Ministry of Education and Science of the Russian Federation

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South Ural State University

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«___»_____2017

«___»_____2017

The Roadmap for the Competitiveness Enhancement Programme of

SOUTH URAL STATE UNIVERSITY
Stage Two: 2018-2020

Chelyabinsk, 2017

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4. Radionov A.A. – Vice-Rector for Academic Affairs
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Number of pages of the main text of the document _____.

Number of annexes _____.

Number of pages of all annexes_____.

Rector of the SUSU University

_____ (**Shestakov Aleksandr Leonidovich**)
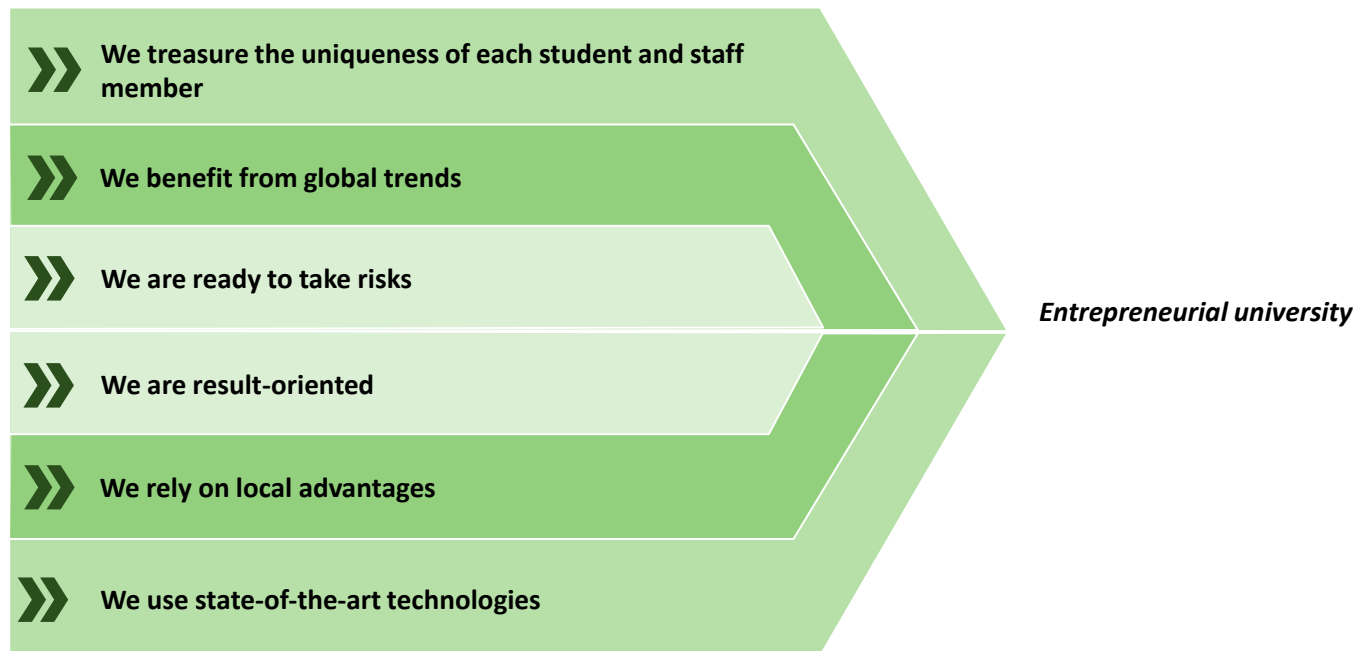
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Contents

I. Target Model

I.1. Smart University for Sustainable Development of the Urals

The mission of SUSU is to address the most pressing challenges for the sustainable development of humanity through creating, communicating and applying scientific knowledge and educating a new generation of leaders for the 21st century.

In pursuing our mission, we rely on the **values of an entrepreneurial university**.

Figure 1. The values of an entrepreneurial university:

- » We treasure the uniqueness of each student and staff member
- » We benefit from global trends
- » We are ready to take risks
- » We are result-oriented
- » We rely on local advantages
- » We use state-of-the-art technologies

Entrepreneurial university

We believe that a diverse and motivated team is the heart of our university, and we **treasure the uniqueness** of each student and staff member, bringing in people from different backgrounds and with various aspirations. We give our students an opportunity to choose their own path at the university. We allow staff members and research teams the freedom and autonomy in their research. We are convinced that world-class scientific breakthroughs can only be achieved when scientists work on the projects that inspire them.

At SUSU, we understand and accept **global challenges:** giving young people the chance to get a high quality education and find an interesting profession; reducing poverty, social and gender inequality; improving the environmental, social and economic sustainability of cities and local communities; promoting intercultural communication and bridging the digital gap.

We benefit from global trends because globalisation shortens distances and SUSU is becoming a full member of the global research and educational process, a portal connecting our society to global leaders. Increasing global mobility enables us to attract talented scientists and students from around the world who share our vision and goals.

We understand that in order to resolve global issues, it is necessary to use unique approaches and we are **ready to take on risks** associated with realisation of new projects. We consistently venture into uncharted territory and we have repeatedly proved this in the past by opening new lines of activities and transforming
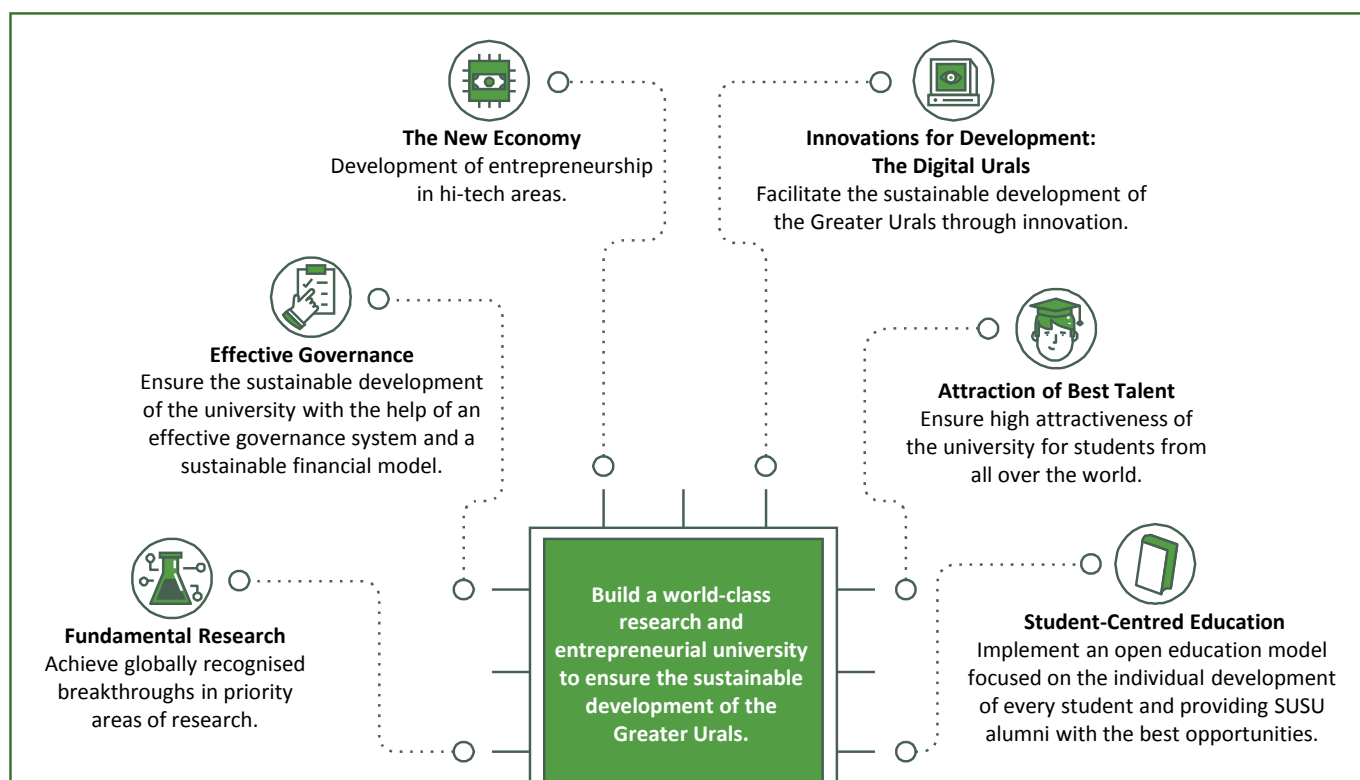
a polytechnic institute into a classical university. We **are result-oriented** in all our projects and are responsible for the final product in accordance with the best traditions of our engineering school. This feature defines our culture and we will pass it on to our young scientists, students and postgraduates, together building a meritocratic environment and motivating each other on a daily basis.

We value the community that we are a part of and we are doing our best to develop it, because we believe that we are capable of changing life in the region. **Relying on local advantages**, we are creating a smart university for sustainable development of the Urals, a university that can attract talented individuals from nearby regions as well as from Central Asia, the Middle East and China.

The ability to master, use and roll out new technologies is one of our key competencies, and we are proud to bring cutting-edge technological advances and approaches to the Urals. New technologies will fundamentally change our university for the better and enable us to implement a qualitatively different approach to academic research, governance systems and collaborations with partners. Through our joint efforts, we can revive the region's economy and make it one of the centres of growth in Russia.

Our mission and values shape the strategic vision of SUSU that determines **our goals**:

Figure 2. Goals of SUSU

Creating a world-class research and entrepreneurial university to ensure the sustainable development of the Greater Urals is the strategic goal that determines the ambitions of our university and tasks for key areas of development. Scientific breakthroughs will allow improving competitiveness of industries in the Urals and making the university more well-known around the world. Our transformation of the educational process and focus on the attraction of talent will bring the best specialists into the region and lay the foundation for its sustainable development. A sustainable financial model and an effective governance system will in turn create a solid foundation for realisation of individual initiatives aimed at achieving the above goals.

After joining the programme to improve the university's competitiveness and identifying its strategic goals, SUSU launched a three-stage **transformation process**:

Figure 3. The three stages of SUSU's transformation into a world-class university

Implementing the mechanisms of transformation	Betting on leaders, focusing on breakthroughs	A world-class research and entrepreneurial university
2015-2017	**2018-2020**	**2025**

The first stage of the transformation showed both the initial results as well as significant **gaps in the target model**, indicating the priority areas for further development:

1 **The inefficiency of initiatives aimed at the attraction of talent due to a lack of new residence halls and the region's lack of appeal to students and international researchers.**

Education offerings linked to industries that are traditional to the Ural economy, the lack of accommodation for students from other cities and countries and the region's stagnant economy are factors that thwart the efficiency of the university's attempts at talent attraction.

2 **The incongruity of the existing administrative and information infrastructure with the challenges faced by the university.**

The level of development of the administrative and information infrastructure of the university limits its ability to attract additional revenues and retain talent.

3 **An insufficient volume of research funding.**

The existing level of research funding is lagging behind that of the universities included in the leading global academic rankings.

At each stage of the transformation, the university focuses its resources on the most critical practical steps for that stage. During the first stage (2015-2017), the university set up the key mechanisms of transformation and observed the initial results.

Figure 4. Main instruments and results of the transformation of SUSU

Over 1,900 faculty members signed performance contracts starting from 1 September 2016

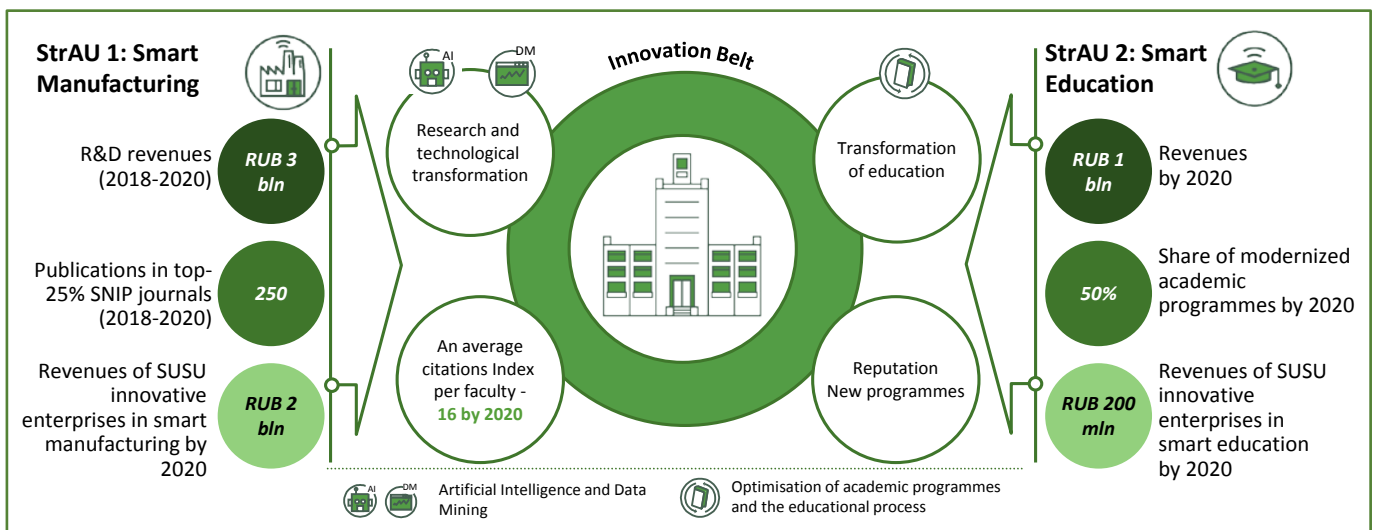SUSU implemented a **KPI system** based on six target indicators related to the Competitiveness Enhancement Programme

