# COMPLEX PROGRAM

## of cooperation

## of National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

## with educational, scientific and innovative spheres of the People's Republic of China at a new stage

2019

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## PREAMBLE

Building on the traditions of friendship and mutual understanding between the Chinese and Ukrainian peoples,

based on the provisions of the Agreements between the Government of Ukraine and the Government of the People's Republic of China:

1) "On Scientific and Technical Cooperation" dated April 27, 1992;

2) "On Cooperation in the Field of Exploration and Use of Outer Space for Peaceful Purposes" dated May 20, 1996;

3) "On Mutual Recognition of Documents on Education and Degrees" dated December 11, 1998,

4) "On Technical and Economic Cooperation" dated January 25, 2013;

5) "On Economic-Technical Cooperation" dated December 05, 2013;

6) "On technical and economic cooperation" dated January 27, 2015,

by assisting scientists, teachers, and students of universities of Ukraine and the universities of the People's Republic of China in the development of cooperation,

by intending to bring the cooperation of the Igor Sikorsky KPI with partners in the People's Republic of China to a new level and contribute to the development of economic cooperation between our countries at a new stage,

Igor Sikorsky KPI makes the following proposals – as the integral parts of the Complex program of Cooperation of the Igor Sikorsky KPI with the educational, scientific and innovative spheres of the People's Republic of China.

# 1. INTRODUCTION. DEVELOPMENT OF THE IGOR SIKORSKY KPI IN THE PERIOD OF INDEPENDENT UKRAINE. NEW PRIORITIES FOR INTERNATIONAL COOPERATION

Proposals to the Integrated Program of Cooperation of the Igor Sikorsky KPI with the educational, scientific and innovative spheres of the People's Republic of China at the new stage follows both from the history and traditions of the world-renowned scientific and pedagogical schools of the KPI, as well as the priorities in the activities of the KPI for international cooperation, which have been formed in recent years.

The characteristics of these new priorities represented in this **section 1**.

## 1.1. "Visiting card" of KPI: the main features of the history and present time

● The main milestones of the Igor Sikorsky KPI development:

**1898 – the foundation** of the Kyiv Polytechnic Institute of Emperor Alexander II;
**1995 –** the Kyiv Polytechnic Institute was granted the status of the National Technical University of Ukraine;
**2003** – the National Technical University of Ukraine "Kyiv Polytechnic Institute" in Bologna University joins the Great Charter of Universities (**Magna Charta Universitatum**);
**2007** – was granted the status of a **research university**.

● **Twelve institutions of higher education, 11 academic and branch scientific institutions, and two factories were created based on KPI**.

● KPI was noted with high **awards by the Governments of Bulgaria, Poland, and the Socialist Republic of Vietnam** for outstanding achievements in the field of training engineers.

● **KPI plays an important role in shaping Government policies** in the field of higher technical education, science, and innovation in Ukraine.

● KPI is the first university in Ukraine that **has entered the world's university rankings** since 2012 (Quacquarelli Symonds (QS), etc.).

● KPI for the past ten years ranked **first in the national TOP-200 ranking**;

● **Igor Sikorsky KPI is the largest technical university and the largest "manufacturer" of engineers** in Ukraine according to 39 Bachelor's, 92 Masters and 82 Ph.D. training programs.

● 25% of all students of Ukrainian technical universities study in the KPI.

● Innovative Ecological System of KPI, the core of which is Science Park "Kyivska Polytechnica," **annually brings on the national and foreign markets 100-150 start-ups**; it is the highest indicator in Ukraine.

● **KPI is the main institution of higher education and science for the defense industry complex of Ukraine**. There are more than 40 types of weapons developed, 6 of which already has been provided to the Armed Forces.

● **KPI is the only university in Ukraine that develops micro-and nanosatellites and put them on the Earth orbit**. Now the third nano-satellite PolyITAN-3 is being prepared.

● **The KPI has one of the most powerful cybersecurity schools in the world**. The Igor Sikorsky KPI team **dcua** recognized as the best from more than 12,000 white hackers teams from around the world in the 2016 CTFtime ranking (http://CTFtime.org); in 2018 this team is the leader of the competition again.

