Al-Farabi Kazakh National University
(Almaty, Kazakhstan)

Tlekkabul Ramazanov
Vice-Rector for Science & Innovations

Colombo, Sri Lanka, COMSATS, 12-13 May 2015
Present statistics of the Centre
Main Campus Area 75 hectare
VISION: to enter the Top 200 leading research universities in the world
MISSION: Generating the human capacity - highly qualified specialists competitive in the international labor market

«To 2020 .... at least 2 higher educational institutions will be awarded in the ranking of the world's best universities»

From the Message of President of Kazakhstan N. Nazarbayev

ABOUT THE UNIVERSITY:
• Faculties: 14
• Chairs: 63
• Research institutes: 25
• Laboratories of the National Level: 2
• Science and Technology Park

ACADEMIC PROFILE:
• More than 20 000 students
• Bachelor specialities: 81
• Master specialities: 84
• PhD programs: 64
Al-Farabi Kazakh National University Structure

Al-Farabi Kazakh National University - the only university in the Republic of Kazakhstan, which has a unique scientific and innovative structure.

Research is carried out in accordance with the priorities of the Republic of Kazakhstan and world trends in science and technology.

14 Faculties

8 Scientific Institutes and Laboratory of engineering profile of natural area

10 Scientific Institutes «Gylymp Ordasy»

5 Scientific Institutes and 30 Scientific Centers of socio-humanity area
<table>
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<tr>
<th>Faculties</th>
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<tr>
<td>Faculty of Mechanics and Mathematics</td>
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<tr>
<td>Faculty of Physics and Technology</td>
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<td>Faculty of Chemistry and Chemical Technology</td>
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<td>Faculty of Biology and Biotechnology</td>
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<tr>
<td>Faculty of Geography and Nature Management</td>
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<td>Faculty of History, Archeology and Ethnology</td>
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<td>Faculty of Philology, Literary Studies and World Languages</td>
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<td>Faculty of Journalism</td>
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<td>Faculty of Philosophy and Political Science</td>
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<td>High School of Economics and Business</td>
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<td>Faculty of Law</td>
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<td>Faculty of International Relations</td>
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<td>Faculty of Oriental Studies</td>
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<td>Faculty for Pre-College Education</td>
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Research Institutes and Centers

- Institute of Mathematics and Mechanics
- Institute of Experimental and Theoretical Physics
- Institute of New Chemical Technologies and Materials
- Center of Physico-Chemical Methods of Research and Analysis
- Institute of Biology and Biotechnology Problems
- Institute of Ecological Problems
- National Nanotechnology Open Laboratory
- Scientific and Technology Park
- Laboratory of Engineering Profile
### Socio-humanity institutes and centers

<table>
<thead>
<tr>
<th>Institute Name</th>
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<tr>
<td>Abay Research Institute</td>
<td>Research Centre for Korean Studies</td>
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<tr>
<td>Institute of State and Law</td>
<td>Center for Arabic Studies</td>
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<tr>
<td>Confucius Institute</td>
<td>Research Institute of Archaeology and Ethnology</td>
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<tr>
<td>Institute of Security and Cooperation Problems</td>
<td>Center for Psychological Technology and Innovation</td>
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<tr>
<td>International Institute of Kipchak Studies</td>
<td>Center for Economic Research</td>
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<tr>
<td>Orazbayev Center for Archaeology and Ethnology</td>
<td>Center for Legal support of innovation development of RK</td>
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<tr>
<td>NATO Information and Resource Centre</td>
<td>The European Information Centre</td>
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<tr>
<td>Center for Sociological Research and Social Engineering</td>
<td>Center of problems of fight against crime</td>
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<tr>
<td>Versatile scientific and innovative center of the educational services &quot;GLOSS&quot;</td>
<td>Resource Center for American and Democratic Studies</td>
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<td>Research and Innovation Center for Educational Studies</td>
<td>Republican Center «Al-Farabi and spiritual culture »</td>
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<tr>
<td>Research and Educational Center for German Studies</td>
<td>Center for Religious Research and Expertise</td>
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<tr>
<td>Training and Research Center Ancient Turkic scripts</td>
<td>Center of Ethnopedagogics and Ethnic Psychology</td>
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<tr>
<td>Center for Environmental Safety and Natural Resources</td>
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*Abay Research Institute* and *Orazbayev Center for Archaeology and Ethnology* are located in the Abay Research Institute of Chemistry and Pharmacy in the city of Almaty, Kazakhstan.
Former research institutes of Academy of Sciences (Gylym Ordasy) are integrated with KazNU

| Institute of Mathematics and Mathematical Modeling |
| Institute of Information and Computer Technologies |
| Institute of Economics |
| Institute of History and Ethnology named after C.Valikhanov |
| Institute of Literature and Art named after M.Auezov |
| Institute of Oriental Studies named after R.Suleimenov |
| Institute of Linguistics named after A.Baitursynov |
| Institute of Mechanics and Engineering named after Academician U.Dzholdasbekov |
| Institute of Philosophy, Political Science and Religious Studies |
| Institute of Archaeology named after A.Margulan |
Contingent Staff Summary