6

Share of publications in Q1 SNIP journals indexed by Scopus

11%
2016

35%
2017

SUSU piloted mechanisms for funding world-class faculty members

Twenty-seven faculty members received a 40% pay raise for showing prominent research results

40%

SUSU introduced a new research management approach

Members of SUSU's International Academic Advisory Council and experts from other universities provided expertise to assess projects

Established

8 laboratories with leading international scientists

100+ grants allocated to young scientists

SUSU adopted a new brand

South Ural State University

1943

National Research University

SUSU modernised its website

SUSU redesigned the website content and format for an external audience in accordance with the university's marketing strategy

SUSU's website improved its position in the Webometrics ranking among Russian HEIs

40 **23**
2017

SUSU created a bilingual environment

SUSU launched new English language courses based on the Cambridge University Press methodology

En

1500+ students and staff

SUSU piloted a new recruitment system for international research staff

SUSU introduced a new recruitment model and conducted open international competitions to select the best staff

7 International postdocs

60 International PhD students

SUSU overhauled its organisational structure

30+ faculties → **10** schools

Number of departments **145** → **85**

57% percentage of staff that support the new structure

SUSU scaled up the LMS system

Interaction of students and staff via online resources

33% Percentage of staff in key schools that have adopted blended learning technologies

The implementation of these instruments laid the foundation for the second stage, during which the university bets on leaders by concentrating its resources in breakthrough research areas integrating computer sciences and engineering, and related to development of the **Industrial Internet of Things**

(IIoT), to work with companies in the Greater Urals to address global challenges. To achieve these goals, SUSU will establish strategic academic units (StrAUs) **«Smart Manufacturing»** and **«Smart Education»**.

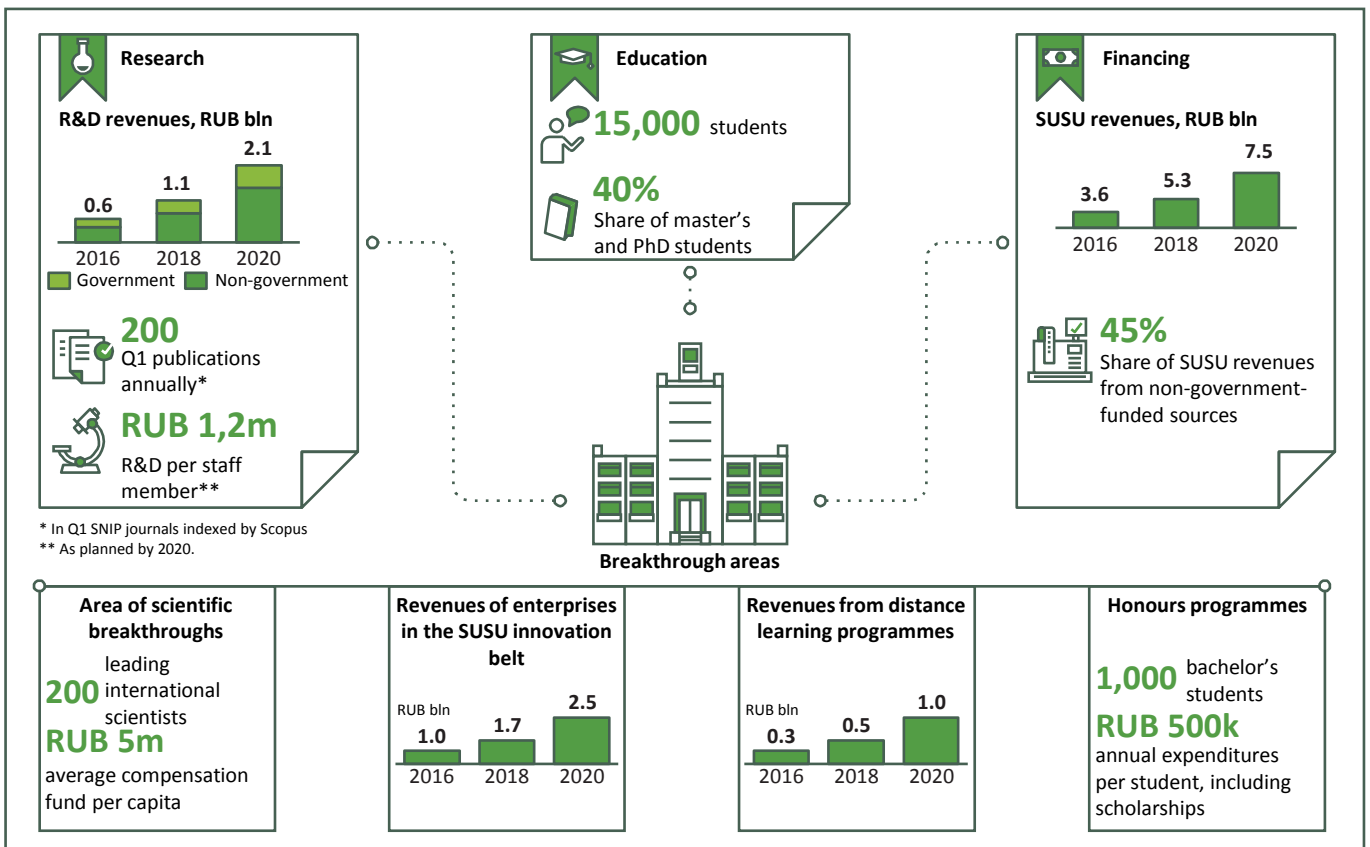**Figure 5. StrAUs «Smart Manufacturing» and «Smart Education».**

«If you goal is to put ten pencils through a wall, what is the best way to do it? Should you grab all ten in your hand and hit the wall? Or should you take one and hit the wall? It turns out the best thing is to put one through, and then put the rest to follow».

Edward Monser, President of Emerson Corporation, head of the SUSU International Academic Advisory Council (IAAC)

In pursuing its goals, SUSU relies on a sustainable **financial model**:

In 2018–2020, SUSU will focus on increasing its revenues from research activities. By solving complex engineering problems for leading companies in the Greater Urals, the university will significantly increase its R&D revenues. This will in turn secure competitive compensation for over 200 researchers.

A number of factors will drive the growth in SUSU's revenues from educational activities. The average tuition fee for students enrolled on a commercial basis has already increased by 30% in 2017 because the university was declared the Programme 5-100 winner. In 2018–2020, the average amount of per capita financing for publicly funded spots in SUSU will become the same as for other participants of the programme. According to the methodology used by the Ministry of Education and Science to calculate the amount of financing per capita, the fulfilment of roadmap targets leads to an increase of more than 30% in public financing for students.

In particular, a higher number of citations per faculty member will produce a notable effect on the average budget per master's student, while the fulfilment of another target (a higher average USE score) will result in increased financing for bachelor's students. Finally, compliance with the KPI on the volume of R&D revenues per faculty member will positively affect financing for all students in accordance with the methodology.

In addition to an increase in financing per student, the university's revenues will grow due to the development of distance learning formats for both supplementary professional training programmes and for main academic programmes. This is already generating significant revenues for the university due to the necessary competencies and technologies that SUSU has for the provision of high-quality distance learning and a wide range of academic programmes.

Revenue growth will enable the development of honours programmes for bachelor's students. The target budget per student in honours programmes will be the same as that of the leading Moscow universities. Graduates of honours programmes will become a hallmark of SUSU.

I.2. Research and Innovations Strategy

The strategy of SUSU in the areas of research and innovation focuses **on three long-term goals**:

1. Achieving globally recognised breakthroughs in priority research areas.
2. Facilitating the sustainable development of the Greater Urals through innovation.
3. Developing entrepreneurship in high-tech industry areas.

The advantage of SUSU as a classical university is that it develops a wide range of academic disciplines. Most of the university's publications focus on but are not limited to engineering, computer sciences and material sciences. The university's recent achievements include publications in the top-1% journals on archaeology and history, digital production and leading biomedical journals. The number of publications in top-10% SNIP journals increased by 163% in 2014-2016, and exceeded the level of 2016 in the first eight months of 2017.
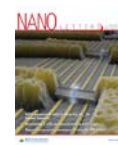
The main priorities for achieving SUSU's long-term goals are greater funding for research and broader collaboration with the business community. The basis of the marketing strategy in the areas of research and innovation will be to satisfy solvent industrial demand for R&D. The strategy consists of two main concepts: the Digital Urals and the New Economy of Chelyabinsk.

Publications in Top-1% SNIP journals (2015-2017)

Cell
Early Divergent Strains of Yersinia pestis in Eurasia 5,000 Years Ago
2015

Nano letters
Giant faraday rotation of high-order plasmonic modes in graphene-covered nanowires
2016

Additive Manufacturing
Microstructure and physical properties of a Ni/Fe-based superalloy processed by Selective Laser Melting
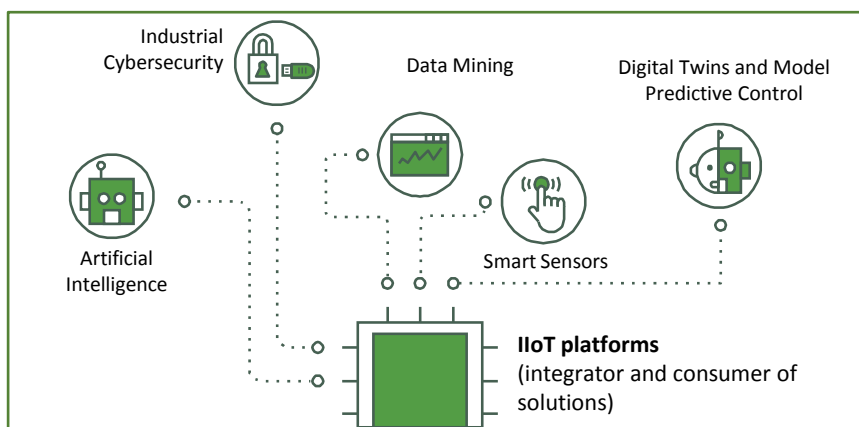**2017**

The Digital Urals

The Greater Urals is one of Russia's industrial centres, and the region is home to leading enterprises in their respective industries. Twenty-six percent of Russia's total industrial output (an estimated **RUB 3.3 trillion** worth of production) comes out of the Urals. In the environment of harsh global competition, enterprises located in the Greater Urals need innovative solutions to unlock their full potential and achieve the following objectives:

- Tyumen Region
- Sverdlovsk Region
- Perm Krai
- Orenburg Region
- Chelyabinsk Region
- Kurgan Region
- Udmurt Republic
- Bashkortostan Republic
- Oil and Gas
- Mining and Metals
- Industrial Automation and Instrument Making
- Machine Building

Revenues, RUB bln, 2015

- **Cut costs** to improve competitiveness in the standardised goods market;
- **Create products** with high value added and guaranteed quality **that are in demand around the world**;
- **Ensure comfortable and favourable environmental conditions** to prevent talent from leaving the region.

The Industrial Internet of Things represents a range of solutions for data collection, transfer and aggregation, as well as platforms that allow for the processing of data and use it to implement smart solutions. The IIoT is considered the number-one breakthrough technology that will disrupt business models according to the PwC Digital IQ global survey for 2017, companies are most ready to invest in IIoT projects.

The emerging digital solutions related to the development of **the Industrial Internet of Things** (IIoT) can help achieve these objectives and improve both the efficiency and the competitiveness of enterprises based in the Urals. **The IIoT** integrates and creates a fast-growing demand for the cutting-edge **digital solutions** developed by SUSU:

1. **IIoT sensors:** research into and the development of fundamentally new precision sensors and data delivery methods as part of the IIoT.
2. **Digital twins and model predictive control:** designing and developing a new class of systems to support digital production based on the digital twins of industrial processes.
3. **Artificial intelligence:** developing models, methods and algorithms for the creation and configuration of deep artificial neural networks for industrial purposes.
4. **Data mining:** developing new and highly scalable parallel methods and algorithms for extra-large data mining.
5. **Industrial cybersecurity:** research into software development and methodologies that ensure information security of industrial systems.