● Since January 1999, the **International Department of UNESCO** "Higher Technical Education, Applied Systems Analysis and Informatics" has been operating at the KPI.

● KPI is the center of the Ukrainian Scientific and Educational Telecommunication Network URAN (**Ukrainian Research and Academic Network**), which is the national representative of Ukraine in the Pan-European Science and Education Network GÉANT.

● Over **50 joint international educational and research centers,** such as the Ukrainian-Chinese, Ukrainian-Polish, Ukrainian-French, Ukrainian-German, Ukrainian-Japanese, etc. have been established in the KPI, as well as joint educational and research structures with transnational companies (Boeing, IBM, Dow Chemical, Jeppesen, Hewlett Packard, Delcam, Siemens, Rigaku, HAAS, etc.). They act as international bridges of cooperation in education and science based on curricula designed to meet the needs of global markets.

● **KPI has the largest number of partners in the PRC among universities and companies – more than 22 partners**, including Harbin Institute of Technology, Beijing Polytechnic University, Zhejiang University, Shanghai Research Institute of Precision Devices, Shandong Academy of Science, Huawei Technologies Co., Ltd., Zhejiang Golden Egg Science and Technology, etc.

**And the number of partners grows annually**.

## 1.2. From 1991 to 2010-2012

This stage of the University's development began with the final phase of the Soviet Union existence and conditionally covered about 20 years of Ukrainian independence.

The transition from a centralized economy to a market, a substantial reformatting of its structure in new geographic and political boundaries, a radical change in the principles of interaction with the outside world required a profound rethinking of the fundamental principles and the role of higher education in Ukraine.

In the face of this challenge, the KPI has worked out a new concept for its further development. It consisted in its transformation from the model of the great polytechnic institute, which was firmly embedded in the centralized economy of the former USSR and carried out educational and research work in narrow-oriented specialties, to the model of the European Technical University with a universal broad-profile training by the new needs of society.

**First.** The universalization of education and research required the combination and harmonization of the fundamental-natural, engineering, technical, and humanitarian components of the training of new generation specialists.

Accordingly, there were created ten new faculties and educational institutes, more than 50 departments. More than 150 new specialties and specializations were opened, and an interdisciplinary approach was strengthened in the organization of educational process and research.

In those years, the contingent of KPI students grew by 12 thousand and exceeded 40 thousandth threshold, and together with teachers, scientists, staff, the family of Kyiv Polytechnic composed the 50 thousandth team of holders of advanced society knowledge.

**Second**. While solving the new tasks faced the society in this period, the KPI created national institutions in its structure:

– the first in Ukraine State Polytechnic Museum;

– Science Park "Kyivska Polytechnica" and expanded to 10 regions of Ukraine Innovative Ecosystem "Sikorsky Challenge," which became the first high-tech breakthroughs island in the country;

– Educational and scientific information network URAN, which is the national representative of Ukraine in the European network GEANT and provides its information resources with the leading universities and research centers of Ukraine;

– more than 50 international centers jointly with international organizations and multinational companies that implement the practical integration of the KPI in the world and European scientific and educational space.

Thus, during this period, the scale and content of the KPI became much larger than the institution of higher education in its traditional sense.

According to the world university ranking Quacquarelli Symonds (QS), and others, the KPI entered the 4% of the world's most authoritative universities, became a major educational, scientific and innovation center, a methodological center of the state, an island of breakthroughs in a number of high-tech areas, a center for educating professionals of the new generation, true patriots of Ukraine.

## 1.3. From 2010-2012 to the present

In 2012, a new university development strategy was approved. Under this strategy, on the base both of interdisciplinary, innovative training programs and the activities of more than 50 international scientific and educational centers and the Innovative Ecosystem "Sikorsky Challenge," the KPI develops a strategy for the state to gradually move from a low-tech and commodity economy to a high-tech and competitive one.

New realities forced to add to the university development strategy one more task: to increase the state's defense capability. In a matter of months, the KPI has intensified scientific development and training of personnel in military-industrial fields.

