Roman Strongin (President)

Education and Science as Drivers of Development

2011 TII Annual Conference
“Innovation, Prosperity, Quality of Life”
Nizhniy Novgorod, 26-28 May, 2011
The Goal of this Presentation is to Elucidate the Banner Headline

“Education and Science as Drivers of Development”

by Exposing the Role of a Particular University in the Development Process
The Particular University is

Lobachevsky State University of Nizhniy Novgorod (National Research University)

UNN Includes:
- 19 Departments (Faculties),
- 136 Sub Departments (Chairs),
- 5 Research Institutions,
- 9 Branches at the Industrial Zone of Nizhniy Novgorod

Studying at UNN:
- over 41,000, including 900 of PhD students

Performing Training and Research:
- over 1000 Doctors of Philosophy and over 340 Doctors of Science (Russian Post PhD top Degree for Research)
What such a University can Do for Development?
University Project

“Building the Center for Innovative Development of Medical Instrument Engineering on the Base of UNN” is Included into Federal Program (2011-2016) with financing about 51 million US dollars.

The Goal is to Develop (with Partners from Industry and Russian Academy of Sciences) the Center of Competence for Medical Instrument Engineering and High Biomedical Technologies

Clusters to be Created are:

Educational, Research, Innovative, Manufacturing and Medical
This Project is just about to Start.

Could we anticipate it to become a Driver for Development?

Do we have such an Experience in the Past?
Department (faculty) of Radio Physics
Established at UNN in 1945 (First in the USSR)

Founders of the Faculty

Academician A.A. Andronov
Founder of the «Nonlinear Thinking»

Professor M.T. Grekhova
First Dean of the Radio Physical Faculty

Academician V.L. Ginzburg
Chairman of the Department of Radiation and Propagation of Electromagnetic Waves.
Chief Editor of the Magazine “Radio Physics”

Nobel Prize Laureate
Results:

The City Became the Soviet and the Russian **Capital of Radiolocation** — the Recognized **Center** of:

- Wave Phenomenon Studies (in Different Media);
- **Effective Design and Production of Radar Systems**
Department (Faculty) of Computing Mathematics and Cybernetics Established at UNN in 1963 (First in USSR)

Founder
Professor Yu.I. Neimark N.Viener Prize and A.Andronov Prize Laureate

Now the City is the Recognized Center in Information Technologies
The Lobachevski State University Project

“Education and Research Center
“Information and Telecommunication Systems: Basic Physics and Software”

became (2006) one of the winners within the National Priority Project “Education” with financing about 25 million US dollars.

Additional Project (2007):

“Establishing at UNN the new Center for Nana Industry” ($5.38 million)

This Dramatically Improved Facilities for Research and Education and made the University more Attractive for its Partners
New Equipment for Physical Metrology

Scanning electron microscope “JEOL” (Japan)


Bruker EMX/060310-CM” (Germany) for paramagnetic resonance EPR spectrometer” research in solids.
Laboratory of Nana Structured Semiconductors

Best Equipment (in its Class) in Russia
**Materials**

New *aluminum-silicon alloy materials* with nana crystal structure reach a *record plasticity* (700%).

The Study was prolonged in the frame of Russian-American Program Grant (2008-2009):

«*Foundations and methods for grain boundaries design to ensure low-temperature superplasticity of nanocrystalline metals and alloys*»
Modeling Dynamic Processes in the Myocardium

Objective. **Search for Effective (sparing) Methods to cure**

**Principal Types of Cardiac Arrhythmia: Tachycardia and Fibrillation.**

**Suggested Model** is based on implementing 300x300x100 cell net to cover the myocardium. The cell state is described by 6 variables. Total amount of variables is **55 millions.**

**Impact of Electricity** is modeled by introducing some stimulating current into the system of differential equations.

**Pharmacotherapy** – by changing the conductivity parameters of ionic channels.

**Reproduction of principal dynamic modes in myocardium:** solitary spiral waves, driving centers, chaos of spiral waves.