EMPLOYEES
- Faculty: 29%
- Administrative staff: 15%
- Technicians: 6%
- Others: 50%

FACULTY
- Total number: 1,800
- Postgraduates: 648
- Graduates: 1,152

D, doctor of sciences, candidate
Postgraduates, graduates
Financial and economic performance indicators

The proportion of funding sources for 2011-2014

- Government: 43.3 billion tenge/288.7 mln $
- Public-private partnerships: 2.04 billion tenge/13.6 mln $
- Extrabudgetary funds: 14.26 billion tenge/95 mln $
- Research activity: 8.9 billion tenge/59 mln $

The structure of financing capital construction, repair of buildings for 2011-2014

- MES RK: 20%
- Own funds: 31%
- State-private partnerships: 49%

The material and technical equipment (mln. tenge)

- 2011: 1088.1 mln
- 2012: 1206.6 mln
- 2013: 1339.8 mln
- 2014 (For August, 2014): 400.8 mln

The dynamics of payroll growth

- 2010: 6000
- 2011: 6000
- 2012: 6000
- 2013: 6000

- Payroll: Blue
- Raiting: Orange
- Bonus: Red
- Perks: Purple
- KTU: Green
- Additional payments: Brown

The material and technical equipment categories:

- Computer equipment
- Library stock
- Teaching and laboratory equipment
- Other OS
Capacity building activities

7,125 billion tenge/47,5 mln $

175,8 mln tenge/1,17 mln $

Scientific internships

Grant of MES for training

Budget of research activity

Capacity building activities
Funding of building within the framework of state-private partnerships

Innovation Cluster – 10 bn tenge (54 mln USD).

Housings of Research Institutes – 7 billion tenge (37 mln USD).

Medical and Biological Cluster – 500 million $

Dormitory for 1500 people – 27 mln USD.
Innovation management: methods

- **Restructuring** of the university on the cluster approach basis:
  - expansion of faculty activity fields;
  - determination of scientific fields and concentration of departments by scientific fields and integration of chairs (from 115 to 63)

- **Decentralization and democratization of management**:
  - delegation of authority and decision-making rights to faculties and chairs;
  - increasing the role of public collegiate boards.

- Implementation of the system «**Management focused on result**»;
- Implementation of the system «**Kaizen**»;
- Implementation of the system «**Knowledge Management**».

- **Rating system of assessment** of faculty staff activity;

- **Differentiated payment stimulation teachers and faculty staff**:
  - Encouraging payment of teachers and faculty staff on the base rating
  - Encouraging payment of employees on the basis of labor participation rate;

- **Attestation of faculty teachers and staff**;

- **Recruitment of teachers and faculty staff on a competitive basis.**
The application of innovative educational technologies in the university

1. Formation of new structure of basic curriculum
2. Examination of educational programs and courses for compliance with the methodology of competency approach for specialists training
3. Informatization of the educational process and improvement of resource provision for carrying out classes
4. Development and implementation of the Academic Policy of KazNU according to international standards
5. Improvement of technology of training and evaluation of knowledge
6. GIVING ~ 90% OF CREDITS FOR THE PROFESSIONAL BLOCK OF DISCIPLINES: STEM-GENERATING MODULES – SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS
7. Issue of Diploma Supplement on accredited specialties
Under conditions of innovative economy and knowledge-based economy any generation of new knowledge and technology is achieved through **joint efforts of universities, government and business** as key elements of innovation system of any country.
**Goal**

Stimulation of diversification and improvement of competitiveness of the manufacturing industry

**Tasks**

1) advanced development of the manufacturing industry;
2) improvement of efficiency and increasing the added value in the priority sectors;
3) expansion of markets for non-primary goods;
4) increase of productive employment;
5) giving a new level of manufacturability to priority sectors of industry and providing a basis for development of future sectors through the formation of innovation clusters;
6) stimulation of entrepreneurship and development of small and medium-sized businesses in the manufacturing industry.
Perspective directions of SPIID-II