Applied projects that focus on IIoT-connected digital technologies will be the foundation for development of research activities. For each project, SUSU will engage experienced international partners with leading expertise. Major academic partners are Oxford University (UK), Heidelberg University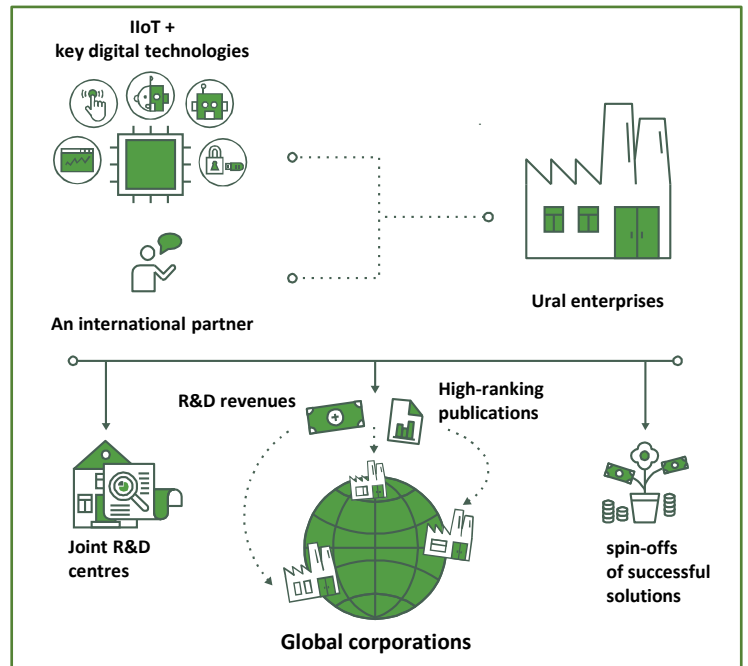 (Germany), the National Engineering School of Saint-Étienne (France), Lappeenranta University of Technology (Finland), Darmstadt University of Technology (Germany) and the National Institute of Technology (India). In 2018-2020, the list of partners will expand due to active development of international academic contacts.

«You should keep it in mind: if there is no industrial partner, there should be no new area of research. You should strive to increase the share of financing by business and increase the number of projects implemented for companies».

Ron de Klo, professor of the Leiden University, member of SUSU IAAC

The successful development of digital solutions for enterprises **will increase non-public income from R&D activities** and **the number of high quality, first-quartile publications** in fast-growing areas of research. It will also create opportunities to enter the international research market. Furthermore, developing SUSU based on an entrepreneurial model will create a favourable environment for opening joint R&D centres with leading companies and for setting up small innovative enterprises ("SIE") that will scale up the implementation of successful solutions and make a considerable contribution to the university's non-public income.

The implementation of this strategy will help SUSU finance its fundamental research and transform the university into a world-class research centre with a strong academic reputation.

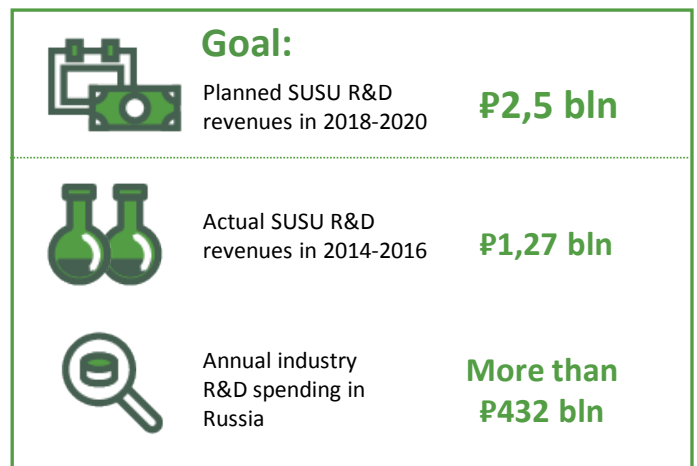The target annual volume of R&D for 2018-2020 will be **RUB 5 billion**.

«You should proactively seek industrial support for your research papers. I think that you can find an industrial partner for every publication, and joint publications will increase financing for development of international research activities».

Muthupandian Ashokkumar, professor of the University of Melbourne, member of the SUSU IAAC

In 2018-2020, SUSU, in alignment with its strategy to focus on research into digital technologies related to the IIoT, will focus on working with four industries that are located in the Greater Urals, prioritising them by the level of expected revenues from applied R&D. The concept of the Digital Urals will come to fruition through the establishment of the **StrAUs «Smart Manufacturing»** and **«Smart Education».**

Machine building is the industry with which SUSU has active cooperation, including with such giants of the industry as KAMAZ. Machine building is widely represented in the region by such leading companies as Uralvagonzavod, Perm Motors, leading enterprises of the Almaz-Antey consortium, the United Automobile Group and Kurganmashzavod. SUSU is well experienced in carrying out industry-specific projects and the university enjoys strong relationships with many leading companies in the industry.

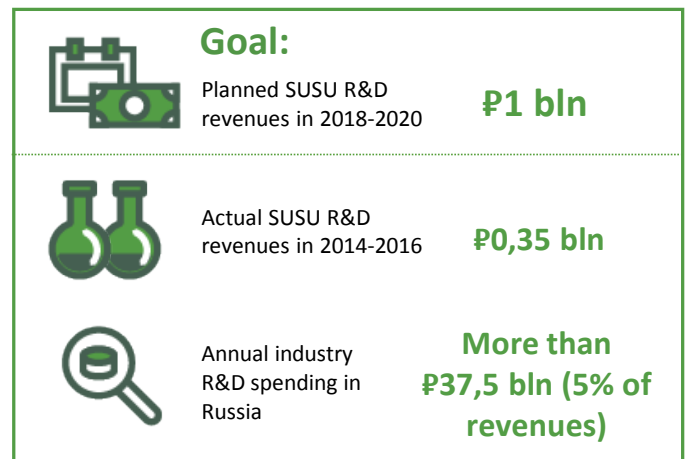|	Goal:	
	Planned SUSU R&D revenues in 2018-2020	₽2,5 bln
	Actual SUSU R&D revenues in 2014-2016	₽1,27 bln
	Annual industry R&D spending in Russia	More than ₽432 bln

Over the last three years, SUSU has implemented a significant number of large-scale projects for the industry, including the creation of energy-efficient transmissions for KAMAZ trucks and buses, development of information-processing methods for strapdown navigation systems used to control high precision aerial vehicles for NPO Semikhatova and components for unmanned transportation systems. In addition, SUSU participated in designing innovative and energy-efficient tramcars for Uraltransmash and realisation of the contract with Perm Motors on development of robotic systems for aviation in 2017.

The goal of cooperation with the industry in 2018-2020: conclusion of large R&D contracts and expansion of cooperation with the industry, including establishment of joint R&D centres. SUSU has already formed the portfolio of planned projects with the industry for RUB 700 mln by 2020. The volume of planned contracts will increase after active implementation of strategic initiatives and industry cooperation roadmaps by the university. The priority areas for cooperation of SUSU with the industry related to development of the **IIoT** are the following:

Application of neural networks to improve the quality of produced goods, reduce costs and increase productivity.

Development of data collection and analysis systems for diagnostics and process management in technological equipment of industrial enterprises, engines and devices, including on-line assessments of the equipment's condition and predicted failures to forecast repair needs.

Application of artificial intelligence to control autonomous vehicles and improve the efficiency of cargo traffic management.

Creation of digital platforms that allow for design, engineering and multiparametric optimisation of equipment and next-generation products.

Development of remote control methods for robotic systems and automated processes.

⛏️ **The metals and mining industry** has a strong presence in the region. The largest companies operating in the Urals are the Magnitogorsk Iron and Steel Works (MMK), the Chelyabinsk Pipe-Rolling Plant (ChelPipe), Evraz and VSMPO-AVISMA. SUSU has designed a model predictive process control for MMK's blast furnace and has experience in developing and implementing automatic control systems for power plant boilers to minimise gas consumption. The annual economic effect for MMK reaches RUB 50 mln.

Goal:	
Planned SUSU R&D revenues in 2018-2020	**₽1 bln**
Actual SUSU R&D revenues in 2014-2016	**₽0,35 bln**
Annual industry R&D spending in Russia	**More than ₽37,5 bln (5% of revenues)**

The goal of cooperation with the industry in 2018-2020: to ensure global technological leadership of metals and mining enterprises of the Greater Urals on the basis of leading digital production technologies. SUSU has already formed the portfolio of planned projects for the industry for RUB 330 mln by 2020. The volume of planned contracts will increase after active implementation of strategic initiatives and industry cooperation roadmaps by the university. The priority areas for cooperation of SUSU with the industry related to development of the **IIoT** are the following:

Development of analytical methods based on neural networks to enhance the quality of produced goods and reduce environmental costs.
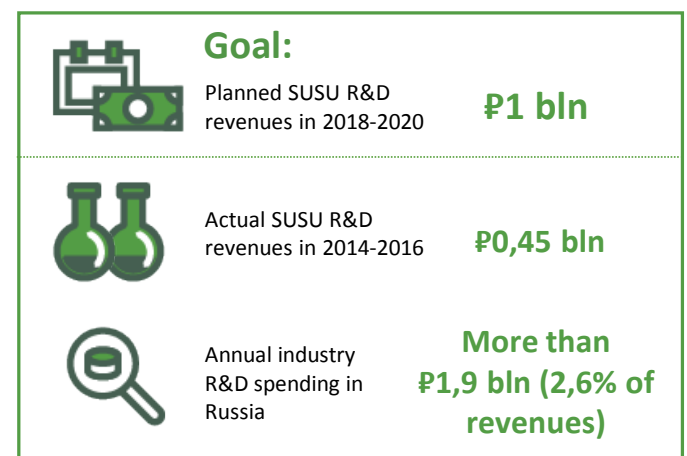
Development of real-time analytical methods for process, equipment and production diagnostics.

Application of supercomputer modelling to expand the range of produced goods and to improve the efficiency of production.

📡 **Industrial automation and instrument engineering** is one of the leading industries in the Urals and the South Ural Instrument-Building Cluster is located in the Chelyabinsk Region. **Emerson** is the university's most active partner in the industry.

Over the last three years, SUSU participated in setting up the high-tech production of antennas and hardware modules for the Polyot enterprise, and in the development of an energy-efficient, real-time

Goal:	
Planned SUSU R&D revenues in 2018-2020	**₽1 bln**
Actual SUSU R&D revenues in 2014-2016	**₽0,45 bln**
Annual industry R&D spending in Russia	**More than ₽1,9 bln (2,6% of revenues)**

geo-information system to control the heating and water supply for the Russian Instrument-Building Company. SUSU has been doing research on multifunctional microsensors situated on nanocomposite anisotropic mats of carbon tubes and created a distributed virtual testing stand for Emerson. SUSU will collaborate with the industry on **IIoT projects** in the following ways:

The goal of cooperation with the industry in 2018-2020: strengthening of cooperation with the industry through the development of joint projects and solutions for other industries. The priority areas for cooperation of SUSU with the industry related to development of the **IIoT** are the following:

Improvement of efficiency of IIoT platforms based on new methods of information processing and ensuring self-diagnostics of sensor devices.
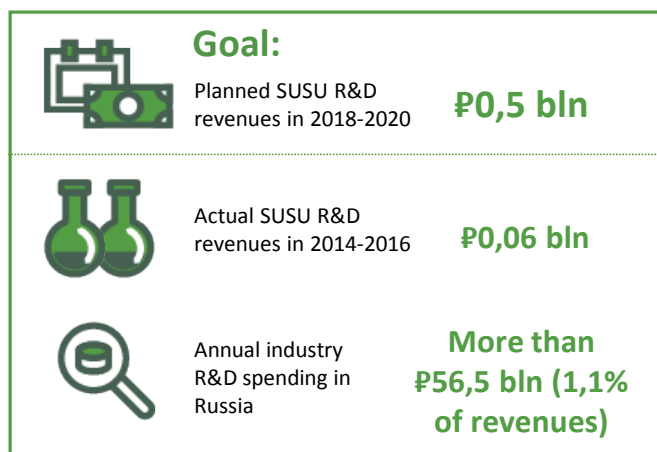
Development of devices and algorithms for the vibroacoustic control of mechanical structures and new precision flow meters for heterogeneous mediums.

Development of sensor data transfer safety technologies and cybersecurity systems for enterprises that implement the **Industrial Internet of Things**.

Oil and gas is the largest industry in the Greater Urals. The largest companies operating in the Urals are Rosneft, Gazprom, Lukoil and Surgutneftegaz. SUSU does not have significant experience of cooperation with the industry. However, SUSU successfully participated in a large project to design a Coriolis flow meter for the oil and gas industry.

The goal of cooperation with the industry in 2018-2020: expansion of cooperation and conclusion of large R&D contracts with the industry, as there have

Goal:	
Planned SUSU R&D revenues in 2018-2020	**₽0,5 bln**
Actual SUSU R&D revenues in 2014-2016	**₽0,06 bln**
Annual industry R&D spending in Russia	**More than ₽56,5 bln (1,1% of revenues)**

not been large-scale contracts with the industry in the portfolio of projects of SUSU for 2018-2020. The priority areas for cooperation of SUSU with the industry related to development of the **IIoT** are the following:

Analysis of super-large bulks of data from IIoT sensors at oil and gas production facilities to improve the control of technological processes, their quality and efficiency.

Supercomputer modelling for cheaper and more efficient geological prospecting and exploration in hard-to reach areas.

