



Enhancement of the Competitiveness among the World  
Leading Education and Research Centres

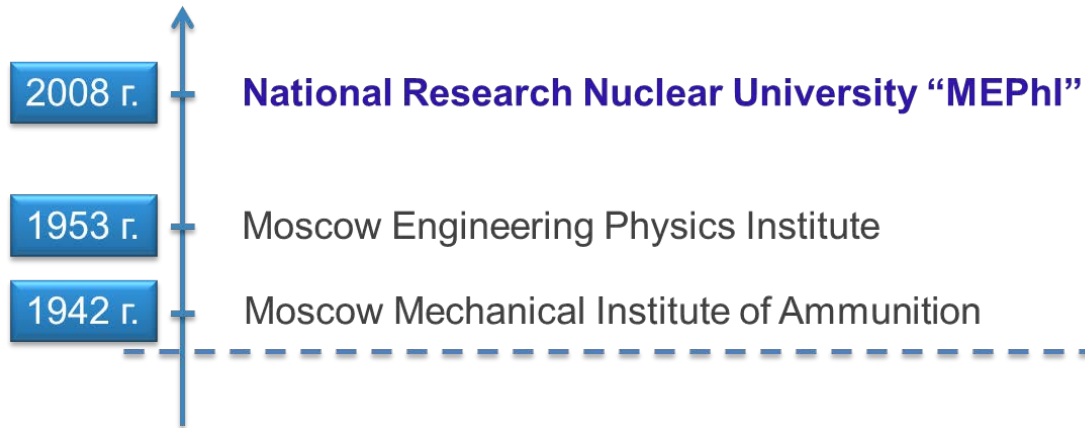
# From Soviet Atomic Project to Leadership in Education and Research Worldwide

- I. Soviet Atomic Project
- II. Russian Nuclear Thrust
- III. International Nuclear Thrust
- IV. Jumping through the gap to  
Leadership in Education &  
Research

M.N. Strikhanov  
Rector

July, 5 2013

# I. Soviet Atomic Project



I.V. Kurchatov



S.I. Kislyak

Ambassador of the  
Russian Federation to the  
U.S.



S.V. Avdeev

Cosmonaut  
Hero of Russia

**Outstanding Soviet physicists and the USSR Atom Project leaders participated in MEPhI development; 6 Nobel prize winners were among its staff**



N.G. Basov



A.D. Sakharov



N.N. Semenov



I.E. Tamm



I.M. Frank



P.A. Cherenkov



N.N. Rukavishnikov

Cosmonaut  
Hero of the Soviet Union

## II. Russian Nuclear Thrust

**Rosatom is the leading Russian high-tech company  
(Established by Federal Law, 2006)**

- #2 in the world nuclear power generation – 177,3 GW\*h
- 300 enterprises and 200 thousand employees
- 2012 income –B\$16
- State taxes –B\$6
- Foreign contracts in next 10 years - B\$66,5
- R&D – 4.78% from income



ROSATOM

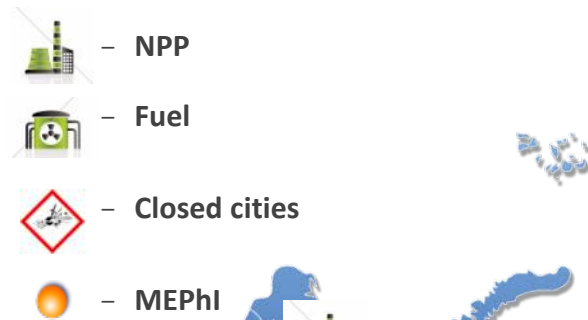
Rosatom is the leading company in President priorities for modernization of the Russian economy

National nuclear program is the important factor of the Russian sustainability development