In particular, the university has become the developer of more than 40 new technologies of dual and special purpose, six of which have already been put into service, and significantly expanded the training of personnel for security institutions and the Armed Forces of Ukraine.

Looking into the future through the prism of objective laws of the development of nature and society, Kyiv Polytechnicians see a series of new global and regional challenges that have already begun to change the world order and have a direct impact on Ukraine.

The objective nature of this process is dictated by the Fourth Industrial Revolution proclaimed at the Davos Economic Summit in 2015.

According to its content, during the next decade the world economy will be transformed in directions:

automation

digitalization,

robotizing

artificial intelligence coverage

development of the Internet of things.

Already, due to global "digitization," the demand for "outdated" engineering work is rapidly decreasing.

KPI responds to this challenge by strengthening analytical, forecast work on the prospects for the development of each sector of industry and deepening interaction with the high-tech labor market.

The global energy crisis, associated with the reduction of natural reserves of organic fuels, in particular – anthracite coal in Ukraine, obliges to develop actively renewable energy sources.

Reducing people's access to clean drinking water (Ukraine is provided by 55%) forces to intensify the development of new technologies for water preparation and purification.

The growth of global diseases: cancer, cardiovascular diseases, AIDS, tuberculosis, cerebrovascular disease, and others require accelerated development of biomedical engineering biotechnics and biotechnology.

Significant climatic changes caused by the human-made impact on nature should unite KPI scientists – biologists, chemists, environmentalists,

sustainable development experts – based on interdisciplinary approaches – to find answers to these and other challenges and risks of the present.

Recent geopolitical realities of the last time put urgent tasks not only to strengthen the defense capability of the state but also to increase the competitiveness of the Ukrainian economy.

The group of scientists of the International Council for Science, the Committee on System Analysis of the Presidium of the National Academy of Sciences of Ukraine, Igor Sikorsky KPI, Institute for Applied Systems Analysis of the Ministry of Education and Science of Ukraine and the National Academy of Sciences of Ukraine, the World Data Center for Geoinformatics and Sustainable Development and the "Agrarian Superstate" Foundation, headed by Academician M.Z. Zgurovsky developed eight scenarios of the socio-economic development strategies of Ukraine in the medium-term (until 2020) and long-term (until 2030) time horizons, one of which you can see below.

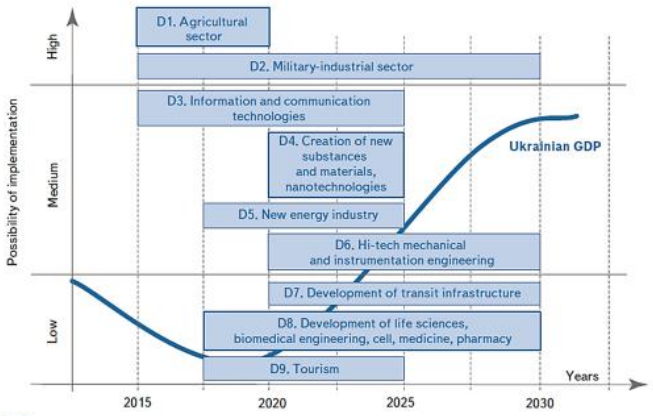




*Fig. 5.1.*
TIME CHART OF ACTIVATION OF THE MAIN CLUSTERS OF THE UKRAINIAN ECONOMY

The diagram shows how likely 9 clusters of the economy of Ukraine can act as drivers of social and economic development in the period up to 2030.

Among these drivers are Agrarian Sector, Military-Industrial Complex, Information and Communication Technologies, New Substances and Materials, Nanotechnology, New Energy Industry, High-Tech Mechanical and Instrumental Engineering, Transit Infrastructure Development, Development the Life Sciences, Biomedical Engineering, Medicine, Pharmacy, Tourism.