Development of control methods for robotic systems in remote locations.
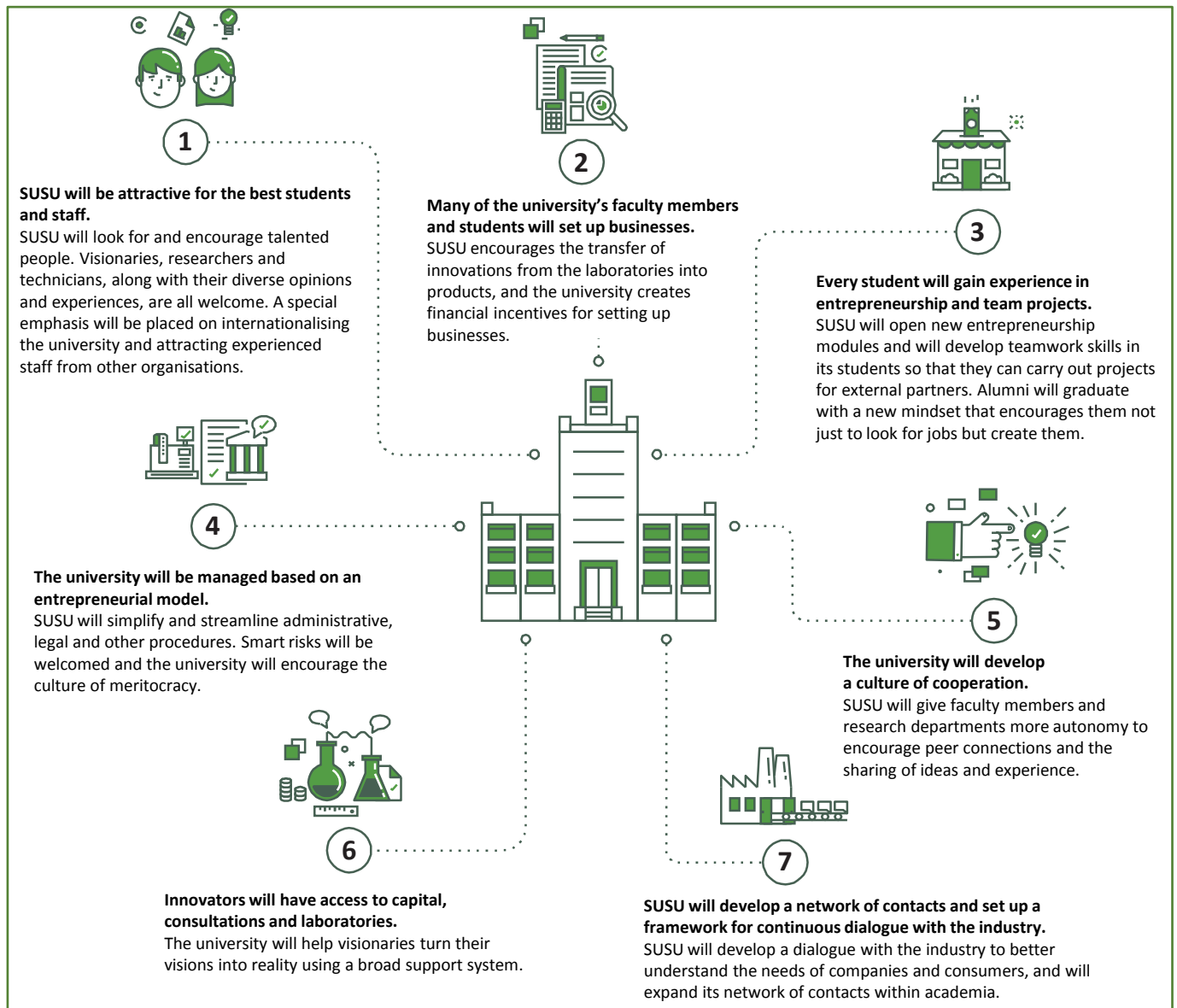
The new economy of Chelyabinsk

The economy of the Chelyabinsk Region is lagging behind the leading Russian regions in terms of salaries, and the region does not create substantial numbers of new jobs for highly qualified specialists due to a lack of diversification. The sustainable development of the Chelyabinsk Region and the Greater Urals requires development of innovations and entrepreneurship. SUSU will transform the main institutes and build an innovation-friendly ecosystem around the university using international best practices. These changes will help make Chelyabinsk more attractive for leading researchers and talented students.

While developing an innovative environment, SUSU will follow the recommendations made by the ISC:

«Technical experts should understand business and patents. Engineers should be a part of the entrepreneurial culture. You can provide resources to startups on campus. This will encourage students to work hard».

Jaewan Kim, KIAS professor, member of SUSU IAAC

The SUSU vision of its innovative ecosystem is based on the following **seven principles**:

1
SUSU will be attractive for the best students and staff.
SUSU will look for and encourage talented people. Visionaries, researchers and technicians, along with their diverse opinions and experiences, are all welcome. A special emphasis will be placed on internationalising the university and attracting experienced staff from other organisations.

2
Many of the university's faculty members and students will set up businesses.
SUSU encourages the transfer of innovations from the laboratories into products, and the university creates financial incentives for setting up businesses.

3
Every student will gain experience in entrepreneurship and team projects.
SUSU will open new entrepreneurship modules and will develop teamwork skills in its students so that they can carry out projects for external partners. Alumni will graduate with a new mindset that encourages them not just to look for jobs but create them.

4
The university will be managed based on an entrepreneurial model.
SUSU will simplify and streamline administrative, legal and other procedures. Smart risks will be welcomed and the university will encourage the culture of meritocracy.

5
The university will develop a culture of cooperation.
SUSU will give faculty members and research departments more autonomy to encourage peer connections and the sharing of ideas and experience.

6
Innovators will have access to capital, consultations and laboratories.
The university will help visionaries turn their visions into reality using a broad support system.

7
SUSU will develop a network of contacts and set up a framework for continuous dialogue with the industry.
SUSU will develop a dialogue with the industry to better understand the needs of companies and consumers, and will expand its network of contacts within academia.

I.3. Education Strategy

The main goal of SUSU's education strategy is to create an open education model that focuses on the individual development of every student and offers the best opportunities for SUSU alumni. In order to achieve this goal, the university will transform its educational process and put together an appealing and competitive package of academic programmes and educational services.

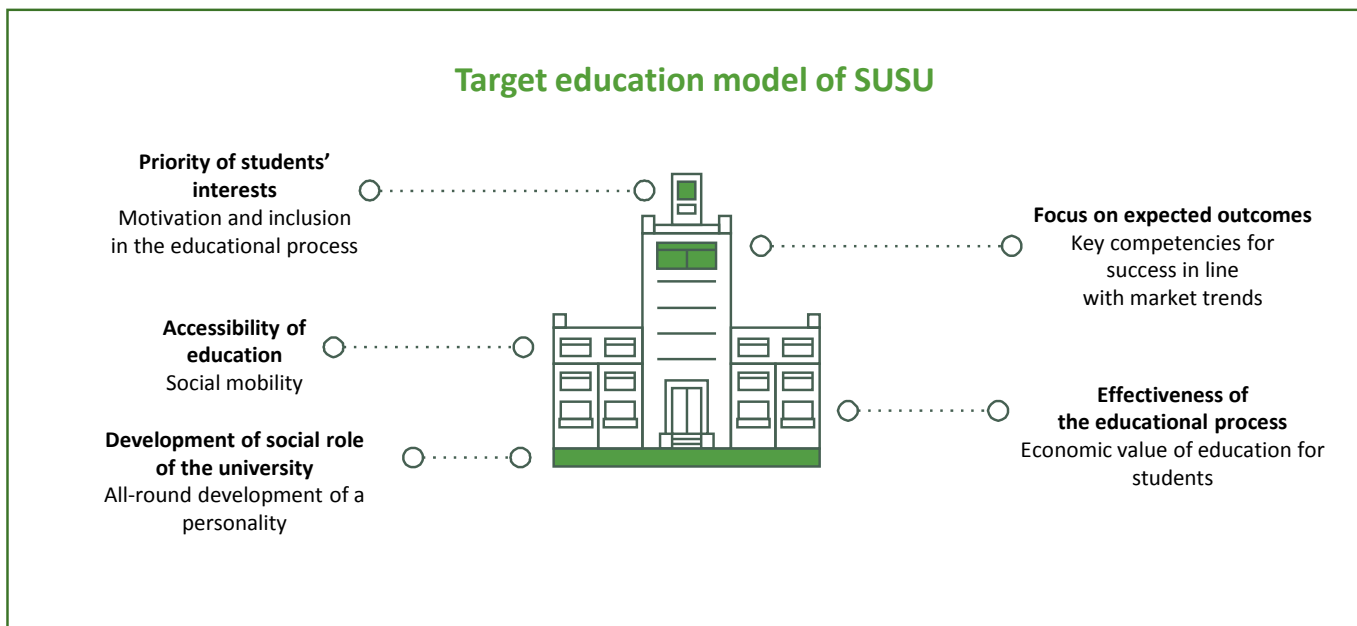The academic model addresses the challenges faced by the university:

Figure 5. Global challenges in higher education

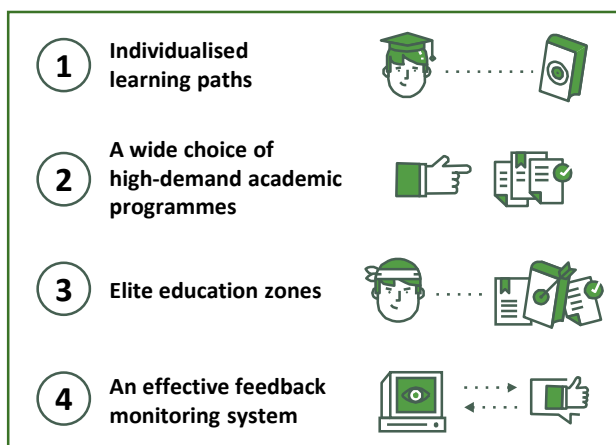| Challenges	Description
Democratisation of knowledge	The dynamic development of open sources knowledge sources encourage universities to change their educational offerings and business models.
High competition in markets for students and funding	Increased competition due to tight budgetary environment and a changing demographic situation.
Development of digital technologies	Digital technologies are radically transforming the way education is delivered and accessed, and the way 'value' is created by public and private higher education providers.
Global mobility	Rising mobility of students, teachers and universities is increasing the competitiveness of domestic education markets and creating international opportunities.
Integration with industry	Business is increasing its role in the sector as a partner of universities and as a competitor.

Source: University of Oxford, 'International Trends in Higher Education, 2015'

Addressing these global challenges will be key to the success of SUSU's academic programmes. These challenges are serious, but they are also opportunities to develop, rise to a new level and get ahead of the competition. In order to derive the maximum benefit from these opportunities and to enhance the value of education offered, the university will upgrade its academic programmes and optimise the educational process in accordance with the following **five main principles.**

Figure 6. Main principles of the SUSU's academic programmes

Target education model of SUSU

Priority of students' interests
Motivation and inclusion in the educational process

Focus on expected outcomes
Key competencies for success in line with market trends

Accessibility of education
Social mobility

Effectiveness of the educational process
Economic value of education for students

Development of social role of the university
All-round development of a personality

Priority of students' interests

1. **Individualised learning paths**

2. **A wide choice of high-demand academic programmes**

3. **Elite education zones**

4. **An effective feedback monitoring system**

SUSU will offer a wide choice of high-demand academic programmes and learning formats while giving students more opportunities for greater control over their education:

- Individualised learning paths will enhance the variety of academic programmes and enable students to benefit from exposure to different disciplines.
- The most popular academic programmes will be prioritised while new highly sought-after programmes will be established.

- Honours programmes will give the most talented and motivated students an opportunity to unlock their full potential.
- A feedback system will ensure the continuous monitoring of students' interests starting from 2017-2018.

The realisation of this principle is grounded in the culture and traditions of the university and the results achieved during the first stage of the Competitiveness Enhancement Programme.

The university **focuses on promising and popular academic programmes**. For example, the university set up a department of social and humanitarian sciences to meet market demand in the 1990s. In the past decade, the university has been increasing the number of highly sought-after programmes in computer sciences. SUSU is planning to pursue further strategic initiatives to expand students' academic options by attracting talent and monitoring market demand. As a feedback mechanism, the Uniform State Exam (USE) results are now included in the KPIs for all university departments.

Since 1 September 2016, the university has been developing **honours programmes** under Project 5-100 that enable the most talented and motivated students to unlock their full potential. **The results of the feedback monitoring programme** will be included in the KPIs for each staff member from 1 January 2018 to encourage the most popular teachers, track the requirements of students and adjust ongoing activities based on the students' interests.

Focus on expected learning outcomes

For many prospective students the learning outcome is measured by the level of their future welfare and financial independence, which is directly associated with employment in leading Russian and international companies. The university believes that its objective is to develop in its students the key competencies needed to work for the leading companies so that their SUSU education is considered economically beneficial and helpful for reaching their goals.

Figure 7. Target groups of employers of SUSU alumni

Industry	Preferred employers of SUSU alumni
IT	• Google, Facebook, Mail.ru, Yandex, Kaspersky Lab • Microsoft, IBM, SAP
Automotive industry	• Mercedes-Benz, BMW • KAMAZ
Oil and gas	• Schlumberger • Gazprom, Gazpromneft, Rosneft
Industrial automation	• GE (General Electric) • Emerson, Siemens
Engineering	• Roskosmos • Rostekh
Mining and metals	• Norilsky Nickel • MMK
TMT	• Channel One • MTS, Megafon, Vympelcom, Rostelecom
Professional services	• McKinsey&Company, The Boston Consulting Group, PwC • White & Case, Deloitte, EY

Sources: preferred employers of students of leading universities, Future Today (2017).