Global international leadership

# II. Russian Nuclear Thrust

## MEPhI – Networking, regionally distributed



### MEPhI:

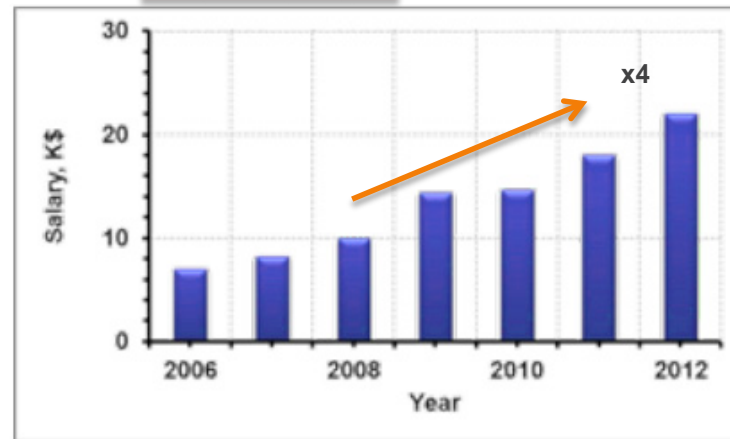
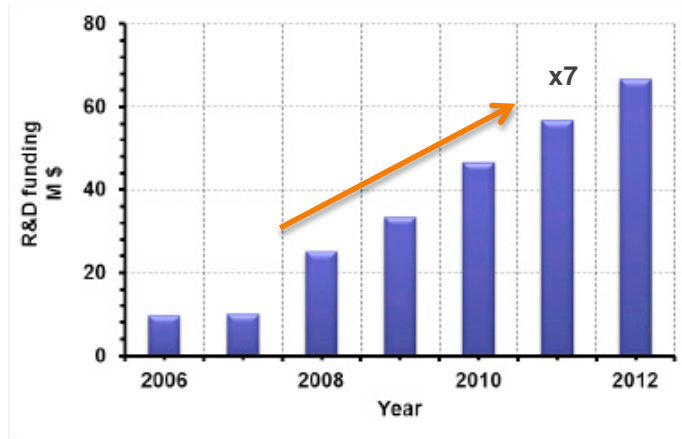
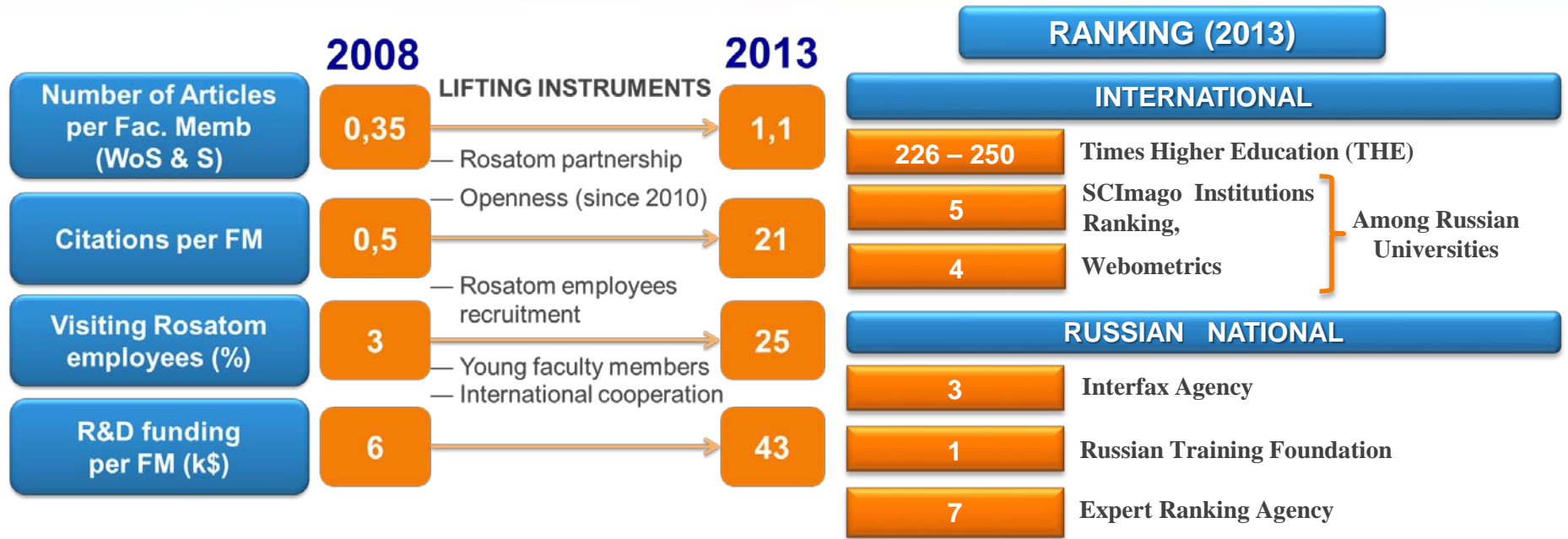
- Main Educational and Research Partner of Rosatom (NPP, Fuel, Radiation Technologies, etc.)
- One of Two First Research Universities (2008)
- 20 Regional Universities and colleges
- Located in 15 Federal Districts and in 20 atomic cities throughout Russian Federation



**MEPhI Development program**  
(2008 – 2017, M\$180)  
**55 Indicators:** Young  
Fac.Memb (%), Foreign  
students, R&D share (%), etc.