**The new priorities of the KPI for international cooperation follow from the "FORESIGHT AND THE CONSTRUCTION OF THE STRATEGIES OF SOCIO-ECONOMIC DEVELOPMENT OF UKRAINE".**

Based on fundamental and applied research, it is necessary to accelerate the development of the topical engineering directions of the university, including:

aviation technology

space technology

modern material science

communication systems

cyber defense system

artificial intelligence systems

and many others.

On the other hand – the growing phenomena of aggression, populism, inequalities between people, corruption, demographic changes, terrorism, and crime make our social scientists focus on developing a new vision of the place and role of Ukraine and the KPI in a conflicting world.

These realities compel KPI as the country's leading educational and research center to develop new approaches to training specialists with a new thinking, high human values, true patriots of Ukraine that will be able to overcome these challenges.

The KPI continues to improve the model of the research university by combining the science-intensive, high-tech engineering education, competitive science, and innovation, constantly enforcing the component of broad fundamental knowledge in this model.

Improving the quality of the specialists' training and the quality of scientific research is becoming critical at the present stage.

It is possible to do this provided further development of scientific and engineering schools, their close ties with the high-tech labor market based on the model of dual education, innovative interaction and deepening processes of internationalization of the university and expansion of international cooperation.

So, in this section, the priorities of the Igor Sikorsky KPI have been named in a certain – until 2030 – time perspective, which are important for international cooperation.

In this – the international sphere – one of the most important directions of the Igor Sikorsky KPI is the developing cooperation with partners from the People's Republic of China.

**The above priorities shape the proposals for cooperation with partners in the People's Republic of China. The following sections represent these proposals.**

# 2. THE ACTUAL DIRECTIONS OF COOPERATION WITH PARTNERS FROM THE PEOPLE'S REPUBLIC OF CHINA AT THE NEW STAGE. PROPOSALS FOR COOPERATION

## 2.1. Cooperation in the field of education

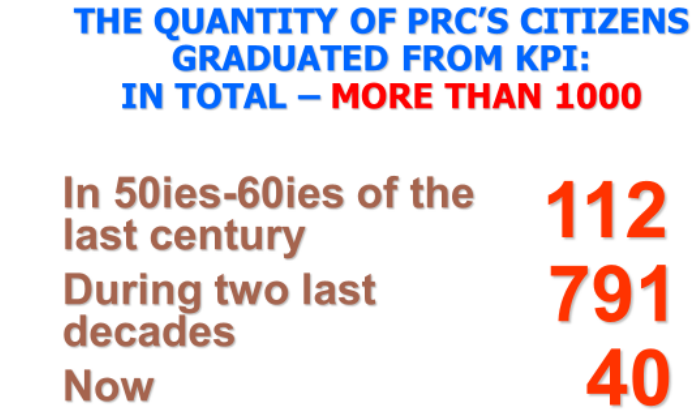
### 2.1.1. The role of the KPI in the field of education for Ukraine and the world, including the training of specialists for the People's Republic of China

Igor Sikorsky KPI is the largest "manufacturer" of engineers in Ukraine according to 39 Bachelor's, 92 Masters and 82 Ph.D. training programs.

25% of all students of Ukrainian technical universities study in the KPI.

The KPI fulfills this important mission not only for Ukraine but also in the international sphere and plays the role of a powerful international educational center of engineering.

Throughout its 120-year history, a well-established tradition of international education has formed: KPI has trained more than 7,000 engineers for 67 countries, as well as China.




The outstanding graduates from the Igor Sikorsky KPI in 50s-60s of the last century:


A number of citizens of the People's Republic of China who graduated from the KPI:

– in the 50s - 60s of the last century - 112;

– during the last two decades - 791;

– today are being training - 40;

– More than 1000 specialists have been trained.

Igor Sikorsky KPI was the first among Ukrainian universities to receive a license [No. 163801] for retrain and skills development of Chinese

specialists. In 2015, only seven universities from around the world had obtained such a license.