- Oil and gas complex
- Chemical Industry
- Metallurgical complex
- Food industry
- ICT / Space technologies
- “Green” Energy
- Pharmaceutics

Opening of laboratories

Increasing the material-technical base

- 2015 год
  2,1 bn tenge/ 11,7 million $

- 2016 год
  2,3 bn tenge/ 12,5 million $

- 2017 год
  2,3 bn tenge/ 12,5 million $
**Directions of SPIID-II:**

- Oil and gas complex
- Metallurgical complex
- Chemical Industry
- Food industry
- “Green” Energy
- ICT / Space technologies

**Educational Programs:**

- Petrochemistry
- Materials science and technology of new materials, Nanotechnologies
- Chemistry and technology of rare and rare earth metals
- Genetic engineering, Food and Biological Safety
- Nuclear power, Alternative energy and energy saving technologies, Geo energy
- Automation and robotics, space technologies, Innovation management, innovative entrepreneurship
Directions of SPIID-II:

- Information and communication technologies
- Industrial chemistry
- Agrochemistry

Pilot educational programs:

- Automation and control of technological processes;
- Information technologies for space monitoring systems;
- Mathematical and computer modeling of technological processes;
- Geo energy and information technologies for efficient development of mineral deposits;
- Mechanics of machines and manipulators, creation of intelligent robots;
- Chemistry and technology of organic materials;
- Chemistry and technology of inorganic materials.
- Chemistry and technology of production of mineral fertilizers and ameliorants;
- Chemistry and technology of plant protection products.
International recognition

QS World University Rankings (2014) 305
QS Emerging Europe and Central Asia Ranking (2014) 14
Great Value Colleges (2014) 31

Central Asian Regional Hub of UNESCO on sustainable development was established on the basis of the University according to the program UNITWIN.

In the framework of the VII Astana Economic Forum on May 21-22, 2014, III Asian Universities Forum was held on the basis of the Al-Farabi Kazakh National University.

Main purposes of the University in the framework of the President’s Address “Kazakhstan's way-2050: Common goal, common interests, common future” are:

Promoting the idea of strengthening the role of the President of Kazakhstan as one of the key figures in the international process of solving global problems

Promotion in transformation of Almaty into a regional hub of multilateral diplomacy
III Asian Universities Forum «Eurasian diversity and the role of universities for sustainable development»
May 21-22, 2014, Astana-Almaty

➢ Galym Mutanov, rector of KazNU
➢ Jan Sadlak, President of the IREG Observatory on Academic Ranking and Excellence, France
➢ OH Yeon Cheon, President of the Seoul National University, The founder of the Forum of Asian universities, the Republic of Korea

THE SECRETARY-GENERAL

QUOTE FOR AL-FARABI
KAZAKH NATIONAL UNIVERSITY
May 2014

Having experienced the power of education in my life and the advancement of my country, I know that it can open doors of opportunity and unlock solutions to world’s many problems. The research and practical work done by researchers and scientists have immensely benefitted the UN in our global mission of peace, development and human rights. As we now strive to shape a bold post-2015 development agenda, I look forward to your insights and other contributions. Thank you for your commitment to the United Nations, including through your membership in

GREETING ADDRESS from Ms. Irina Bokova, Director-General of UNESCO

Higher education institutions play a crucial role in sustainable development of any nation. As sustainability is becoming the most critical issue of the world, the role of higher educational institutions in relation to sustainable development is more prevalent. In this regards this effort of the University is considered to be as a strong commitment to UN principles as well as contributes in achieving of long-term tasks for sustainable development declared in the Millennium Development Goals. I do believe that the Forum will become a good platform for informed discussion across a wide range of sustainable development issues from the perspective of Eurasian diversity.

Address of the UN Secretary-General
Ban Ki-moon

Congratulations of the Director-General of UNESCO Irina Bokova
KazNU in TOP-300
(QS World University Rankings)

TOP - 200

TOP 300

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1 place – École Polytechnique Fédérale de Lausanne

10 place – Cambridge University

12 place – Oxford University

30 place – University of Texas — Austin

31 place – al-Farabi Kazakh National University

32 place – Australian National University

40 place – Utah State University

45 place – University of California San Diego

50 place – Wofford College
On-going programs
In 2014 at the University there were implemented 616 projects with total funding of 7,125 bn tenge ($ 50 mln), including:

- 4 projects of MES and the World Bank joint program “Technology Commercialization”;
- 3 projects of JSC “National Scientific-Technological Holding “Parasat”;
- 1 grant of The International Science and Technology Center;
- 6 projects of JSC “National Agency for Technological Development”;
- 141 international grants and projects within international scientific and educational cooperation;
- 72 developed in collaboration with national companies and private enterprises.