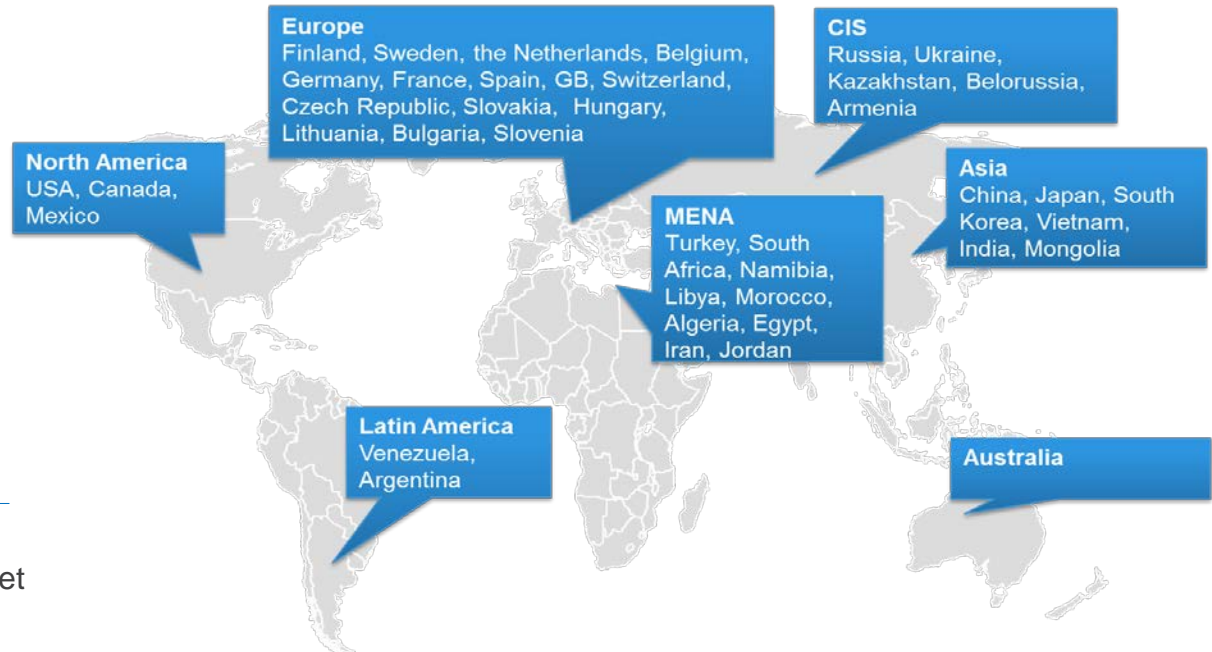
# II. Russian Nuclear Thrust



# III. International Nuclear Thrust

## Rosatom is #1

- ▶ in uranium deposits
  - ▶ in uranium enrichment
  - ▶ in new NPPs construction
  - ▶ Russian electricity generation company, 24,4 GW installed capacity
- 
- ▶ 17% of the world nuclear fuel market
  - ▶ B\$50 portfolio
  - ▶ The world's only company of the complete nuclear power cycle
  - ▶ Referential Gen+ NPPs with active & passive safety systems
  - ▶ Providing outstanding opportunities for the local industry



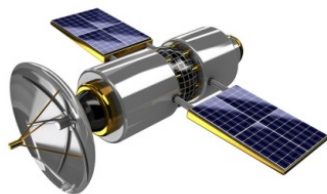
**MEPhI & Rosatom = ACTIVITY SUIT**  
**HR world request 3000 per year**

# III. International Nuclear Thrust

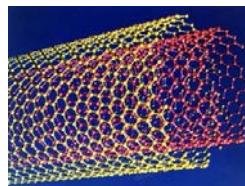
## Rosatom –MEPhI New Technologies



Space nuclear engines



Radiative Hard electronics



Radiative nano-technology



Nuclear medicine and agriculture



Alternative sources of energy

**New Research – New Curricula**

## IAEA – Rosatom – MEPhI Partnership



Practical Arrangements and Action Plan

**Nuclear Non-proliferation, Safety & Security cooperation**

Nuclear Knowledge Management Network

Educational Networks: ENEN, ANENT, INSEN, AFRONEN

Technical support programs: trainings, scientific visits, courses, laboratories, simulation