**KPI would like to see more Chinese citizens studying in it, including post-graduate education.**

Over 50 joint international educational and research centers**,** such as the Ukrainian-Chinese, Ukrainian-Polish, Ukrainian-French, Ukrainian-German, Ukrainian-Japanese, etc. have been established in the KPI, as well as joint educational and research structures with transnational companies (for example, with Boeing, IBM, Dow Chemical, Jeppesen, Hewlett Packard, Delcam, Siemens, Rigaku, HAAS, etc.). They act as international bridges of cooperation in education and science based on jointly developed curricula to meet the needs of global markets.

Through joint structures with the UN, the European Union, NATO and others (UNESCO, UNIDO, WIPO), the KPI not only represents Ukraine in international organizations but also implements curricula in their areas of activity.

Examples:

– 5-year UNIDO educational project for the preparation of specialists in the KPI through the Center for Cleaner Manufacturing – as a broad educational platform of the Igor Sikorsky KPI;

– James Martin Center for Nonproliferation Studies of the Middlebury Institute of International Studies at Monterey and the Ministry of Education and Science of Ukraine identified the KPI as the basic university for the formation and implementation of the National Platform for the Training of Physical Nuclear Safety Technologies;

– The curriculum of the Master's and Ph.D. Programs in Sustainable Development and Management was proposed for 12 countries of the Black Sea region through BSUN (Network of Universities of the Black Sea Region), which brings together 110 universities of the Black Sea countries.

**All of the above mentioned and many other KPI educational platforms can be made available for cooperation with partners in China in the field of education.**

**Thus, the KPI is ready and has a strong potential to carry out an international training mission for the specialists preparing in various fields representing modern breakthrough scientific, technological and innovative directions also for the People's Republic of China.**

For this purpose:

– it would be advisable to ensure the presence of the Igor Sikorsky KPI at the information websites for entrants from the People's Republic of China, including in Chinese;

– to disseminate among the recruitment partners information about the university, the possibilities of admitting.

It is also proposed to implement for partners from the People's Republic of China "Portfolio of joint educational projects of Igor Sikorsky KPI " consisting of:

– educational project in the form of "Remote preparatory department";

– educational project in the form of "Training center":

a) based on the Igor Sikorsky KPI;

b) based on a foreign partner;

– educational project "Undergraduate / Magistracy";

– educational project "Network Educational Program."

### 2.1.2. To expand the training of the People's Republic of China citizens in English (undergraduate, postgraduate, Ph.D.) in the Igor Sikorsky KPI

Igor Sikorsky KPI is ready to extend the education of the People's Republic of China citizens in English (undergraduate, postgraduate, Ph.D.) in specialties in the following areas:

– space,

– aviation,

– energy sector,

– Information Technology;

– cybersecurity;

– biomedical engineering;

– new materials

– as well as in other specialties that will be considered as important for the training of specialists and the postgraduate training (advanced training) for the People's Republic of China.

### 2.1.3. Joint education programs.

It is proposed to start joint programs of the "Double Diploma" type ("Diploma of two partner universities") according to certain schemes.

The most appropriate are 2 + 2 or 1 + 3 schemes.

Under the scheme 2 + 2 (Baccalaureate), Chinese citizens study at the Chinese University at the 1st and 2nd courses, and the 3rd and 4th courses in the Igor Sikorsky KPI.

Under the scheme 3 + 1 – Chinese citizens study in China during the first year, and on the 2nd, 3rd and 4th courses – in the Igor Sikorsky KPI.

They master basic disciplines at Chinese universities, and special disciplines and practices in Ukraine, where there are specialized and real practice bases.

After graduation, bachelors receive a diploma from the KPI and a Chinese partner university.

Such a form of cooperation involves training by the agreed, harmonized by the two partner universities education programs in the specialties which are chosen by partners.

In recent years, the KPI has been negotiating with all the Chinese partners in such areas.

Consequently, it is necessary to identify universities in China that can become partners of the KPI, to negotiate with these partners to agree on curricula – interesting for both parties, to harmonize these curricula and start training.

It is also proposed to undertake work with large Chinese corporations (for example, Huawei, Tencent, Tiens, etc.) on the formation of dual education programs at educational and scientific capacities of the Igor Sikorsky KPI.