SUSU organises its educational process in order to provide its students with the skills required to succeed in their future careers and that are highly sought after by leading employers, such as **the ability for independent learning, and social and communication skills.** These skills are needed to adapt to the reality of rapid scientific and technological progress and changes in the labour market.

Figure 8. Key competencies of SUSU alumni

Competencies for unlocking the potential for learning	Social and communicative competencies
Ability to study, acquire new knowledge and skills, including those in other professional areas	Ability to vary communication styles depending on goals and circumstances
Effective search and information usage skills	Ability to make managerial decisions and bear responsibility for them
Ability to conscious goal-setting, professional and personal development	Effective teamwork
Ability to self-assessment, self-improvement and adaptation to changing conditions	Ability to work in an international environment

In order to teach SUSU students these skills and undertake a transition to a modern academic model, the university will organise a campaign to introduce a project-based and problem-oriented approach in all academic programmes. Students will be engaged in projects throughout their education, applying and expanding their knowledge and skills from various disciplines in the process.

Efficiency of the educational process

The goal of this principle is to maximise the economic value of education through the optimisation of the educational process. The economic value means the net financial effect from SUSU graduates' education, net of time spent and other alternative costs. The university is enhancing the quality of its academic programmes, along with their range and flexibility, **by integrating distance and mixed learning formats**. Students receive more opportunities to control their education and they will be able to use the time freed up by distance learning to study in a more efficient manner.

Optimisation of the educational process

- Integration of the distance learning format into the educational process and the reduction of teaching load
- Implementation of learning personalisation methods into the educational process
- Inclusion of webinars, modules and third-party MOOCs into educational programmes of SUSU,

The best lectures and courses will be rolled out across the entire university, displacing the less popular ones. Courses offered by the best Russian and foreign universities **will be integrated into the academic programme**. The introduction of **adaptive education technologies** will help to find an approach for every student and unlock its full potential. The educational process will become more efficient and easier for students, and that will eventually improve their academic results. Reducing students' classroom workload

will improve the efficiency of the academic process for the faculty as well, because they will be able to devote more time to research and innovation.

«The faculty should spend more time on research and innovations. In the leading universities, professors have many teaching assistants who check students' papers».
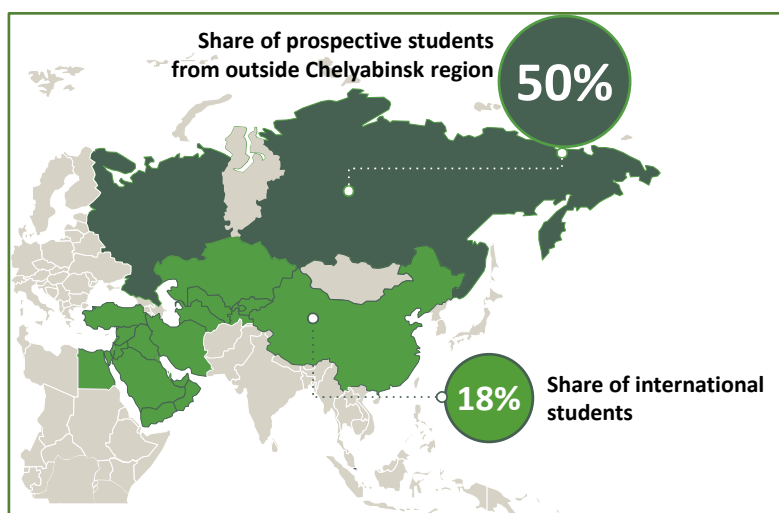
Jaewan Kim, KIAS professor, member of SUSU International Academic Advisory Council

SUSU will actively research and implement new teaching technologies to improve the quality of education, and the Strategic Academic Unit «Smart Education» will be an essential instrument for achieving this result.

Accessibility of education

SUSU seeks to provide as many students as possible with **a high-quality education** and to **improve students' social mobility**. SUSU is the largest university in the Chelyabinsk Region and it provides the strong regional economy with well-trained specialists. A broader use of distance learning formats will help the university to overcome its infrastructure and geographical limitations, and **regardless of their age, occupation or marital status**.

Share of prospective students from outside Chelyabinsk region **50%**

18% Share of international students

Thanks to this approach, SUSU will significantly reduce territorial, financial and other barriers that prevent many young people from receiving a high-quality education, creating an open and accessible university model. A diverse community of students from a variety of different backgrounds and social classes will be an excellent environment for developing multicultural communication skills.

This diversity will enrich the university, creating a combination of talents that encourages the development of ideas and social skills of students.

Developing the university's social value

The university gives students an opportunity to become part of a diverse, lively and energetic team of like-minded people seeking to improve life in the region.

The harmonious, comprehensive development of students, along with their social adaptation to various conditions, is an important part of the social value of education. The university will facilitate it by helping students to experience a rich social life with numerous extracurricular activities that include hobby classes, sports teams and other student groups. Participation in such associations fosters teamwork, leadership and socialisation, and makes the learning process more enjoyable.

SUSU already has 23 art groups, 24 sports groups and multiple other diverse student groups. Over 200 events are held annually, such as holidays, festivals and creativity competitions, and the university intends

to develop these activities in future. The university has been developing the School of Young Leaders which provides unique training modules for the brightest university students of SUSU. The school's purpose is to help its members not just stand out within their group or department but become leaders and achieve success in life. Alumni of the School hold managerial positions in the system of local, regional and federal government.

Through various events, student groups and charitable campaigns, as well as through the projects and courses included in the academic programme, SUSU instils and cultivates in its students ideas of social responsibility and the desire to help local communities and foster regional development, which is a part of the university's vision.

II. Strategic Initiatives

II.1. Research and Innovations Action Plan

We developed strategic initiatives to achieve all goals set by the university in key priority areas.

Activities to Enhance Research

(Strategic initiatives 1, 2, and 7 of the Roadmap)

Main Goal:

To achieve globally recognised breakthroughs in priority research areas.

To achieve this goal, the following tasks need to be undertaken:

1. Increasing applied R&D revenues and the number of high-ranking publications.
2. Enhancing the university's attractiveness for students and staff.
3. Enhancing faculty members' professional skills and boosting their productivity.

SUSU Advantages

In 2015-2016 SUSU mastered international academic recruitment instruments. The university implemented meritocratic principles in its management, developed a bilingual environment and introduced procedures of independent evaluation of research projects with the help of the International Academic Advisory Council. In 2016, the university set up eight multidisciplinary laboratories headed by leading international scientists:

Laboratory	Head	h-index	Location
Natural Sciences, Engineering and Computer Sciences			
Laboratory for Molecular Electronics	Wolfgang Haase	*48*	TUD, Germany
Laboratory for Multiscale Modeling of Polyfunctional Compounds	Artem Masunov	*32*	University of Central Florida, USA
Laboratory for Mechanics, Laser Processing, and Digital Technology	Philippe Bertrand	*19*	ENISE, France
Laboratory for Self-Monitoring and Self-Validating Sensors and Systems	Henry Manus	*12*	University of Oxford, United Kingdom
Laboratory for Problem-Oriented Cloud Computing Environments	Andrei Tchernykh	*12*	Center for Research and Higher Education, Mexico
Biomedicine			
Laboratory for Neurohepatology	Julio Licinio	*60*	Flinders University, Australia
Laboratory for Synthesis and Analysis of Food Ingredients	Sonawane Shirish H	*24*	National Institute of Technology, India
Social Sciences			
Laboratory for Migration Studies	Jeff Sahadeo	*5*	Carleton University, Canada

An excellent example of SUSU's advantages for development of research activities was a model demonstrated during the implementation of a project on additive technologies with the SMS Group and the National Engineering School of Saint-Étienne in 2016-2017, with whom SUSU established a joint

laboratory. The project featured research, educational and innovative components. Its implementation involved a leading international scientist **Philippe Bertrand,** prominent academic and industrial partners, and the project itself focused on a consumer located in the Greater Urals – MMK, the leading mining and metals company. PhD and master's students of SUSU went to ENISE in France to undertake their studies with the support of the Erasmus+ programme in 2016-2017. A prominent publication '*Microstructure and physical properties of a Ni/Fe-based superalloy processed by Selective Laser Melting'* was published in the *Additive Manufacturing* journal (top-1% SNIP) as a result of research undertaken by the SUSU's Laboratory for Mechanics, Laser Processing, and Digital Technology in 2017.

Over 60 international PhD students have begun their studies at SUSU. SUSU also recruited seven talented postdoctoral researchers from different countries in 2017. A breakthrough was made in **increasing the share of research publications in the first quartile journals** as measured by SNIP provided by Scopus from 12% in 2016 to 35% in the first eight months of 2017.

Challenges

The main challenge is the level of research funding that is insufficient for a world-class university as well as the degree of efficiency of research activities. In addition, the university has a comparatively low level of international collaborations.

What will SUSU do to resolve these issues?

1. **Implement roadmaps for developing cooperation with four priority industries,** including:
   1) Establishing **industry advisory boards.**
   2) **Developing contacts and cooperation with the industry.** Active communications with Russian and foreign graduates of SUSU who are employed at leading industrial enterprises.
   3) **Forming industry-specific, multidisciplinary R&D teams** to ensure greater R&D revenues.
   4) **Organising industrial internships** for students, graduates and postgraduates and attracting leading industrial specialists to teach at SUSU**.**
   5) **Implementing a "one-stop-shop" system** and **eliminating legal obstacles for cooperation**.

«Your professors should actively communicate with alumni employed at different enterprises, because they developed mutual trust with their students over the years. This cooperation may have a profound impact on development of SUSU».

Edward Monser, President of Emerson Corp., head of the SUSU International Academic Advisory Council

SUSU will establish the StrAU «Smart Manufacturing» for implementing applied multidisciplinary research projects in the interests of industries located in the Greater Urals and increasing R&D revenues.

1. Implementing **a programme to attract world-class scientists and foreign administrators,** and raising the salaries of scientists to a competitive level.

2. **Developing a polylingual campus.**

3. Arranging **courses on international project management** for research staff members working at the international level.

4. **Developing international partnerships and participating in top-rated conferences.**

5. **Attracting talented** international and Russian **postdocs.**

6. **Arranging internships for young scientists** at leading foreign universities.

7. **Supporting and developing a KPI (key performance indicator) system for performance-based contracts** while simultaneously raising staff requirements to the level of leading universities.

Activities to Sustain Entrepreneurial Environment and New Economy
(Strategic initiative 6 of the Roadmap)

Main goal:
Developing entrepreneurship in high-tech industry areas for sustainable development of the Chelyabinsk region and the Greater Urals.

To achieve this goal, the following tasks need to be undertaken:

1. Increasing the number of new ventures founded by SUSU and a several fold increase in their revenues.

2. Increasing the share of graduates and employees with entrepreneurial experience.

SUSU Advantages

In 2016, total revenues of business entities in which SUSU was a co-founder amounted to **RUB 147 million**, while revenues of the innovation belt of enterprises of the SUSU technopark exceeded **RUB 1 billion**. The majority of these enterprises has links to innovations in the areas of engineering, computer sciences and education. The university launched a youth business incubator. SUSU youth teams participated in accelerator programmes such as Generation-S, You are an Entrepreneur and Factor. SUSU's innovative projects win support at competitions organised by the Skolkovo Foundation, RVC Infrafund and the Foundation for Promoting Innovation (FPI).

Over the last ten years, the Umnik programme organised by the FPI granted financial support to 126 students, postgraduates and alumni of SUSU for development of their ideas. Eventually they registered 202 objects of intellectual property and founded 24 small innovative enterprises. A bright example of success is Alexey Zakharov, an alumnus of SUSU, who received financial support from the FPI's Umnik

programme for implementation of the project '*Development of a software complex for dispatching a city taxi based on artificial intelligence*' in 2011-2012.

The innovative solutions developed by SUSU's leading scientists and the development of an entrepreneurial ecosystem encourage the SUSU faculty and graduates to build businesses and create jobs for highly qualified specialists in promising industries, including IT, engineering, telecommunications and media. This has led to a diversification of the regional economy. Examples of such enterprises that are now large regional companies include Intersvyaz, a leader in the telecommunications market in the Chelyabinsk Region and the engineering firm ElMetro Group.

Alexey Zakharov, SUSU alumnus and head of Android at Lyft

Employees and alumni of SUSU also founded the following companies:

Company	Revenues	Specialisation and achievements
Konar	> RUB 15 bln annually	One of the largest manufacturers of parts and components of pipelines in Russia. It has competencies in the field of engineering, participating in solving complex problems in the organization of production and transportation of oil and gas.
GalSen	Over RUB 1 bln annually	A leading manufacturer of innovative electrical teaching equipment. Official partner of the world's leading manufacturers of electric drive equipment: Emerson, ABB, Siemens.
Scientific and technological center "Drive Technology"	> RUB 0,5 bln annually	A leading industrial engineering company in the Chelyabinsk, specialising in the introduction of automation and electric drive systems in metallurgy and other industries.
Uchtekh-Prof»	RUB 400 mln annually (30% of products exported)	A leading manufacturer of educational equipment in Russia. The products were given the highest awards of international exhibitions: 52 medals, 3 Grand Prix cups as the best organisation in Russia for the formation of a modern educational environment.
Regional additive and laser technologies engineering centre	Over RUB 30 mln annually	Development of flexible robotic systems for the company "Proton-Perm Motors", OJSC "Composite" (Korolev).
GRID-engineering	Over RUB 15 mln annually	The company implements projects in IT-related fields. It participated in the creation of graphics for the film "Final Fantasy" of Sony Pictures.
UralARM	RUB 13,5 mln annually	Production of single-drive shut-off ball valves with double shutter; the international patent is at the final stage of registration.
UralGIS	Over RUB 3 mln annually	The company provides online monitoring of agriculture with the help of Web-cartography and GIS-technologies. It performs aerial photography to obtain photorealistic 3d models and high-precision terrain for mining objects, develops and implements geoinformation systems.