Research activity

Number of projects of grant financing of MES RK

The amount of research activity funding

Publications in high-rated journals of Thomson Reuters and Scopus data bases in 2014
Scientific-Innovation “Corridor”

**Researches**
- State authorities of Kazakhstan, Development institutions, National and international funds
- Fundamental
- Applied
- Scientific institutes and centers

**Innovations**
- Business angels
- Venture capital, Development institutions, Enterprises
- Techno park, research teams
- Design Bureau, factories, SMEs

**Production**
- National companies, Business, Second level banks
- Enterprises production sphere, stock exchanges, SMEs

**Design**
- Design, Patenting
- Engineering
- Technical designing

**Distribution**
- Production

**Idea**

- Publications with IF, h-index
- Protective documents
- Prototype

- Production prototype
- Creation of start-up companies
- License agreements, technology transfer
- Production output
- Small scale, serial production
Research-educational cluster

- Cluster of Life, Biotechnology and Natural Sciences
- Cluster of Chemical Engineering Sciences
- Cluster of Physical Engineering Sciences, Nanotechnologies and Material Technologies
- Cluster of Mathematics and Computing Sciences, Information and Space Technologies
- Cluster of Social and Humanity Sciences and Technologies

Innovation cluster

- Business Incubation Center
  - Business incubator;
  - Consulting;
  - Technology Transfer and Licensing;
  - Commercialization Office.
- Scientific Technology Park
  - Center of High Technologies;
  - Experimental-Design Center. Industrial Center
- Office of venture capital
  - NATD;
  - Development Institutes;
  - Banks of the second level.
- High School of Innovative Technologies and Industrial Engineering

Start-ups
- Spin-offs

Limited-edition Production
- High Technology Companies

Publications
- Patents
1. «Method for extraction of Beryllium from the minerals of Genthelvite group when processing the raw minerals (ores, concentrates)»
USA Patent № 8,945,492

2. «Method for extraction of Beryllium from raw genthelvite (danalite, genthelvite, helvite) and bertrandite (chryosberl, euclase, bertrandite) mineral groups when processing the raw minerals (ores, concentrates)»
USA Patent № 8,945,493
Innovative and commercialization projects (R&D)

University supporting projects – 18: international – 4, republican – 7, branch– 3, university – 4

According to the “Technology Commercialization” program of MES RK and the World Bank the results of 4 R&D are commercialized. 4 spin-off companies are created:

«Creation of pilot production of nano structured carbonaceous materials for chemical processes» (Funding – $1,500,000)

«Creation of production of new hydro gel medical forms of phyto preparations from the vegetable raw materials of Kazakhstan» (Funding – $1,500,000)

«Practical application of isotope ratios of natural radio nuclides in hydrometallurgy of uranium and radioecology» Funding – $600,000

«Development of methods for producing self-renewing composite coatings Funding – $600,000»
Spin-off companies

**LLP «Eco Chem»**
Pilot production of nano structured carbonaceous materials and composites.

**LLP «Chemistry and innovation»**
Production of new hydro gel medical forms of phyto preparations from the vegetable raw materials: hydro gel bandages, phyto preparations, synthetic anesthetic, polymeric hydro gel ointments from vegetable raw materials of Kazakhstan.

**LLP «AIM Lab»**
Production of self-renewing composite coatings: metal composite coatings with incorporated capsules.

**LLP «EcoRadSM»**
Practical application of isotope ratios of natural radio nuclides in hydrometallurgy of uranium and radioecology.
Pilot plant for production of composite materials
Pilot production site for processing carbon-mineral shungit rocks
(EKR, 80 km from Ust-Kamenogorsk city, v. Auezov)

Productivity of complex - 2000 tons of shungite concentrate per year

Pilot production site
Shungit rocks
Creation of biotech complex “Vermi culture” for processing of agricultural waste to produce high-quality feed additives and vermi compost.

The small innovative enterprise for production of new products of “Technology Business Incubator” with the support of “NATD“ is created (farm "Manshuk", Almaty region).