### 2.1.4. Joint Educational Structures. The idea of "distributed laboratories" in education, "twinning" laboratories

Igor Sikorsky KPI is ready to negotiate the creation of joint educational structures with partners in the People's Republic of China.

The initial stages of this kind of negotiations in recent years have been conducted with several universities and research centers of the People's Republic of China: Huizhou University and Guangzhou University (Guangdong Province), with the University of Tsilu (Shandong Province), with a group of companies Van lead.

Also, the KPI is ready to negotiate the transfer of innovative training technologies under franchising agreements, to conclude contracts for the creation and transfer of author courses of disciplines on the terms of recognizing and proper distribution of copyright, rights to intellectual property, property rights.

Igor Sikorsky KPI is ready to consider the proposals of universities, research centers, companies, and other organizations of China on the creation of joint educational laboratories in the KPI – these proposals are attractive for investment in KPI.

KPI is interested in such a promising form of cooperation.

The idea of "Distributed educational laboratories, centers, supporting points" in the field of education: they should consist of two parts-twins: one part is created in the KPI, the second part – at the university-partner in the PRC.

Educational projects, such as "Double Diploma" ("Diploma of two partner universities"), according to the schemes "2 + 2", "3 + 1", "1 + 1", etc. also may be implemented on their basis.

### 2.1.5. Academic mobility.

The KPI would like to expand academic mobility through cooperation with the People's Republic of China.

Examples of this kind already exist. Students and graduate students of the Igor Sikorsky KPI had the opportunity to participate in scholarship programs for academic mobility with the Harbin Polytechnic University, Xi'an Jiaotong University and the Beijing Institute of Technology. From 2014, nine students of the Igor Sikorsky KPI studied in such programs in Harbin.

To deepen cooperation between countries in this form, we propose to expand the number of Chinese universities to exchange students, negotiate and develop standard contractual documents to consolidate their results.

### 2.1.6. Cultural and artistic direction

Based on the Center for Culture and Arts of the KPI, there are constantly 15 collectives of amateur performances, 5 of which have titles of national. In the 2017/2018 academic year 192 cultural and artistic events were held, 5 teams took the first places in the City Review-competition of folk art on vocal-choral, choreographic, fine arts and crafts, and also attended tours of 8 countries (International Festival "12 Festival of Traditional Art", Poland, Poznan (August 22-28, 2018), Italy, Loreto city. International festival (July 02-11, 18.), Hungary, Budapest (March 15-20, 2018), Georgia, Tbilisi, Batumi (June 6-10, 2018), Italy Sardinia island "Festival of Choirs" and others.

To enhance cooperation and promote cultural exchanges, we offer to organize the participation of our teams in international festivals and contests.

### 2.1.7. Sports direction

The Physical Education and Sports Center of the KPI supports the development of physical education and sports, with 9 sports clubs (basketball, football, volleyball, aerobics, fitness, swimming, triathlon, freestyle wrestling, judo, boxing, heavy and athletics, rugby, archery, sports orienteering, sports tourism, rock climbing, etc.). Trainees of these sections are masters and candidates for the master of sports of the international and national levels, winners of the All-Ukrainian (56 winners) and International competitions (11 winners), namely:

student Ivakhnenko Victor – gold medal at the World Championship, 1st place at the European Championship among students, 1 st place on the Ukrainian Championship among men of weight-lifting sport;

student Lyaskovich Vladislav – first places in the Ukrainian Championship on the Wrestling;

student Desyatnik Alexander – 1st place at the Ukrainian orienteering championship;

student Lisova Oksana – 1st place at the Ukrainian Triathlon Championship;

student Tarasevich Arina – 3rd place in the Ukrainian Triathlon Championship (Aquathlon).

To deepen cooperation between countries and create a culture of leisure, promote healthy lifestyles among young people, promote sport and support the sport and cultural traditions, **we propose** coordinating the participation of KPI students and KPI partners in China and sports teams in the international competitions.

### 2.1.8. Social direction

To deepen cooperation between countries and conscious choice of a healthy way of life, prevention of negative phenomena in the youth environment, the involvement of students in the volunteer movement and social activity – we offer joint preparation and implementation of social projects.