Challenges

There are many barriers, administrative and otherwise, that hinder innovation and entrepreneurship at the university. Many of these barriers result from the existing university culture and administrative infrastructure, which do not sufficiently encourage initiative and reasonable risk. There is no support system for innovators.

What will SUSU do to resolve these issues?

1. **Attracting talented prospective students** with an entrepreneurial spirit through the Zvezda academic competition, and through academic and training conferences and competitions, as well as by awarding scholarships to the most talented prospective students.

2. **Encouraging students to participate in team projects** for external entities and **introducing courses in entrepreneurship**.

3. **Introducing incentives** for the faculty and students to engage in entrepreneurship.

4. **Providing access to advisory support** and developing an efficient **technology transfer centre**.

5. **Ensuring access to start-up capital**, including the introduction of microgrants.

6. **Building infrastructure** on the campus **to encourage the development of start-ups.**

7. **Holding** specialised **entrepreneurship competitions** such as the Innovative Urals, a national competition for social entrepreneurship.

8. **Supporting internships** aimed at training students and staff in entrepreneurial skills and developing business ideas.

II.2. Action Plan for Education
Best Talent Attraction Activities
(Strategic Initiatives 7 and 9 of the Roadmap)

Main goal:
To ensure high attractiveness of the university for students from all over the world.

Advantages of SUSU
- Location close to the Russian border convenient for attraction of international students.
- Successful experience of attracting students to distance- and mixed-learning programmes.
- Successful experience in attracting international students.

SUSU is creating a community of students from different regions with different backgrounds and experiences. The university's location close to the Russian border is a definite advantage in this endeavour. Recently, SUSU has managed to set up channels to bring in students from the CIS as well as from China and the Middle East.

Challenges
- Limited appeal of the university and the region for prospective students.
- Insufficient dormitory capacity.
- Limited SUSU brand awareness outside the Chelyabinsk region.

✅ What will SUSU do to resolve these issues?

1. Implementing **new systems for recruiting talented applicants**.

2. **Extending the geographical reach for attraction of international applicants**, including through distance learning programmes.

3. Developing a **strategy for accommodating students from other countries** and cities.

4. Developing the infrastructure for a polylingual environment.

5. Entering non-traditional markets for educational services by **implementing mixed and distance learning formats** of education.

6. **Expanding enrollment** in high-demand academic programmes.

Expanding the geographic catchment area through mixed and distance learning forms of education will be essential to the success of these initiatives. In order to use this tool efficiently, SUSU will develop a polylingual environment and a strategy for accommodating students from other cities and countries.

SUSU will also enter non-traditional markets for educational services by developing mixed and distance learning. Such markets include, for example, those people who are employed and wish to get an education, and other potential students that do not have the possibility or desire to study in a traditional format.

Introducing a more competitive admissions process will attract more talented and motivated students, creating a favourable environment for their development and academic success. This will be achieved by expanding the university's geographic catchment and entering new markets together with increasing the number of students studying in high-demand fields.

«Working with younger students should be encouraged (starting from 9-11th graders and even much earlier). You should also think about how to attract the smartest children in the Chelyabinsk Region at the youngest age possible. You could also consider providing applicants with a possibility to formally begin their studies at the university while they are still in school».

Edward Monser, President of Emerson Corp., head of the SUSU IAAC

Activities to Enhance Teaching and Learning
(Strategic Initiatives 1 and 8 of the Roadmap)

Main goal:
To align academic programmes with students' interests and enhance the learning process efficiency.

SUSU Advantages

- Successful experience in creating distance learning programmes.
- Successful experience in designing curricula that incorporate elements of distance learning.
- Establishing and running academic programmes that are in high demand.

Challenges

- Emphasis on the university's interests and not on students' needs in academic programmes.
- Misalignment of existing curricula with target competencies.
- Lack of flexibility in learning paths and modes.

What will SUSU do to resolve these issues?

1. **Implementing individual learning paths** and **creating a single academic space** for all bachelor's programmes.
2. **Integrating distance learning into curricula** and expanding the scope of distance learning programmes.
3. **Implementing adaptive learning technologies** in the educational process.
4. Developing **joint academic programmes** with leading international and Russian universities.
5. **Creating honours programmes** on the basis of new academic programmes that meet international standards.
6. Implementing **problem-oriented and project-oriented** education.
7. **Integrating educational modules of third-party providers** into the university's academic process**.**

The purpose of this group of strategic initiatives is to offer academic programmes that are of better quality and in higher demand while making the learning process more comfortable and efficient for every student. The main instrument for implementation of this group of initiatives will be the StrAU «Smart Education».

The broader integration of distance learning into academic programmes will give students more control over their time and make the educational process more flexible. This approach will also allow to benefit from expertise of the best lecturers from SUSU and other universities to improve the quality of educational materials. In the 2016/17 academic year, SUSU students participated in educational activities involving foreign professors with the help of distance learning technologies: the teaching staff gave a series of lectures at SUSU and then communicated with students and assessed their work via the 'E-SUSU' system. The same format was used for the International Engineering School PWs@PhD organised in partnership with the Erasmus+ project at SUSU recently.

Introducing individual learning paths will make the university's academic programmes more flexible and allow for a broader choice of modules, making the university's educational services more appealing to potential students. Learning efficiency will increase thanks to adaptive technologies. Perception analysis and adaptive testing technologies will help select the optimal teaching methods for students and enable them to master the material and improve their academic results.

The comprehensive implementation of a problem-oriented and project-based approach will help align the programmes offered by the university with target competencies as well as with the requirements of employers and graduates. Creating honours programmes will let the most talented and motivated students pursue the best academic programmes in an environment favourable to their academic success that will allow to unlock their full potential.

II.3. Effective Governance Action Plan

SUSU will improve efficiency of the university's decision-making in accordance with the best international practices

(Strategic initiative 4 and 5 of the Roadmap)

Main goal: To ensure the sustainable development of the university with the help of an efficient governance system and a sustainable financial model.

To achieve this goal, the following tasks need to be undertaken:

1. To foster a collaborative, entrepreneurial and performance-driven culture at the university and reduce the role of centralised administration.

2. To improve the university's efficiency through the adoption of advanced management tools.
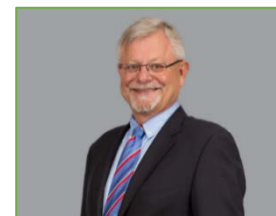
SUSU Advantages

In 2016, the university's academic units were restructured. As a result, over 30 departments were consolidated into ten schools while the number of units dropped from 145 to 85 in two years. **The mechanisms designed for implementing Project 5-100** were project management and change management systems. **A KPI system was introduced for faculty members and department chairs** based on a short list of strategic target indicators related to the implementation of Project 5-100.

Reaction to the restructuring has been positive: **74% of staff members support the changes** carried out as part of Project 5-100 while 57% of employees are satisfied with the university's new organisational structure. The **Supervisory Board** and **International Scientific Council** were set up to monitor the university's transformation and ensure its further sustainable development.

«More than 30 faculties were consolidated into ten large schools; the number of departments changed. What you did was not easy, indeed. You demonstrated leadership skills, as if the entire team had said 'Yes! We will do it!'».

Edward Monser, President of Emerson Corp., head of the SUSU IAAC

Challenges

The maturity of SUSU's administrative and information infrastructure is limiting the university's opportunities for generating additional revenues and retaining talent.

What will SUSU do to resolve these issues?

1. **Adopt a new recruitment system:** Ensure the rotation of research and educational unit managers, limit the amount of time a person can hold a particular position and attract employees through competitive selections based on open procedures and external independent assessment.

1. **Develop a resource and authority delegation system:** Remove administrative barriers between units to enhance cross-disciplinary interaction. **Increase the independence of structural units**: Improve talent engagement and introduce adequate incentives for them.

2. **Create StrAUs «Smart Manufacturing» and «Smart Education»** with well-developed meritocratic management systems and broad powers for addressing global research problems in their areas of focus.
3. **Develop the system for finding world-class specialists**.
4. **Transition to an investment model for financing:** Develop a fundraising system and establish an endowment fund.

SUSU will continue implementing activities initiated in 2015-2016:

1. **Further restructuring** and optimising academic units;
2. **Regularly revising research and educational activities**;
3. Developing a system to monitor demand for educational programmes and track the satisfaction of students, as well as **abandoning programmes for which there is no demand**;
4. **Introducing a minimum USE score** required for enrolment in bachelor's programmes in order to maximise resources in breakthrough areas.

III. Action Plan for Implementation of the Competitiveness Enhancement Program for the Period 2018-2020

Table 1. Action Plan for Implementation of the Competitiveness Enhancement Program for the Period 2018-2020

Strategic initiatives (SI) / tasks (T) / activities (A)		Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
			2018	2019	2020	
SI 1: Breakthroughs in science and education						
Task 1.1: Introduce and promote international programs carried out in collaboration with leading universities, research organizations and top-ranked high-tech companies						
A 1.1.1	Develop, introduce and promote joint educational programs with leading universities, research organizations and top-ranked high-tech companies. Introduce and promote educational programs in English for staffing of the top-priority areas of social and economic development on the regional and federal level, including development of such industries as medicine and biosciences, agriculture and IT	Number of educational programs of higher education and vocational programs developed and implemented in partnership with the leading Russian and foreign universities and/or in the leading Russian and foreign scientific organizations, units	12			g
A 1.1.2	Obtain international accreditation for key educational programs with further promotion to the global market	Number of educational programs with international accreditation, units (cumulative)		3	6	g
Task 1.2: Ensure development of applied market-oriented scientific research and development						
A 1.2.1	Set up "one-stop shop" services for work with the business community	Number of research and development projects in cooperation with Russian and international high-tech companies on the basis of the University, including the ability to create structural divisions of the University, units	100	125	150	h
A 1.2.2	Develop cooperation with the business community to implement projects in breakthrough areas on the regional, Russia-wide and global levels	Total value of business contracts, mln rub	450	600	850	h
Task 1.3: Ensure the establishment of new cross-disciplinary scientific platforms and the further development of existing ones						

Strategic initiatives (SI) / tasks (T) / activities (A)		Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
			2018	2019	2020	
A 1.3.1	With approval of the International Scientific Council, organize temporary creative groups via attraction of world leading academics to perform advanced research	Share of foreign professors, lecturers and researchers in the total number of faculty, including Russians with foreign Universities PhD, %	3	5	10	h
A 1.3.2	With approval of the International Scientific Council, develop infrastructure for scientific and educational centers and laboratories via attracting world leading academics	Average citation in Scopus per 1 faculty staff (during the last 5 years), units	10	11	12	a
A 1.3.3	Set up a system for searching and maintaining applications for international grants, as well as for training SUSU academics in preparing applications for international grants	Total value of international grants received by the SUSU academics, mln rub (cumulative)	30	40	50	h
SI 2: Recruiting talented faculty						
Task 2.1: Organize advanced training programs for academic staff aimed at preparing them to international work						
A 2.1.1	Implement best practices of university language training from the 5-100 Program	Number of young faculty staff who certified IELTS, people (cumulative)	70	150	200	в
A 2.1.2	Support the Academic Writing Office for development of publishing and professional communication skills	Number of publications in Scopus per 1 faculty staff (during the last 5 years), units	17	18	19	в
Task 2.2: Implement an international recruitment system						
A 2.2.1	Develop the University system for international recruiting and hiring of junior academic staff, especially through creating a system of open international scientific contests and grants	Share of young faculty staff, %	88	89	90	b
A 2.2.2	Create a program motivating the board of executives to recruit external academic staff, including international	Share of young faculty staff with experience in leading Russian and foreign universities and/or in the leading Russian and foreign scientific organizations in the total number of young faculty staff, %	1,5	2,2	3	b
Task 2.3: Ensure increased citation indices for the University's faculty						
A 2.3.1	Improve the system for motivating academic staff to publish articles in high-impact academic journals and ensure access to full-text databases and informational resources	Number of publications in top-10% of scientific magazines (SNIP), units (cumulative)	100	110	120	f