Spiral Chaos in Myocardium while passing from normal Rythm to Fibrillation.
New Extra Quality Courses in Information Technologies

- «Programming Technologies» (based on the Microsoft Solutions Framework) is the Winner of the “Microsoft Software Engineering Contest 2006”.

- «Methods and Means for constructing Distributed Programming Systems using “Java” Technology» is the Winner of the Contest “Sun Microsystems Teaching Grants 2006”.

- «Theory and Practice of Computing for High Performance Cluster Systems» is the Winner of all Russian Contest of Educational Programs for the contemporary Multi Core Processing Systems (Intel Company; 2006); In use at 20 Russian Universities (Educational Support Block for the Operating System MS Windows Compute Cluster Server)
Microsoft “Imagine Cap” World Final (2009) Students Contest (77 countries)

Software Design Award

Second place

Team: Vital Lab
Maxim Bovykin
Denis Gnatyuk
Alexey Klishin
Sergey

Country: Russia

UNN TEAM
3D Virtual Tomography Software
Elaborated by the Students’ Team
Some Interests of Partner Companies to Collaborate with University are:

- in enriching its Sources for Innovation (supporting new projects and ideas);

- in attracting (by additional education, training, practical placement) Talented People to work in its area of research and development or at its Local Division;

- in Expanding Markets for its Technologies by advertizing “in action” (demonstration, teaching and approving the abilities by licensing, trial installing, etc.);

- in Improvement of Educational Means supporting implementation of its technologies, etc.
Some of UNN Links with High-Tech Information Companies

- Department of Computational Mathematics and Cybernetics
  - Laboratory of New Information Technologies
  - INTEL-UNN Center of Competence in INTEL Programming Technologies
- Center of IT Academy
- Center of Competence in HPC Technologies
- Innovation Center
- Center of Cisco Systems Network Academy
- CUDA Research Center
- INTEL (bunch)
- National Instruments
- "Atlas" Center, "CriptoPro" Company
- Microsoft (bunch)
- Cisco Systems
- NVIDIA Company
- Department of Radio Physics
  - Center of Excellency and the Wireless Laboratory
  - Regional National Instruments Training Center
  - Information Systems Security Center
- Department of Finance
  - Stock Exchange Operations Center
  - Laboratory of Banking Information Systems
  - "Broker Credit Service" Company
Signing Strategic Agreement of Intentions (February, 2009)

UNN -- Intel®
(first for the Russian Universities)

"Development of Cooperation with UNN is Strategically Important for INTEL"

Dusty Robbins
the Leader of INTEL
Software and Services Group
March, 2009
Bill Gates included UNN in the List of Ten Universities - "Microsoft" Partners
Signing the Agreement of Intentions with Microsoft

Rector of UNN E. Chuprunov

President of «Microsoft Rus» N. Prianishnicov

2010
University as the **Center of Integration**

**Networks of Interaction**

- **Museums, Theaters, Artists’ Associations,**
- **United Center (RAS)**
- **Intel**
- **TELMA**
- **Association of Industrialists and Entrepreneurs**
- **NIIIS**
- **POLET**

- **Habachevski State University of Nizhniy Novgorod**
- **Research-Educational Centers**
- **Institutes**
- **Institute for PhD and post Doctorate Studies. Theses Councils**