### 2.1.9. A software for studying the Ukrainian language with the use of English as an intermediary language – "Golden Gates to Ukrainian"

We propose to use the software "Golden Gates to Ukrainian" to study Ukrainian language with the use of English as an intermediary language for entrants who are planning to study in Ukraine (the product was created in 2002 for the recommendation of HE Extraordinary and Plenipotentiary Ambassador of the People's Republic of China to Ukraine Mr. Lee Goban).

## 2.2. Cooperation in the field of science

### 2.2.1. Prioritization.

Section 1 outlined the priorities of the KPI in the field of science and innovation, aimed at the earliest launch of drivers of socio-economic development of Ukraine.

Among these priorities are topical engineering directions of the university, which are developing based on fundamental and applied research and find further realization in the innovation sphere, providing a commercial effect:

aviation technology

space technology

modern material science

communication systems

cyber defense system

artificial intelligence systems

and many others.

These priorities should be negotiated with the Chinese partners; more specialized areas of cooperation should be identified.

It is necessary to begin the formation of joint project proposals for national and international scientific grant programs to use by the KPI and its partners from the PRC when participate in international competitions, fight funding and – through such a form (scientific and technical cooperation) "run" the entire system of interaction for the sustainable cooperation.

### 2.2.2. Joint complex interdisciplinary projects according to modern priorities.

Currently, Igor Sikorsky KPI does not have large interdisciplinary projects on orders from China (such as, for example, the UNIDO project in the KPI on the operation of the Cleaner Production Center in Ukraine, as discussed in section 2.1.1.).

KPI will be interested in such projects and contracts that have signs of large complex interdisciplinary projects of interstate level and contracts for their implementation in the KPI by scientists and students.

We are ready to move in cooperation with China to a new level: to implement major interdisciplinary projects under the state orders of China, including defense projects.

### 2.2.3. Joint laboratories, centers, bureaus and other collaborative structures in the field of science. The idea of "distributed laboratories" in the field of science, "twinning" laboratories.

Igor Sikorsky KPI is ready to consider the proposals of universities, research centers, companies, and other organizations of China to establish joint research laboratories in the KPI – such proposals are attractive for the KPI.

KPI will be interested in such a promising form of organization of cooperation.

The idea of "Distributed Academic Laboratories, Centers, Support Points" in the field of science: they should consist of two twin parts: one part is created in the KPI, the second part – at the partner university in the People's Republic of China.

### 2.2.4. Preparation of Doctors of Philosophy and Doctors of Sciences as a factor for deepening the cooperation of scientists of China and Ukraine.

Igor Sikorsky KPI is ready to expand cooperation in this direction.

An example of this type of cooperation is the Agreement, signed in May 2018 between the Igor Sikorsky KPI and Tsilu University (Shandong Province) on preparation at the KPI the specialists for the People's Republic of China according to Ph.D. programs. Directions of preparation and subjects of scientific researches agreed by both parties before the start of the admission company.

### 2.2.5. Involvement of students in scientific and technical cooperation.

"S.O. Lebedev and V.M. Glushkov International Open Student Olympiad" on programming "KPI-OPEN" held for 13 years at the Igor Sikorsky KPI. Chinese students also participate in this Olympiad.

To deepen cooperation between countries, we propose to expand the number of universities – participants from the People's Republic of China, to invite Chinese companies to be the co-organizers of the Olympiad, etc.

## 2.3. Cooperation in the field of innovation

### 2.3.1. Innovative ecosystem and "Sikorsky Challenge" start-up festival.

KPI has a well-developed Innovation Ecosystem, the core of which are the Science Park "Kyivska Polytechnica," the start-up school and the International "Sikorsky Challenge" start-up festival.

Through these structures, KPI is the largest manufacturer of start-ups in Ukraine and annually launches 100-150 start-ups for negotiations with national and international investors.

We invite interested Chinese companies and investors to participate in the "Sikorsky Challenge" Festival, to participate in the work of the International

Jury of the Festival, to negotiate the acquisition of start-ups by a Chinese business.