Strategic initiatives (SI) / tasks (T) / activities (A)	Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
		2018	2019	2020	
A 2.3.2 Create a system for promoting the results of scientific work, as well as motivating academics to speak at top-rated conferences and forums and recruiting foreign collaborators	Number of grants for participation in the academic mobility program itemized by types (individual, for research groups//for participation in conferences, for allocation during carrying-out of scientific projects, etc.), units	20	25	30	f
SI 3: Recruiting talented prospective students					
Task 3.1: Ensure the development of the academic postgraduate model; implement a system of measures for enrolment of alumni from Russian and foreign universities for postgraduate studies					
A 3.1.1 Create and implement a system of recruitment of external applicants to the postgraduate studies of the University, including establishment of the department engaged in recruiting Russian and foreign postgraduates	Share of students of postgraduate programs with diplomas of different from SUSU higher educational institutions in the total number of faculty, %	26	27	28	d
A 3.1.2 Introduce a system of grants for internships at leading research organizations and universities	Number of students of master and postgraduate programs receiving grants and other support for academic achievements and/or participation in scientific as well as socially important projects, arranged by universities, people	750	775	800	d
A 3.1.3 Develop and implement a set of measures for enhancing of productivity of postgraduate studies, specifically through implementation of a system of participation of postgraduates in funded research and development	Number of PhD awarded to the graduates whose research supervisors are Russian and leading foreign academics of high publication activity and performance, people	8	11	15	d
Task 3.2: Implement a system of grants to support young academic staff and students, as well as to ensure international academic mobility					
A 3.2.1 Support young academic staff and students by providing grants for scientific projects, including internships at leading research organizations and universities	Share of intern-researchers and young faculty staff, received support, in the total number of researchers and young faculty staff, %	35	40	45	f
A 3.2.2 Implement a system of target grants to support talented Russian and foreign students	Share of students on educational programs of higher full-time education that received support in the total number of students on educational programs of higher full-time education, %	17	18	20	f

Strategic initiatives (SI) / tasks (T) / activities (A)		Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
			2018	2019	2020	
A 3.2.3	Develop the academic mobility function, a search system of mobility programs and organization of partnerships for such programs	The share of students who are aware of academic mobility programmes of the university, %	60%	80%	100%	f
Task 3.3: Develop and implement a new system for recruiting talented applicants to the University						
A 3.3.1	Develop infrastructure for a bilingual environment; develop the linguistic and cross-cultural competencies of employees	Share of students from leading foreign universities in the total number of students, %	0,8	0,9	1	g
A 3.3.2	Develop a University-based system of academic conferences, competitions, contests and new forms of professional navigation for applicants to bachelor and Master's degree programs, including for the purposes of selection and recruitment of talented applicants on base of the results of the competitions	Share of students of Master's and postgraduate programs, %	18	25	25	g
A 3.3.3	Develop and implement a new system for recruiting foreign applicants	Share of foreign students educated in the University's core educational programs (including students from CIS countries), %	12	14	18	g
SI 4: Concentration of resources						
Task 4.1: Implement the mechanism ensuring concentration of resources on breakthrough areas of science and abandoning less effective areas of science and education						
A 4.1.1	Develop a practice of monitoring of technological trends in priority development areas of the university, including with participation of international experts	Number of grants received by the faculty from Russian Science Foundation and other supporting research and development funds, units	30	40	50	a
A 4.1.2	Implement a system for monitoring of demand for educational programs and discontinue those training areas for which there is no demand	Share of restructured educational programs, % of previous year	10	10	10	e
A 4.1.3	Create and implement a system for monitoring of students' level of satisfaction	Number of participants of monitoring of students' level of satisfaction, people	60	80	100	g
A 4.1.4	Restructure the social economic and liberal arts faculties of the University to enhance productivity of carrying-out of corresponding educational programs of scientific research	Share of non-public structural divisions in total number of structural divisions, in agreement with International Scientific Council and Scientific Council, %	10	10	10	g

Strategic initiatives (SI) / tasks (T) / activities (A)		Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
			2018	2019	2020	
A 4.1.5	Develop internal procedures of performance assessment of structural divisions to apply corresponding results competitively when allocating the expenditures of the University on the scientific research	Share of non-public structural divisions in total number of structural divisions, in agreement with International Scientific Council and Scientific Council, %	100	100	100	h
A 4.1.6	Come to an agreement with the academic board of the University over gradual justified increase of the admission score at the Unified State Examination for further enrollment of the applicants to the key bachelor programs	Average Uniform State Exam (USE) score of students accepted to full-time course of study at the expense of the Federal budget, points	72	75	78	g
SI 5: Effective university governance						
Task 5.1: Implement a system for training succession pool for the University's staff and advanced training for senior staff, including English language training						
A 5.1.1	Reform the executive board of the University and its divisions, including establishment of a Headhunter Office for recruitment of internationally reputable administrators	Reformation of at least 25% of executive board and its divisions within 2 years, % (cumulative)	7	10	15	a
A 5.1.2	Develop professional skills and qualifications of the University staff included in the succession pool, especially of language proficiency, strategic and project management	Number of employees included in the succession pool for managerial positions, people	3	5	7	a
Task 5.2: Create a change management system						
A 5.2.1	Support the project management office for the 5-100 Program	Share of accomplished Key Performance Indicators of the Roadmap, %	90	90	90	a
A 5.2.2	Support a system of internal PR communications aimed at providing informational support for institutional changes	Level of the faculty staff's awareness of the Russian Academic Excellence Project 5-100, %	90	90	90	a
A 5.2.3	Create and implement a management system to support transformation processes aimed at developing and supporting internal change agents	Share of staff supporting changes in SUSU, %	50	50	50	a
Task 5.3: Ensure the effectiveness of the financial model of the University						
A 5.3.1	Develop and implement a system for raising funds, including by establishing an endowment fund	Number of active charity workers, people (cumulative)	200	300	500	a
A 5.3.2	Develop and implement a strategy of enhancing effectiveness of the financial model	Share of income from non-budgetary sources in the University revenue structure, %	45	45	45	a
Task 5.4: Set up an Supervisory and International Research Boards						

Strategic initiatives (SI) / tasks (T) / activities (A)		Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
			2018	2019	2020	
A 5.4.1	Support the International Research Board (IRB) with involvement of leading foreign experts and ensure its effective cooperation with academic board of the University	Number of employees participating in International Scientific Council summits, people	9	9	9	a
Task 5.5: Develop a system for delegating authority and resources Eliminate overlapping and duplicate structural units						
A 5.5.1	Expand the functionality of Univeris, the corporate IAS	Share of automated document circulation, %	35	60	80	a
A 5.5.2	Implement an assessment system for administrative units	Number of employees participating in assessment of administrative units of the University, people		60	80	a
A 5.5.3	Re-allocate the authorities of employees and develop a system for delegating resources and powers	Share of the University budget redistributed to the level of faculties and academic departments, %	35	35	35	a
SI 6: Innovations for sustainability of Ural region						
Task 6.1: Create an innovation development accelerator at the University; develop support mechanisms for innovative entrepreneurship						
A 6.1.1	Encouraging students and faculty innovation and entrepreneurship	Number of wined grants for funding SME, units.	60	25	30	h
A 6.1.2	Create a system for commercializing the University's innovations on the basis of symmetric interaction with the business community	Number of students participating in youth business incubator activities, people		5	5	h
A 6.1.3	Support the youth business incubator for carrying-out of the youth entrepreneurship programs designed to solve socially important problems of the region Develop a system of youth professional contests with involvement of community and employers	Number of references to the SUSU in regional development context, units	120	150	200	h
A 6.1.4	Implement programs to develop student entrepreneurship aimed at addressing socially significant issues in the region, based on the SIFE (Students in Free Enterprise) Platform	Share of educational programs encouraging entrepreneurship skills, %	30	45	60	h
Task 6.2: Ensure the University's leadership role in the region						

	Strategic initiatives (SI) / tasks (T) / activities (A)	Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
			2018	2019	2020	
A 6.2.1	Host collaborating events with local and regional authorities, companies to boost region's attractiveness Play active role in preparation for SCO-2020 summit	Number of hosted events aimed at rising region's attractiveness, units per year	5	5	5	h
A 6.2.2	Attract and set up high-tech companies in region based on University's interaction with business	Annual growth of University's mentions in media in context of regional development, %	20	30	40	h
SI 7: Reputation management						
Task 7.1: Carry out the re-branding of the University and ensure further brand promotion						
A 7.1.1	Develop and implement a new marketing strategy, including implementation of a complex program of promoting the University in the global educational and academic community	Number of favorable references to the University by the leading Russian mass media, units	30	40	50	g
Task 7.2: Develop and implement a set of measures to enhance the University's reputation in the international academic community						
A 7.2.1	Develop a system of measures aimed at including University journals in the Scopus and WoS databases and their further transforming into highly rated publications	Number of scientific journals of the University, included in database Web of Science and/or Scopus, units	2	3	3	b
A 7.2.2	Implement a single CRM system to interact with international community, alumni, business partners and government authorities	Number of current counterparties, units	2000	4000	6000	b
A 7.2.3	Prepare and distribute an annual report on the University's activities in both Russian and English versions	Availability of the annual report on the University's activities in Russian and English, Yes/No	yes	yes	yes	b
A 7.2.4	Work with international ratings agencies	Number of faculty staff registered as experts in QS, people	800	900	1000	b
A 7.2.5	Ensure informative value and promotion of the University web-site in Russian and English	Increase in rank according to the Webometrics general ranking, place (cumulative)	1700	1800	1900	b
SI 8: New technologies in education						
Task 8.1: Implement new educational models						
A 8.1.1	Implement problem-based learning and project-based training technologies under the CDIO standard	Number of students of the new educational programs, people	400	800	1500	g
A 8.1.2	Create elite bachelor training zones for students with high academic results (honors college')	Number of students of honors college with average score exceeding 90, people	85	120	160	g

Strategic initiatives (SI) / tasks (T) / activities (A)	Key performance indicators (indicator and measurement unit)	Key Performance Indicator Values			Activities according to Government Regulation from March 16, 2013 № 211
		2018	2019	2020	
A 8.1.3	Implement a system of language training based on the Cambridge University Press project	Share of final-year bachelors, certified IELTS, %		5	10	g
A 8.1.4	Reduce the percentage of in-class work while increasing the share of independent student work; introduce a tutoring system	Share of reducing in-class work, % (cumulative)	15	15	15	g
A 8.1.5	Form a unified educational environment for bachelor studies with a free course selection mechanism available to students	Share of credits provided by selective courses in total number of credits, %	20	25	25	g
Task 8.2: Ensure further development of e-training and distance learning technologies					
A 8.2.1	Develop Russian- and English-language MOOC courses on the leading Russian and international platforms (such as Coursera, EdX, Lektorium)	Number of students registered for the MOOC coursed,people	5000	8000	10000	g
A 8.2.2	Implement a system for motivating faculty members to master new educational technologies	Share of faculty members using new educational technologies, %	30	40	50	g
A 8.2.3	Launch E-Learning 20: customization of on-line education through a Big Data-based supercomputer analysis of educational patterns	Share of students completed the e-courses, %	30	40	50	g
A 8.2.4	Expand use of the LMS across the educational process to cover all University courses	Share of educational courses with LMS launched, %	60	80	100	g

Table 2. Action Plan Financing

(rubles)

	Actual expences		Planned expenses							
	2016		2017		2018		2019		2020	
Funding of 5-100 Competitiveness Enhancement Program Mandatory Activities: Subsidy and Non-Government	Subsidised	Non-Government	Subsidised	Non-Government	Subsidised	Non-Government	Subsidised	Non-Government	Subsidised	Non-Government
Total, including:	**115 441 311,43**	**75 507 265,76**	**141 541 200,00**	**70 700 000,00**	**500 000 000,00**	**250 000 000**	**500 000 000,00**	**275 000 000,00**	**500 000 000,00**	**300 000 000,00**
a) Establishing a succession pool for senior university management, attracting specialists with experience in international and Russian Universities and research organizations	29 129 269,80	13 450 777,00	38 585 236,00		78 200 000,00		78 200 000,00		78 200 000,00	
b) Recruiting more youthful faculty members and researchers with time spent and know-how gained in academic and research spheres, in leading international and Russian Universities and research organizations	12 686 051,53	237 492,84	23 415 678,00		84 200 000,00		84 200 000,00		84 200 000,00	
c) Putting into force a number of international and internal academic mobility programs for faculty and researchers (internships, advanced training, professional re-training, exchange programs, etc.)	6 704 187,39		7 580 334,00		6 400 000,00		6 400 000,00		6 400 000,00	
d) Improvement of tertiary education – postgraduate programs and doctorates	1 629 730,91	1 476 641,00	1 034 028,00		6 600 000,00	50 000 000	6 600 000,00	55 000 000,00	6 600 000,00	60 000 000,00
e) Supporting undergraduates, graduates, interns and young faculty members and researchers	50 203 173,03	750 223,00	48 119 730,00		102 700 000,00	25 000 000	102 700 000,00	27 500 000,00	102 700 000,00	30 000 000,00
f) Development of joint educational programs with leading international and Russian Universities and research organizations					11 500 000,00	25 000 000	11 500 000,00	27 500 000,00	11 500 000,00	30 000 000,00
g) Recruiting foreign students to study in Russian Universities, including joint (double degree) programs with international Universities and prospective students demonstrated aptitudes for science	15 088 898,77	21 253 396,92	22 806 194,00		94 500 000,00		94 500 000,00		94 500 000,00	