*E. ferida* worms

Biohumus production in piles. «Manshuk» farm
Production of medications

The work on finding and developing new medicines is carried out. Now the following drugs are obtained from the available domestic raw materials and brought to the industrial production stage: ointment "Sanjar", tincture from camel thorn "Gauhar," Syrup "Limonidin" Syrup "Zhantaқ", anticancer drugs "Alhidin - 5% and 10%“, "Ramon"drug , Polymer Hydro gels.
Technology of extraction of wool fat from wool rinsing water, receiving and deep processing of lanolin

**Goal:** creation of construction and industrial plant for extraction of wool fat from wool rinsing water; improving the technology of obtaining of various grades of lanolin; development of methods for obtaining sterol alcohols by deep processing of lanolin and wool fat.
Within the framework of the International Consortium UNIFORM Project in conjunction with the University of Tokyo an unique project for creation and launch of the first in history of Kazakhstan university scientific and educational nano satellite is realized. 4 students of Physics and Technology and Mechanics and Mathematics Faculties are sent to the University of Tokyo, where they acquire theoretical knowledge and practical skills in creating nano-satellites within the Master Course.
Synthesis of graphene

method CVD - process of vapor deposition of materials. We can produce materials with different structures using CVD-process.

CVD installation

Sensor for UV registration on the basis of CVD graphene

Functionalization of graphene

Electrolytic cell for hydrogenation

Changing of Raman spectrum of graphene under influence of hydrogenation and recovery by annealing
Energy saving lamp with high luminous intensity

The experimental setup of lamp

The scheme of lamp
Universal gas leakage sensor «QORGAN»

- **Weight of sensor** no more than 150 g
- **Overall dimensions** no more than 100x50x30 mm
- **The possibility of sending SMS to mobile**
- **The operating temperature** of 40 to 70 degrees
- **The sensor has a built-in optical indication**
- **The sensor is operable at self-supplied power** up to 1 week

Plasma sterilizer

The laboratory setup for schools on electrical and electromagnetic phenomena

- Combined gas sensors
- Carbon monoxide sensors
- Toxic gas sensors
- Highly sensitive gas sensors
- Flammable gas sensors
- Sensors of alcohol vapors
The research work of students

Publication activity of students for 5 years

Allocations for attracting students to research projects on a paid basis (mln.tenge) for 2011-2014.
The best innovation projects of Student Business Incubators

- Energy saving lamp
- Bio soap
- 3D animation movie
- Cryo case
- «Kipa.kz»
- Students’ drone
- «Youth Travel» tourist agency
- «Eco interior»
Al-Farabi Kazakh National University should become a core of research and innovation development in the Republic of Kazakhstan and the Central-Asian region.

For the purposes of innovative development of Almaty region Al-Farabi Kazakh National University has worked out «Innovative Almaty» project.

Project mission:
• transition of Almaty technological and innovative platform to a new level of the international competitiveness;
• improvement of life quality;
• intensification of enterprise activities;
• creation of new workplaces for highly qualified specialists.
Almaty city innovation structure

City Akimat
Department of Entrepreneurship and Industry

Managing company

Innovative Almaty Project

Planned
- Patent agency of Almaty
- Innovative platform KAZDAQ

Municipal
- Departments, objects of city infrastructure

Financial

Business
- Industrial and service companies, innovation and high technology companies, business-incubators

Scientific-educational
- Universities, institutes, research and design bureaus, Techno parks
Innovation cluster of al-Farabi Kazakh National University is planned as three buildings:

1 – Production center
2 – Business-incubator
3 – Techno park

Ministry of Industry and New Technologies

The program for development of innovation and promotion of technological modernization in the Republic of Kazakhstan (p.18 "Creation of Al-Farabi Innovative cluster“)
Medical and biological cluster

Funding organizations (Shinkhan Bank (Hong Kong), Park Way Holding (Singapore))

The project cost is $500 million
Infrastructure of research-educational and innovation cluster

1. The Center of Educational Management
2. The Center of Life and Biotechnology Sciences
3. Scientific Technology Park
4. The Center of Social and Humanity Knowledge and Technologies
5. The cultural-community Center “Univer-City”
6. The Industrial Center
7. The Business-innovation Center
8. The Center of Emerging Technologies
Main trends of REIC development at al-Farabi Kazakh National University

- Information and communication technologies
- Nanotechnologies and new promising materials
- Alternative energy and energy-efficient technologies
- Biotechnologies
- Biomedicine
- Pharmaceutics
- Physicochemical technologies
- Space technologies (nano satellite and etc.)
- Social and humanity researches
III stage of realization PIT “Alatau” on the basis of REIC KazNU

1 stage
2 stage
3 stage

PIT «ALATAU»

REIC Al-Farabi KazNU

«Innovative Almaty»