### 2.3.2. Supporting point (platform) of the Innovation Ecosystem of the KPI and the Science Park "Kyivska Polytechnica in Hangzhou

It is proposed to create the Support Point (platform) of the KPI Innovation Ecosystem and the Kyiv Polytechnic Science Park in Hangzhou, Zheztsian Province, in cooperation with Golden Egg Technologies Ltd., a partner from the People's Republic of China.

The purpose of this project is to start the launch of the best start-ups of the KPI to the Chinese and international markets.

### 2.3.3. Confucius Institute in Igor Sikorsky KPI, whose feature will be functioning in the Innovation Ecosystem of the KPI.

The establishment of the Confucius Institute and, consequently, the rise of level of the Chinese language study at the largest technical university of Ukraine (with the use of the capabilities of the Confucius Institute) will create a substantial economic basis for deepening Ukrainian-Chinese science-innovation and industrial relations for the long-term perspective, will become an important factor in the development of the Ukrainian-China cooperation in general.

(First Secretary of the Chinese Embassy to Ukraine Mr. Wang Dujun performed similar work at the Belarusian National Technical University (Minsk) in 2014).

### 2.3.4. Actual legal procedures.

It is necessary to work out the legal procedures for assigning rights to the objects of intellectual property jointly created with Chinese partners – in equal shares to each party, or proportional to the contribution of each party, which can be decided during the negotiations.

It is necessary to put into practice the typification of this kind negotiations, the development of standard documents for the distribution and consolidation of copyright, rights to jointly created objects of intellectual property rights, the distribution of property rights.

## 2.4. General principles of cooperation development.

### 2.4.1. Mutually beneficial cooperation and investment attractiveness.

The Academic Council of the KPI in 2017 defined the policy principles of the Igor Sikorsky KPI in cooperation with foreign partners, in particular:

to select for implementation those international proposals that have investment attractiveness for the KPI (the creation of laboratories at the KPI campus, ensure the remuneration of KPI scientists, who works at the request of foreign universities, research centers, firms, enterprises, at the expense of funds transferred by customers to the accounts of the KPI in banking institutions in Kyiv; ensure the principle of recognizing the rights for the created intellectual property objects in a ratio not less than 50:50 (otherwise than equal parts – to each party), etc.

The above concept is not an imperative, peculiarities should be defined during negotiations with foreign partners, but an approach based on the understanding that cooperation should be mutually beneficial is fundamental.

### 2.4.2. Igor Sikorsky KPI would like to deepen cooperation with the provinces of Shandong, Guangdong, Zhejiang, Sichuan, Liaoning, Heilongjiang, and Hebei, and to establish cooperation with other provinces on the principles outlined in the previous chapters.

### 2.4.3. Strengthening the role of the Ukrainian-Chinese Center at the Igor Sikorsky KPI

We appeal to recommend authoritative co-founders of the Ukrainian-Chinese center from the People's Republic of China to strengthen its scientific, technical and innovative direction.

### 2.4.4. On the way to entrepreneurial university.

The system of higher education becomes a separate sphere of the economy. Trends in higher education are pushing universities to change the model from research to entrepreneurship university.

Entrepreneurial University is a higher education institution that, through a combination of fundamental and practical knowledge, generates market-demanded educational, scientific, innovative products that can be commercialized in the domestic and foreign markets of educational, scientific and technical services and innovations.

The implementation of such the understanding of the business universities activity requires the availability of an appropriate system of its organization – a system for knowledge transfer, which in terms of practical implementation represents a comprehensive interaction between business universities and the environment and its management. The knowledge transfer is intended to lead to innovation in the economy and the public sphere.

It is from that standpoint the Igor Sikorsky KPI plans to build cooperation with international partners, including partners from the People's Republic of China.

2.4.5. The Complex Program is open for discussion, additions, clarifications by both the authorities and the scientific and educational community.

***Proposals to the draft "Complex Program..." have been prepared according to the Igor Sikorsky KPI order No. 5/168 dated 09/17/2018 by the Working group:***

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