		Actual expences		Planned expenses							
		2016		2017		2018		2019		2020	
	h) Fundamental and applied scientific research in collaboration with Russian and international organizations:										
	R&D projects with the involvement of leading Russian and foreign researchers as project leaders and/or projects in collaboration with advanced scientific organisations, including the option of setting up structural units at participating universities				28 280 000,00		100 000 000		110 000 000,00		120 000 000,00
	R&D projects together with Russian and international high-tech organisations, including the option of setting up structural units at participating universities		38 338 735,00		42 420 000,00	115 900 000,00	50 000 000	115 900 000,00	55 000 000,00	115 900 000,00	60 000 000,00
2	Funding of 5-100 Competitiveness Enhancement Program Additional Activities: Non-Government			122 900 000,00		142 000 000,00					
3	Funding of 5-100 Competitiveness Enhancement Program: Other sources					500 000 000,00					
4	Total amount of subsidy	150 000 000,00		141 541 200,00							
5	Subsidy account balance by the end of the year										

IV. Obligatory and Additional KPIs

№	KPIs	UOM	Fact	Plan			
			2016	2017	2018	2019	2020
1	Position in global university rankings						
1.1	Rank in ARWU	Rank	-	-	-	-	-
1.2	Rank in ARWU subject ranking	Rank	-	-	-	-	-
1.3	Rank in THE	Rank	-	-	601-800	601-800	401-500
1.4	Rank in THE subject ranking	Rank	-	-	-	-	-
1.5	Rank in QS	Rank	-	701+	651-700	451-500	251-300
1.6	Rank in QS «Computer Science» subject ranking	Rank	-			351-400	301-350
1.7	Rank in QS «Mechanical, Aeronautical & Manufacturing Engineering» subject ranking	Rank	-		201-300	201-300	201-300
1.8	Rank in QS «Materials Science» subject ranking	Rank	-				100
2	Number of articles in the Web of Science and Scopus after eliminating duplication per academician/researcher						
2.1	Number of articles in the Web of Science per academician/researcher	Number	0,39	0,5	0,7	1,2	2,0
2.1.1	Number of articles in the Web of Science per academician/researcher (3 years)	Number	0,31	0,4	0,6	1,0	1,6
2.2	Number of articles in the Scopus per academician/researcher	Number	0,77	0,9	1,2	1,9	3,1
2.2.2	Number of articles in the Scopus per academician/researcher (3 years)	Number	0,63	0,7	0,9	1,5	2,5
3	Average citation index per researcher/academician measured by the total count of articles included in the Web of Science and Scopus databases with elimination of their duplication						
3.1	Average citation index per researcher/academician measured by the total count of articles included in the Web of Science database	Number	0,45	0,7	1,2	2,9	6,8

№	KPIs	UOM	Fact	Plan			
			2016	2017	2018	2019	2020
3.2	Average citation index per researcher/academician measured by the total count of articles included in the Scopus database	Number	0,83	1,2	2,1	4,7	10,6
4	Proportion of foreign professors, academicians and researchers in the total headcount of researchers and academicians, including Russian nationals holding a PhD from foreign universities	%	1,36	2	3	5	10
5	Proportion of foreign students enrolled in the main educational programs of the University (including students from the CIS countries)	%	9,06	10	12	14	18
6	An average USE (Unified State Examinations) score of full-time students enrolled at the University with their tuition to be paid out of the federal budget under bachelor and specialist degree programs	Score	65,8	69	72	75	78
7	Proportion of revenues from non-budget sources in the structure of the University's revenues	%	45	45	45	45	45
8	Share of students of Master's programs and programs preparing future faculty with Bachelor, Specialist and Master diplomas of different from SUSU higher educational institutions in the total number of students of Master's programs and programs preparing future faculty, %	%	17,3	18	19	20	25
9	Research and development costs per academic, thou rub.	Thou rub.	372	400	600	800	1200
Additional KPIs							
10	Share of master's degree and postgraduate students in total	%	16	30	35	38	40
11	Number of educational programs implemented in partnership with leading international universities and research organisations	Number	5	8	12	16	20
12	Cumulative rise in Webometrics ranking	Ranks	1543	1600	1700	1800	1900

Methodology for calculating additional indicator 1 (AI₁).

The additional indicator – **"Share of master's degree and postgraduate students in total"** (**AI₁**) – is calculated as follows:

$$AI_1 = \frac{Q1 + Q2 + Q3}{Q4} * 100\%$$

where

Q1 –Full-time master degree students as of 31 December of the reporting year;

Q2 – Full-time postgraduate students as of 31 December of the reporting year;

Q3 – Full-time tertiary specialists as of 31 December of the reporting year;

Q4 – Full-time students as of 31 December of the reporting year.

Calculation of the "Share of master's degree and postgraduate students in total" indicator includes specialists under the QS rating methodology (source: http://www.iu.qs.com/university-rankings/definitions/#toggle-id-5).

The additional indicator – **"Number of educational programs implemented in partnership with leading international universities and research organisations"** (**AI₂**) – is calculated using the following method:

The number of educational programs implemented in partnership with leading international universities and research organisations and additional professional programs developed and implemented starting from 2016 using a network format in partnership with leading Russian and foreign universities and/or leading Russian and foreign research organisations and/or with the involvement of the world's leading scientists in a given field of science as of the reporting date, in delivering in-class instruction; each program is factored in only once.

The additional indicator – **"Webometrics rating cumulative gain"** (**AI₃**) – is calculated using the following method:

The Webometrics ranking methodology is available on the official website: http://www.webometrics.info/en/Methodology.

The ranking of universities evaluates how a university operates on the basis of its website analysis, and is calculated using the following four indicators: Presence Rank (Web-space size, 1/6 of the overall indicator); Openness Rank (Publication activity, 1/6 of the overall indicator); Excellence Rank (Scimago version of the publication activity, 1/6 of the overall indicator); and Impact Rank (Number of external links to SUSU web-space sites, ½ of the overall indicator). The highest university ranking available in two Webometrics rankings during the reporting year will be selected as the reporting indicator.

№	Indicator	UOM	Fact	Plan			
			2016	2017	2018	2019	2020
1	Total number of employees recruited for senior management positions with a track record of working for leading universities and scientific organizations in and outside of Russia	Number of people (cumulative)	1,16	2	3	4	5
2	Number of scientific journals of the University, included in database Web of Science and/or Scopus	Units	1	2	2	3	3
3	Number of employees included in the succession pool for managerial positions	People	100	100	100	100	100
4	Share of young faculty staff with experience in leading Russian and foreign universities and/or in the leading Russian and foreign scientific organizations in the total number of young faculty staff	%	0	0,8	1,5	2,2	3
5	Share of the number of University faculty staff, participating in academic mobility programs, in the total number of University faculty staff	%	9,14	10	11	12	13
6	Number of academic mobility programs for faculty staff of University and outside organizations realized by the University	Units	5	10	15	20	25
7	Share of young University faculty staff in the total number of University faculty staff	%	30,23	35	35	35	35
8	Share of students on educational programs of higher full-time education that received support in the total number of students on educational programs of higher full-time education	%	15,76	16	17	18	20
9	Share of intern-researchers and young faculty staff, received support, in the total number of researchers and young faculty staff	%	47,85	48	49	50	50
10	Number of educational programs of higher education and vocational programs developed and implemented in partnership with the leading Russian and foreign universities and/or in the leading Russian and foreign scientific organizations	Units	7	8	12	16	20

11	Share of students from leading foreign universities in the total number of students	%	0,04	0,2	0,4	0,8	1
12	Number of research projects involving the leading foreign and Russian scientists and/or in cooperation with leading Russian and foreign scientific organizations at the University basis, including the ability to create structural divisions of the University	Units	7	10	15	20	25
13	Number of research and development projects in cooperation with Russian and international high-tech companies on the basis of the University, including the ability to create structural divisions of the University	Units	31	75	100	125	150

Appendix 3.

Table 5. Proposed calendar for the creation and development of StrAUs in the Federal State-Funded Educational Institution of Higher Professional Education South Ural State University

No.	Description	Deadline			Deliverables	Roadmap events
		2018	2019	2020		
1.	**University-wide events to create and develop StrAUs (signed off on by the university)**					
1.1.	Ensure the regular operation of the SUSU International Scientific Council	December	December	December	Regular operation of SUSU International Scientific Council ensured	M 5.4.1
1.2	Restructure and modernise university divisions to enhance efficiency	January-December	January-December	January-December	SUSU divisions restructured	M 4.1.4
1.3	Restructure business processes, including the implementation of a CRM system and automated workflow	December	December	December	Workflow automation ensured	M 5.5.1
1.4	Ensure regular PMO operation, including StrAU implementation	December	December	December	Regular PMO operation ensured	M 5.2.1
1.5	Develop a recruiting system for new staff and build a talent pool	December	December	December	Talent pool of highly talented individuals formed	M 5.1.2
1.6	Conduct information campaigns on StrAU operations in general and also about each individual StrAU	January-December	January-December	January-December	StrAU information campaigns conducted	M 5.2.2
1.7	Develop faculty incentives and development systems for the StrAUs	January-December	January-December	January-December	Incentive and development systems set up	M 5.2.3
1.8	Modernise the multilingual infrastructure for scientific, academic and extracurricular activities	January-December	January-December	January-December	Bilingual infrastructure in place	M 3.3.1
2.	**Forming and developing StrAUs**				**Smart Manufacturing StrAU 1** **StrAU 1 objectives:** Achieve global-scale scientific breakthroughs in digital technologies by implementing the Industrial Internet of Things at leading companies in the Greater Urals and Russia. **StrAU 1 tasks:** • Increase R&D income by implementing large-scale comprehensive projects for industrial partners • Conduct fundamental and applied research to address global challenges resulting from the development of the digital economy	

No.	Description	Deadline			Deliverables	Roadmap events
		2018	2019	2020		
	• Train a new generation of highly-paid specialists capable of solving global challenges in the field of digital technologies • Popularise the Industrial Internet of Things through international conferences and research-to-practise workshops **QS Computer Science ranking after establishment and development of StrAU 1 is complete:** • 2020 - 300-350 **Smart Education StrAU 2** **StrAU 2 objectives:** Transform SUSU into a university where the emphasis is on the student and where people of various professional and educational backgrounds can find a wide range of quality academic programmes equipped with cutting-edge learning technologies. StrAU 2 will lead to the university's promotion in the QS and THE rankings by improving its reputation in the academic community. **StrAU 2 tasks:** • Create new high-demand programmes and products • Expand industrial partnerships • Develop distance learning in basic academic programmes • Promote a data-driven approach to learning process management • Apply data analytics and AI methodologies to electronic teaching					
2.1	**Developing academic programmes within StrAUs**					
1.1.2	Use student enrolment pattern analysis to eliminate low-demand programmes	December	December	December	Programmes restructured	M 4.1.2
2.1.2	Implement and develop new recruiting and engagement systems for talented applicants from Russian and foreign universities	January-December	January-December	January-December	Recruitment efficiency enhanced	M 3.3.3
2.1.3	Ensure the modernisation of academic programmes to introduce a task-oriented and project-oriented approach to learning	January-December	January-December	January-December	Task-oriented and project-oriented learning approach introduced	M 8.1.1
2.1.4	Develop the university's system for recruiting international PhD students, especially through the creation of a system of grants for talented applicants	January-December	January-December	January-December	International PhD student recruitment system established	M 3.1.1

No.	Description	Deadline			Deliverables	Roadmap events
		2018	2019	2020		
2.1.5	Develop an academic mobility system among leading Russian and foreign universities for students, PhD students and talented faculty	January-December	January-December	January-December	Academic mobility for the university's students ensured	M 3.2.3
2.1.6	Establish new academic programmes (including English-language programmes) partnering with leading R&D institutions and high-tech companies	January-December	January-December	January-December	New academic programmes in cooperation with Russian and foreign partners established	M 1.1.1
2.1.7	Add business skills modules to academic programmes	September	September	September	New business skills modules in the university's various academic programmes established	M 4.1.6
2.1.8	Ensure the optimisation of educational processes to decrease the amount of in-class activities	September	September	September	Number of in-class activities drops	M 4.1.8
2.2.	**Developing R&D activities within StrAUs**					
2.2.1.	Engage leading world-class scientists and researchers in key development areas	January-December	January-December	January-December	Top Russian and foreign researchers brought in	M 1.3.1
2.2.2.	Develop and maintain laboratories to conduct research in key StrAU areas including fundamental research	January-December	January-December	January-December	Lab development and maintenance ensured	M 1.3.2
2.2.3.	Develop a system to recruit and hire junior academic staff and develop a competitive process for the selection of applicants	January-December	January-December	January-December	Junior academic staff engagement and development system established	M 2.2.1
2.2.4.	Improve the system for motivating academic staff and PhD students to publish articles in leading academic journals	January-December	January-December	January-December	System for motivating academic staff and PhD students to publish articles established	M 1.3.2
2.2.5.	Ensure the university's development in the global academic community, i.e. by including the university's journals in the Scopus and Web of Science databases	December	December	December	Inclusion of the university's journals in the Scopus and Web of Science databases ensured	M 7.2.1
2.2.6.	Develop a subsidy system to support academic staff, PhD students and students in their fundamental research activities	December	December	December	Subsidy system for academic staff, PhD students and students established	M 3.1.2

V.