**Networks for Shared Service**
- **Information Centers**
- **Schools and Colleges**
- **Regional Board for Education**

**Mechanism** → **Agreements** *(Training Human Resources + Joint Research)*

**Technologies Export**
- **Enterprises**
- **Enterprise Networks in the District**

**Information Media**
- **RFU**
- **International Projects, Programs and Networks**

**International Projects, Programs and Networks**
- **RIU**

**Contests and Olympiads**
- **NTU**
- **Bor**
- **Pavlovo**

**Administrations of the Regions**

**Rector’s Council in the Region**

**Rector’s Council in the District**

**NIIIS**

**IPM**

**IAP**

**RAS**

**Technology Export**

**University Networks in the District**

**NMI**

**NTU**

**University**

**RFU**

**RIU**

**International Projects, Programs and Networks**

**Contests and Olympiads**

**Mechanism** → **Agreements** *(Training Human Resources + Joint Research)*

**Intel**

**TELMA**

**Association of Industrialists and Entrepreneurs**

**NIIIS**

**POLET**

**United Center (RAS)**

**Institutes**

**RAS**
International Recognition of the University Projects in Education
**International Mobility Projects**

<table>
<thead>
<tr>
<th>Title of the European Commission Tempus Tacis Project</th>
<th>Index and Period of Execution</th>
<th>Financial Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobility and Recognition in Financial Studies</strong> (<em>Dual Diploma Program</em>)</td>
<td>M_JEP-10461-98 1999-2001</td>
<td>€787202</td>
</tr>
</tbody>
</table>

*UNN Partners: University of Calabria (Italy) & Roskilde University (Denmark)*

*Sustainable Result: Russian-Italian University (Economics, Finance, Informatics, Mechanics)*

*This was before Bologna Declaration*
La prima laurea a una studentessa russa

Si chiama Anna Demina ed è la prima studentessa russa che si è laureata a Cosenza. La cerimonia, ieri mattina alle 12, nell'aula seminariale del dipartimento di organizzazione aziendale.

Anna si è laureata in discipline economiche e sociali all'Università degli Studi della Calabria. La ragazza è già laureata in Russia con lode in Economia nazionale all'Università di Nizhni Novgorod, il cui rettore, Alexander Khokhlov, è stato presente ieri.

Anna ha discusso una tesi sullo sviluppo economico regionale: la regione di Nizhni Novgorod e la regione Calabria a confronto, realizzata con lo studio di economia aziendale, con l'attenzione di un gruppo di studenti russi e italiani. Il rettore della Demina, il prof. Domenico Ceraso, del dipartimento di Economia Politica, ha sottolineato il valore della cooperazione tra le due università.

La laurea ha avuto luogo presso un ateneo italiano, dove gli studenti russi provano a sostenere il loro titolo con un esperto di economia aziendale. Secondo la convenzione, il rettore della Demina ha sottoscritto il contratto di conseguire presso l'università di Nizhni Novgorod il titolo di studio del corso di economia aziendale. E ieri il rettore russo ha parlato di cooperazione universitaria e di ricerca nella Russia.
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<td><strong>Becoming an Entrepreneurial University (Tempus Tacis)</strong></td>
<td>UM_JEP-22240-2001-2002</td>
<td>€296534</td>
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<td><strong>Analytical Master for Improved Economic Expertise (Tempus Tacis)</strong></td>
<td>CD_JEP-23229-2002-2003</td>
<td>€483474</td>
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<td><strong>Project-Oriented Methods in Russian Universities (Tempus Tacis)</strong></td>
<td>SCM_T023B05-2005-2006-2008</td>
<td>€149160</td>
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<td><strong>University Knowledge transfer for Sustainable Growth (Tempus Tacis)</strong></td>
<td>UM_JEP-26017-2005-2006-2009</td>
<td>€472200</td>
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<td><strong>Creation of the University Analysis and Planning Support Office: Ensuring Strategic Planning Sustainability</strong></td>
<td>IREX 2005</td>
<td>$20 000</td>
</tr>
<tr>
<td><strong>Endeavour: Entrepreneurial Development as a Vehicle to Promote European Higher Education</strong></td>
<td>Erasmus Mundus Project #2006-2859/001 MUN-MUNB41</td>
<td>€340 800</td>
</tr>
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Thanks for Your Kind Attention!

Lobachevski State University
National Research University

President

Vice President of the Russian Union of Rectors

Professor, D.Sc. (Physics & Mathematics)

Chairman of Software Department

Doctor of Sciences Honoris Causa (London Metropolitan University)

Honorary Freeman of Nizhniy Novgorod City

Chairman of the Nizhniy Novgorod Public Chamber

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