TECHNOLOFT

KazNU

Medical and biological cluster

Innovation cluster

- residents of PIT “ALATAU”
Scheme of interactions of REIC KazNU

**GENERATORS OF TECHNOLOGIES**
Scientists and innovators of university, scientific institutes and centers

**REIC of Al-Farabi KazNU**
Training staff, researches and R&D

**TECHNOLOFT**

**INVESTORS, ENTREPRENEURS AND VENTURE FUNDS**
Association of Business Angels, Venture Capital Funds, Investors, Entrepreneurs

**FOREIGN PARTNERS**
Investors, enterprises, universities, tech. brokers, commercialization centers

Commercialization of Kazakhstan developments abroad, Localization of foreign developments in the Republic of Kazakhstan

Commercialization of Kazakhstan developments in RK
TECHNOLOFT on the basis of al-Farabi Kazakh National University

Science and technology and material complex, which combines Technopark, business incubator, office of commercialization, production center, exhibit space, co-working center and service facilities: telecommunication facilities, access roads, security.

Formation of innovative entrepreneurs, trans professional with high characteristics. For creating a culture of start-ups and innovative environment, and to increase the share of high-tech products in the structure of economy the Tehnoloft with appropriate innovative structure is created on the basis of KazNU.

The purpose of creation of TECHNOLOFT - to focus on a single area all tools needed for innovation, launching start-ups and business incubation.
TECHNOLOFT – a place where innovation environment forms

1. Science and technology and material complex, which combines innovative workshop, co-working center and service facilities: telecommunication facilities, access roads, security

2. A place where innovative environment and culture of start-ups are formed

3. A place of conversion of R&D results into the real sector of economy. A place where all tools needed for innovation activity are concentrated on a single site

4. A place where competitive capable breakthrough start-ups are created

- innovation infrastructure, unique co-working center;
- pilot plant of 3-D printers;
- parking of solar batteries;
- DATA-center;
- air recovery system.
This element of innovation infrastructure is missing at universities.
Interaction of TECHNOLOFT with Autonomous Cluster Fund (ACF)

1% of the total gross income of mineral developers

AUTONOMOUS CLUSTER FUND

ACF

Subsoil users

III stage of PIT “Alatau” realization

Subsoil users

association of innovative companies
As a result, our university gets ...
In order to form the university of modern formation the large-scale project «Al-Farabi university smart city» was started.
An important role in the works of Al-Farabi "Treatise on the views of residents of a virtuous city", "The book is about the pursuit of happiness," "Specify how to get happiness" and others took the doctrine of the model city.

872-951

The ideal al-Farabi - a virtuous city, the most important feature of which is a universal spiritual values.

• PURPOSE of Virtuous City residents is to achieve Happiness

«People can not live alone, and a minimum level of association, where a dispensation of the good life is possible – it is a city.

Virtuous city is like a perfectly healthy BODY, all organs of that HELP each other in order to save the LIFE of a living creature and make it the MOST comprehensive»

Abu Nasr al-Farabi
Six criteria of smart - virtuous city

Smart economy
Smart management
Smart mobility
Smart environment
Smart people
Smart life
"Point of growth" of innovation economy

"Point of growth" of a new worldview

Innovative infrastructure platform

Spiritual, moral and intellectual platform
Smart universities - a pledge of creation of smart city, smart economy, scientific and technological progress based on the spiritual and moral foundations.
KazSEE, is the only independent accreditation center in Kazakhstan, has experience of international accreditation of educational programs, which is ready to carry out accreditation of educational programs in the framework of the state program of industrial-innovative development.

**KazSEE Accreditation Center is the representative and a member of the following international organizations:**

- International Federation Society of Engineering Education, IFEES.
- European Federation of National Engineering Associations, FEANI.
- KazSEE joined the INQAAHE in the field of quality assurance in accordance with the requirements of MES.
- International Society for Engineering Education, IGIP.
- The International Network for Quality Assurance Agencies in Higher Education, INQAAHE.
- European Network for Accreditation of Engineering Programs, ENAEE.
- Partnership Agreement was signed with Association of Engineering Education of Russia and Portugal, Italian Agency of Accreditation of Engineering Programs, QUACING.
European Network for Accreditation of Engineering Programs (ENAEE)

ENAEE - a network of accrediting agencies, is responsible for the pan-European system for accreditation of engineering education programs. ENAEE is recognized by the international community and consist of European engineering associations.

ENAEE according to the results of accreditation allows the assignment of a European quality label EUR-ACE Label, and the international certificate ENAEE.