**Requests from 70 Countries-  
Newcomers in nuclear technologies:**

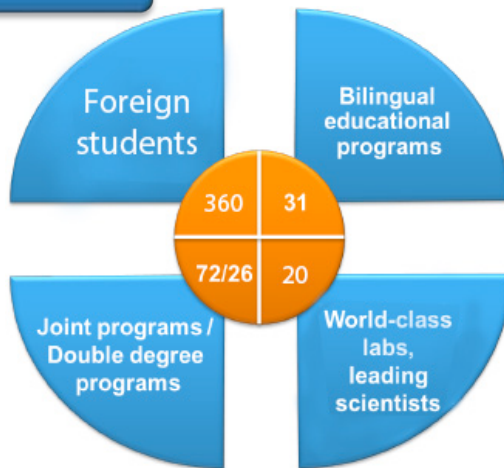
**Education + Training (Retraining)  
+ Consulting**

# IV. Jumping Through the Gap to Leadership in Education & Research

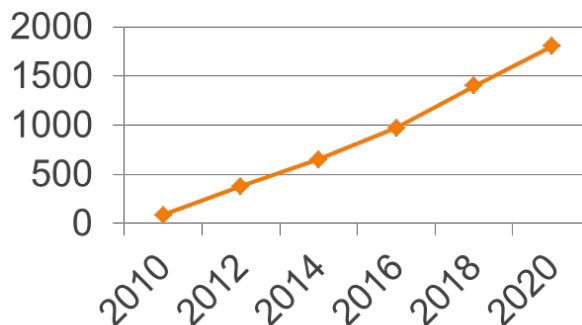
**64 support letters from the world's leading research centers and universities:**

CERN, DESY, KEK, BNL, ORNL, PNNL, MIT, Yale, Stanford, Cambridge,...

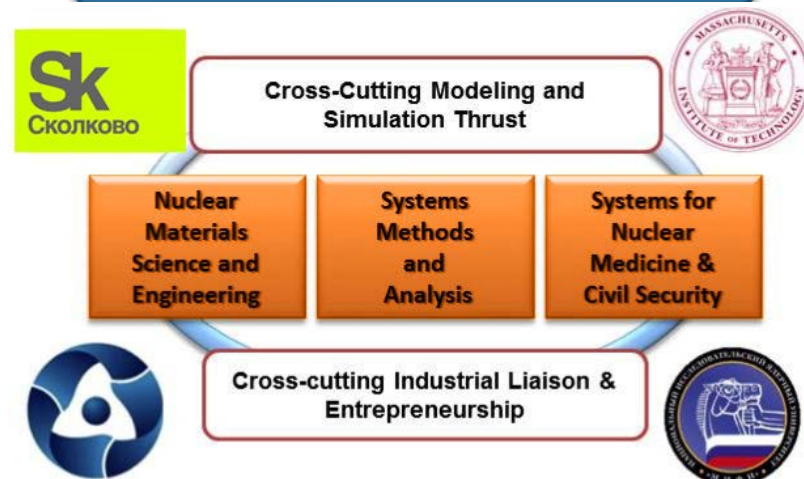
## Education



## Foreign students for Rosatom Overseas



## Nuclear systems & materials



“Research in the field of high energy physics and nuclear medicine with the use of silicon photo multipliers”; (Kansas Univ.)

“The development of the next generation neutron detector”; (Tennessee Univ.)

“Hybrid nano-biomaterials with the energy transfer properties”; (France)

