7%)

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Republic of Tatarstan: Academia

Science and education as a basis of sustainable development

- **31 universities and institutes**
- **57 regional branches universities and institutes**
- **Academy of Science (Republic of Tatarstan)**
- **2 national research institutes**
- **200,400 students (5.3%)**
- **6,100 PhDs (0.2%)**

Kazan University (since 1804)
- **third oldest university in Russia**
- **2010 - federal status**

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University Management

Dr. Dmitry Kondratyev
CEO

Entrepreneur, scientist and **professional educator**

18-years in education mgmt

MIPT graduate (1999)

· Since 1999 – **Founder, Unium education network**

22 private schools

100 courses

Revenue = $7M+

- 1997– 2005 - Founder and CEO of **PhysTech Career**:
- first Russian career centre
- profitable and self-sufficient

- 2002-2006 – **Assistant to MIPT Rector**:
- coordination of projects and grants
- Funding = $20M+

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University Management

Prof. Alexander Tormasov
Provost

Scientist, educator and **software developer**
30+ years experience
100+ patents on software

Teaching and mentoring students at MIPT
Full Professor, Comp. Sci.
Head of Dept., Theoretical and Applied Comp. Sci.
Chief Scientist @ Parallels
- virtualization and automation.
- advanced research and educational projects
- patent portfolio
· **Chair, IEEE Russia**
Manager, Student Centers for Science and Education
· - IU industry collaboration

Key Inspirers and Supporters of the Project

Rustam Minnikhanov
The President of the Republic of Tatarstan

Nikolai Nikiforov
Minister of Communications and
Mass Media of the Russian Federation

Serguei Beloussov
Senior Partner at Runa Capital,
Executive Chairman and
Chief Architect of Parallels

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Russian IT sector challenges:

- **inadequate technological infrastructure**

- **low public and private collaboration**

- **few skilled professionals**

- **hiring qualified IT employees problematic**

Results expected:
Nearly two-fold increase in:

- **new technology**
  industry implementations

- **innovation-based GDP**

- **hi-tech production**

Core MS SE/IT courses visited @ CMU:

- **Analysis of Software Artifacts**

- **Architectures for Software Systems (+ LG training)**

- **Personal Software Process**

Project Management Events:

- **Bootcamp**

- **Studio Mentoring**

Features and Contexts:

SE education features:

- multi-criteria "optimization"

- no single-best solution

- tradeoff identifiation/mgmt

- set priorities

- understand resources

- manage dependencies

Multi-context education:

- software development

- systems (HW+SW) integration

- "wicked" problems

- best answer: "It depends"

Skills to be learned:

Multi-disciplinary skills:

- **self-assessment**

- **self-justification**

- **self-adjustment**

- **soft skills**

- **team work**

Soft skills:

- **communication**

- **cross-culture issues**

- **conflict management**

- **risk management**

- **time management**

- **team building**
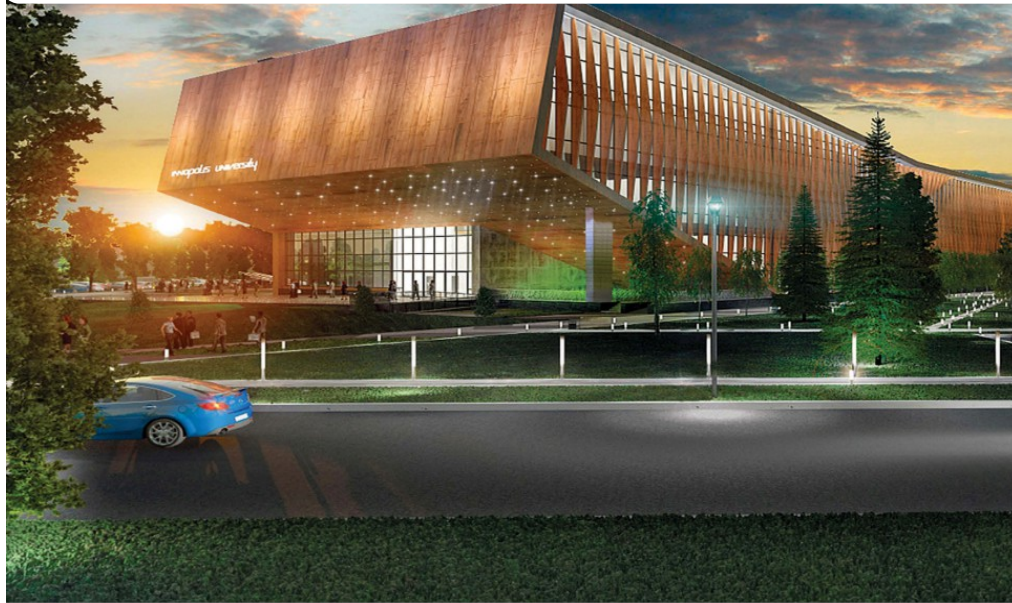
- **negotiations**

Recommendations:

The principles learned should be:

- justified

- analyzed

- hands-on mastered

- applied to real world

Students should:

- act as SE professionals

- use expert-level judgment

Thank you! Welcome to Innopolis!

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