Accreditation Center KazSEE has applied for authorization, and has partnered with ENAEE.
IGIP - one of the authoritative international organizations in the sphere of higher technical education, bringing together the scientific and pedagogical public engineering schools of 72 countries. Founded in 1972 in Klagenfurt, Austria.

IGIP is the only international socio-professional organization, which improves the qualification of engineering specialties teachers of technical universities and issuing certificates of “ING-PAED IGIP”

The official representative of IGIP in Kazakhstan is IGIP Training center at the Al-Farabi KazNU (since 2009). In 2014, the Center passed the international re-accreditation for a period of 5 years and awarded the certificate of the training center of international level.

From January 26 to February 14, 2015 IGIP Training center at the Al-Farabi KazNU started program to enhance the level of teachers professional skills for State Program for industrial-innovative development with awarding certificate ING-PAED IGIP.
Capacity building programs (conferences/training)

Every year **20-25** teachers of KazNU receive grants of the Ministry of Education and Science of the Republic of Kazakhstan "The best teacher of high school" to enhance the level of their professional skills. The amount of the grant is **4 million tenge (~$27,000)**.

In 2014, **95.8 million tenge (~$640,000)** of the grant projects funding of Ministry of Education and Science of Kazakhstan was directed to scientific training, participation in conferences.
Internationalization of education

Number of specialties with teaching in English

Graduation of Masters with dual diploma

Improvement of professional skill of university staff

University staff passed training/retraining/probation, %
Introduction of STEM, STEAM modules to educational programs

ENGINEERING AND TECHNICAL AREA
SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

SOCIAL AND HUMANITARIAN AREA
SCIENCE, TECHNOLOGY, ENGINEERING, ART, MATHEMATICS

COMPETENCE-ORIENTED PROFESSIONAL EDUCATION PROGRAMS
International collaboration
Membership with other regional and international organizations

KazNU is a member of:

- EAU - Eurasian Universities Association;
- IAU - International Association of Universities;
- SEFI - European Society for Engineering Education;
- IAESTE - International Association for the Exchange of Students for Technical Experience;
- University of the Shanghai Cooperation Organization (USCO);
- Open Network University of Commonwealth of Independent States (ONUCIS);
- Eurasia-Pacific UNINET;
- IREG - International Observatory on Academic Ranking and Excellence.

Also, the University signed Magna Charta Universitatum - the Great Charter of Universities.
International scientific and educational centers at the Al-Farabi Kazakh National University

- **Network Local Academy Cisco** has been working since 2008. The goal of the program: modern Information Technology Training.
- **FUJITSU – Smart Library** was established in 2012.
- **Data Center (T-platform, Inspur, HP)** was established in 2011.
- In 2013 HP educational technology center opened at the University for the operation of authorized courses of «Hewlett-Packard» Corporation with certification of students.
- **Konica Minolta** laboratory was opened in 2013.
Joint international educational programs

• Bachelor’s degree
  - Strasbourg School of Management (France)
  - Institute for Nuclear Research (Russia)
  - Lanzhou University (China)

• Master’s degree
  - National Polytechnic Institute of Lorraine and geo-energy center
  - University of the Shanghai Cooperation Organization (USCO)
  - Open Network University of Commonwealth of Independent States (ONUCIS)
  - Pierre-Mendès-France University (France)

PhD degree
- Hokkaido University (Japan)
- Institute of Researches on Catalysis and Environment in Lyon (France)
- Polytechnic University of Valencia (Spain)
### International recognition of educational programs

<table>
<thead>
<tr>
<th>Dual diploma programs with foreign universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Baccalaureate - 4 educational programs</td>
</tr>
<tr>
<td>• Magistracy - 15 educational programs</td>
</tr>
<tr>
<td>• Doctorate - 4 educational programs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>International accreditation of educational programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ASIIN 10 programs – natural specialties</td>
</tr>
<tr>
<td>• During the passage of accreditation</td>
</tr>
<tr>
<td>• ACQUIN 10 programs – humanity specialties</td>
</tr>
<tr>
<td>• ASIIN: 82 programs</td>
</tr>
<tr>
<td>• AQA: 52 programs</td>
</tr>
<tr>
<td>• FIBAA: 41 programs</td>
</tr>
<tr>
<td>• KHAOKO – accreditation passed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue of Diploma Supplement on accredited specialties</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Unified European Diploma Supplement in EU / GoE / UNESCO format is given as an evidence of successful training in the framework of the Bologna process since 2014.</td>
</tr>
</tbody>
</table>

The principle of **trinity of languages**, multilingual education: in 2011 - on 16 specialties; from 2012 - on 41 specialties; in 2014 - new Working curriculum in English divided into levels A, B, C in accordance with the European standard.