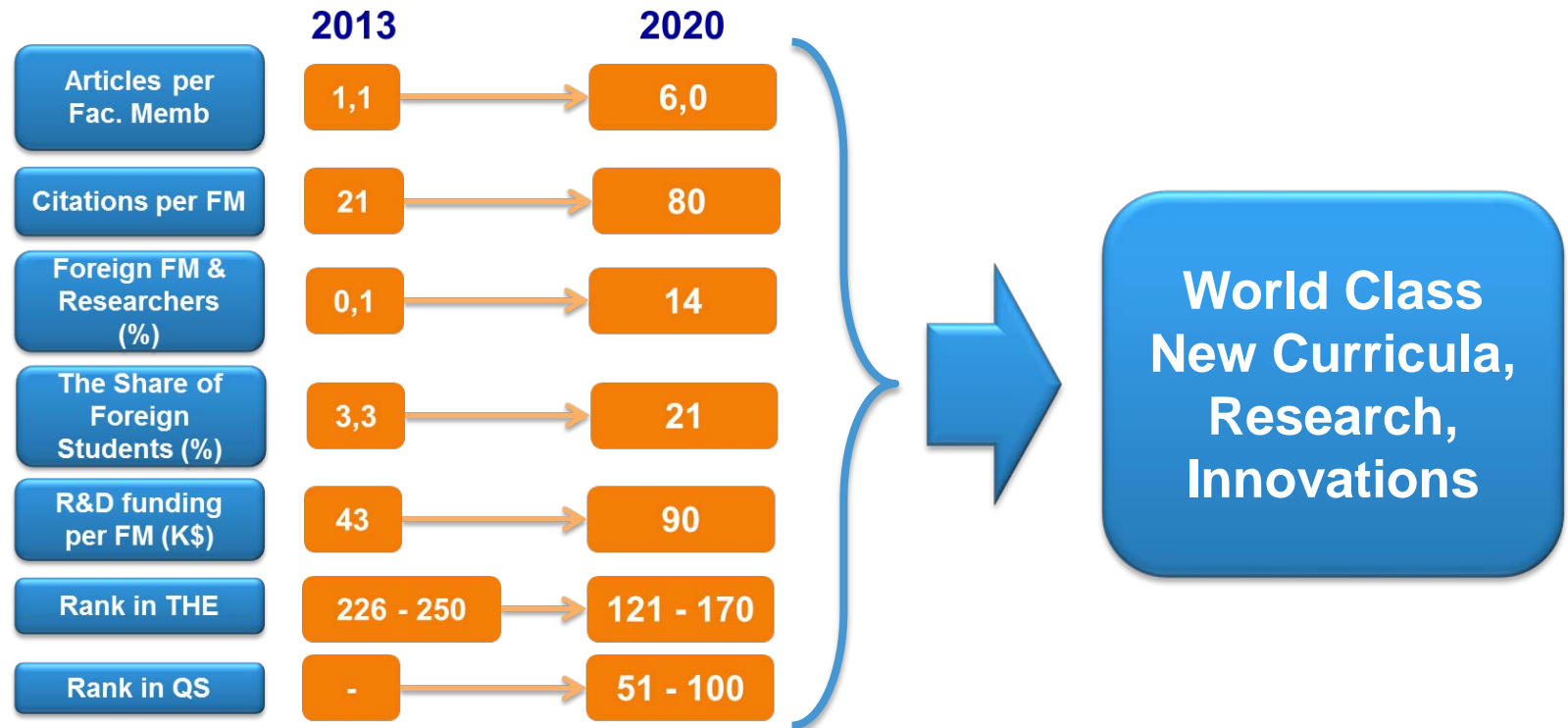
“Microelectronic component base for large-scale physical experiments”; (PNPI)

“Perspective technologies of creating new materials”; (San-Diego Univ.)



# IV. Jumping Through the Gap to Leadership in Education & Research

**Mission:** to generate, disseminate, implement and preserve scientific knowledge aiming to address global challenges of the XXI century, as well as to provide innovative transformations in Russia accompanying development of the country competitiveness in the global energy and non-energy high-tech markets



**Strategic goal** to be a global leader in education, science and innovations in the field of nuclear, radiation, subnano-and nano-technology and engineering. To make a significant contribution to the innovative development and competitiveness of The State Corporation “Rosatom” and other leading Russian high tech companies in the global markets

# 2020: Global Center of Nuclear and Physics Education and Science

## *World TOP University*

The Center of nuclear knowledge management in the world universities sector

The coordinator of nuclear education network

Worldwide Center of competences for Nuclear Non-proliferation, Safety & Security



## *World TOP University*

The set of research centers and world class labs (Centers of Excellence)

Advanced nuclear reactors and fuel cycles

Nuclear physics and high energy physics

Laser, plasma and beam installations and technologies

Nanosystems and nanomaterials

Nuclear medicine and medical physics

Space research and technologies

Materials in Extreme Conditions

Nuclear and chemical technologies

# Thank You for Your Attention