"**Open chair**“ project: development of skills and competencies, invitation of graduates of "Bolashak», Open Society Institute, Soros Fund, Muskie, Chievening, DAAD, etc. to faculty staff.
Joint international research programs

- The university has partnerships with over 250 universities and international educational institutions from 15 countries such as: England, Belgium, Germany, Italy, Spain, Canada, China, Poland, USA, France, Switzerland, etc. University scientists and staff participate in individual competitions for scholarships and grants in the framework of various international programs.

The university is involved in 58 programs and projects of international organizations such as: the Council of Europe, the European Commission's "Tempus", "Erasmus Mundus", UNESCO, NATO, OSCE, ISTC, IAEA, German Academic Exchange Service (DAAD), "Open Society“ Institute and others.
International funds and organizations financing university projects

- TEMPPUS: 26%
- DAAD: 12%
- Projects of international cooperation of MES: 14%
- Hainan University (China): 5%
- Ministry of Foreign Affairs of Hungary: 5%
- Volkswagen Fund: 5%
- "Open Society" Institute: 3%
- NATO: 5%
- Erasmus Mundus: 11%
- Istanbul University: 2%
- EFCA: 2%
- Dornguk University (Korea): 4%
- The Iranian Cultural Center: 2%
- Embassy of India in Kazakhstan: 4%

International funds and organizations financing university projects.
Future plans
Number of the developed up-to-date **profiled magistracy programs** for various SPIID-2 branches on examples of the best world universities: **9 EP in 2015-2017**

Number of the opened world level educational and research laboratories: **3 laboratories in 2015-2017**

**Number of undergraduates**, annually credited to **profiled magistracy** for training at state budget expense: **350 undergraduates in 2015/2016 school year; 350 - in 2016/2017 school year, 350 - in 2017/2018 school year**

**Average evaluation of readiness of graduates** on SPIID-2 specialties to work on the basis of an independent survey of key employers in SPIID-2 industries (score on a 100-point scale) **(80 in 2017, 83 in 2018, 85 in 2019)**

**Number of undergraduates employed after graduation on the specialty, which were trained in SPIID-2 programs - 100%**
### The Roadmap of the Programme of Development of Al-Farabi Kazakh National University for 2015-2019 within the framework of SPIID-2

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of the structure of professional educational programs and their accreditation</td>
<td>2015</td>
</tr>
<tr>
<td>2</td>
<td>Improvement of professional skills of faculty staff</td>
<td>2015-2019</td>
</tr>
<tr>
<td>3</td>
<td>Providing the quality recruitment of students to SPIID-2 Educational Programmes</td>
<td>2015-2019</td>
</tr>
<tr>
<td>4</td>
<td>Ensuring the quality of educational services. Updating the material and technical base</td>
<td>2015-2019</td>
</tr>
<tr>
<td>5</td>
<td>Employment and professional certification of graduates (personnel)</td>
<td>2017-2019</td>
</tr>
</tbody>
</table>
Goals of Al-Farabi KazNU for 2015-2019 within the framework of SPIID-2

- Enter the top 200 leading research universities in the world
- Transformation of the classical national university into the world-class research university
- To achieve the 195th positions in the world ranking QS
- To increase quantity of publications in rating journals with impact-factor to 2000
- To increase volume of revenues from commercialization of scientific developments to 1.8 billions of tenges/10 mln $
- To achieve 98% employment of graduates
- To increase share of accredited educational programs to 100%
- Creation of scientific, educational and innovation cluster for realization of the third stage of PIT "Alatau" at Al-Farabi Kazakh National University.
Share of faculty involved in the implementation of fundamental and applied programs of the total number, %

<table>
<thead>
<tr>
<th>Year</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>85</td>
</tr>
<tr>
<td>2014</td>
<td>90</td>
</tr>
<tr>
<td>2015</td>
<td>95</td>
</tr>
<tr>
<td>2016</td>
<td>97</td>
</tr>
<tr>
<td>2017</td>
<td>98</td>
</tr>
</tbody>
</table>
The total impact factor of scientific publications of scientists and faculty of the University

5000 Top Research Universities

500 Average research universities

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>290</td>
<td>341</td>
<td>460</td>
<td>530</td>
<td>610</td>
</tr>
</tbody>
</table>
The average number of citations per publication

**80-100 Top Research Universities**

**20-30 Average research universities**

- **2013**: 1.1
- **2014**: 2
- **2015**: 6
- **2016**: 13
- **2017**: 20
Thank you for attention!